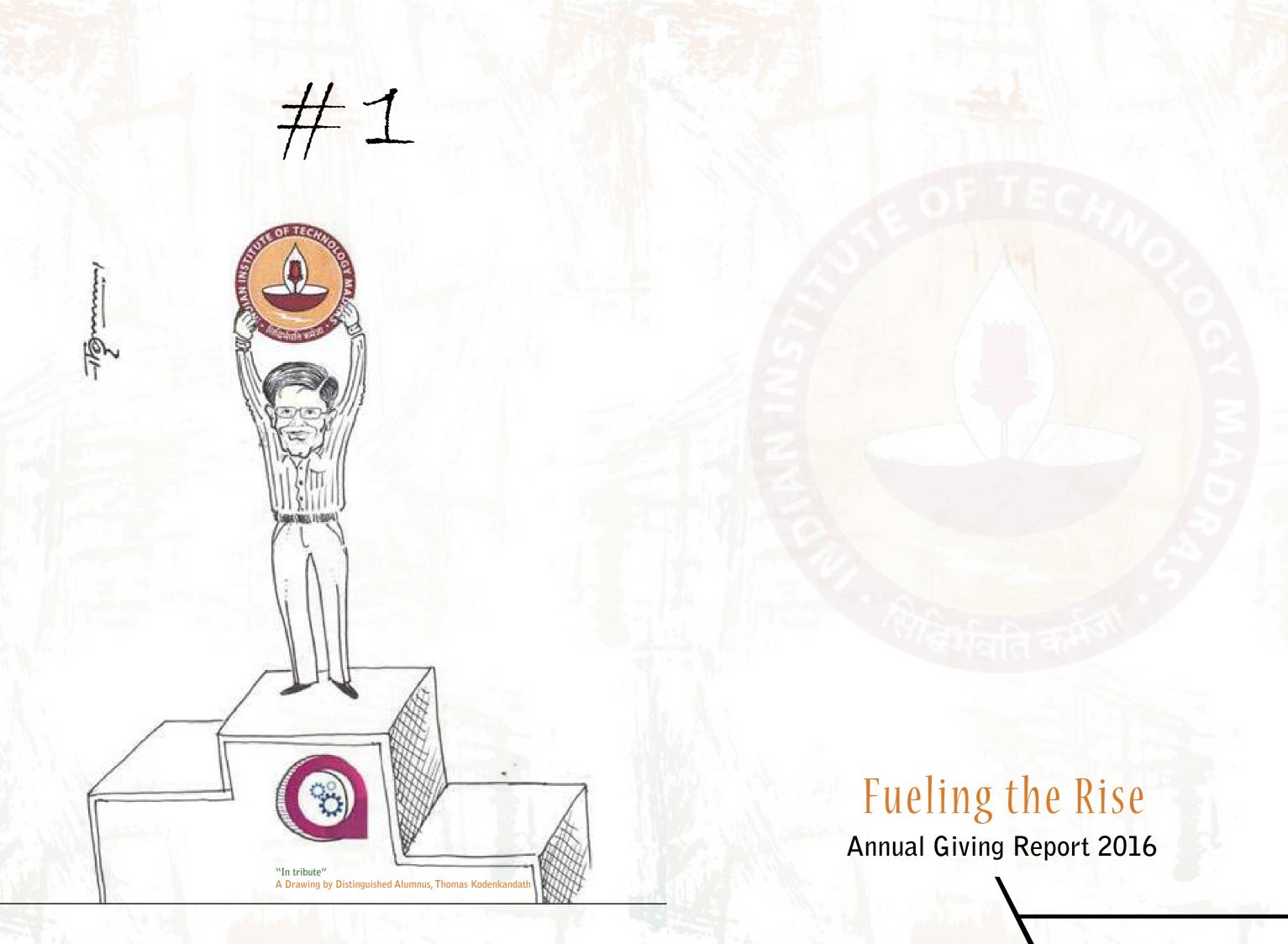
# Fueling the Rise

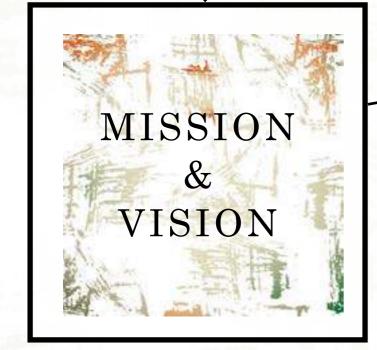


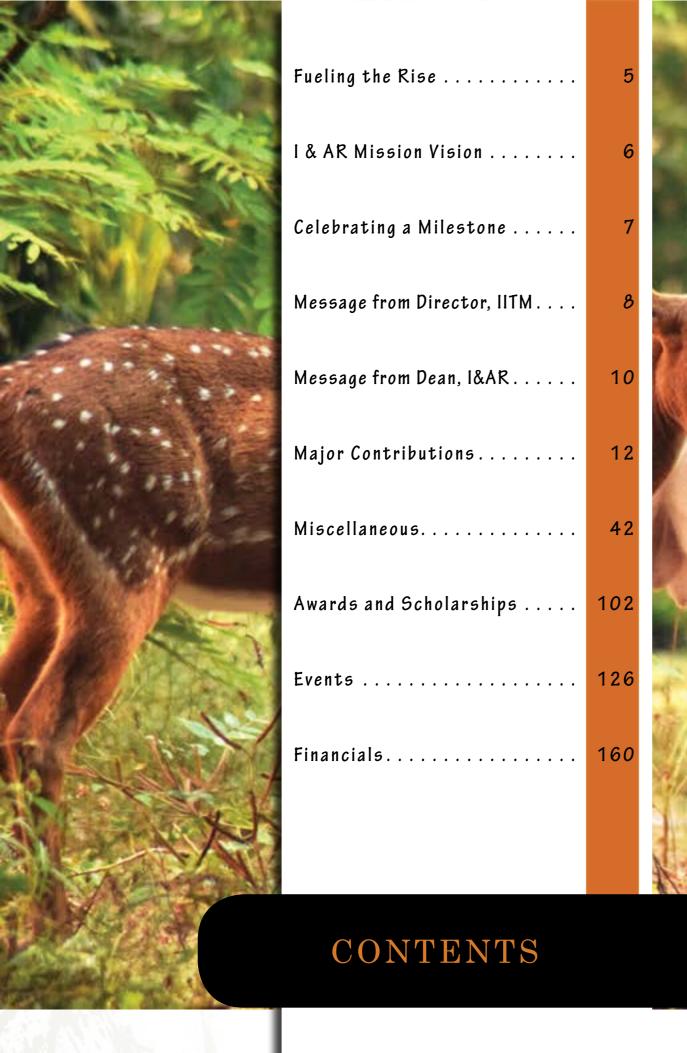


To be an academic institution in dynamic equilibrium with its social, ecological and economic environment, striving continuously for excellence in education, research and technological service to the nation.

## To pursue excellence in:

- Teaching developing human resources in the service of the nation
- Research
- Consultancy and
- Helping to improve technical education in the country





# FUELING THE RISE

## OFFICE OF ALUMNI AFFAIRS MISSION & VISION

## CELEBRATING A MILESTONE

Serve as outward-facing window from the Institute to the Alumni:

- act as primary interface from Institute to alumni-at-large
- authorize alumni access to campus facilities
- administer Distinguished Alumnus Award program
- administer Travel Grant program, etc.

Drive Institute-related fund-raising activities among alumni:

- devise fund-raising strategy
- coordinate fund-raising activities
- ensure timely deployment of funds
- report to Institute and back to donor regarding status of funded projects

Register graduating students into the alumni database:

- enroll students into the database
- provide permanent alumni e-mail ID
- maintain and grow database
- provide database access on as-needed basis

#### Serve the student community:

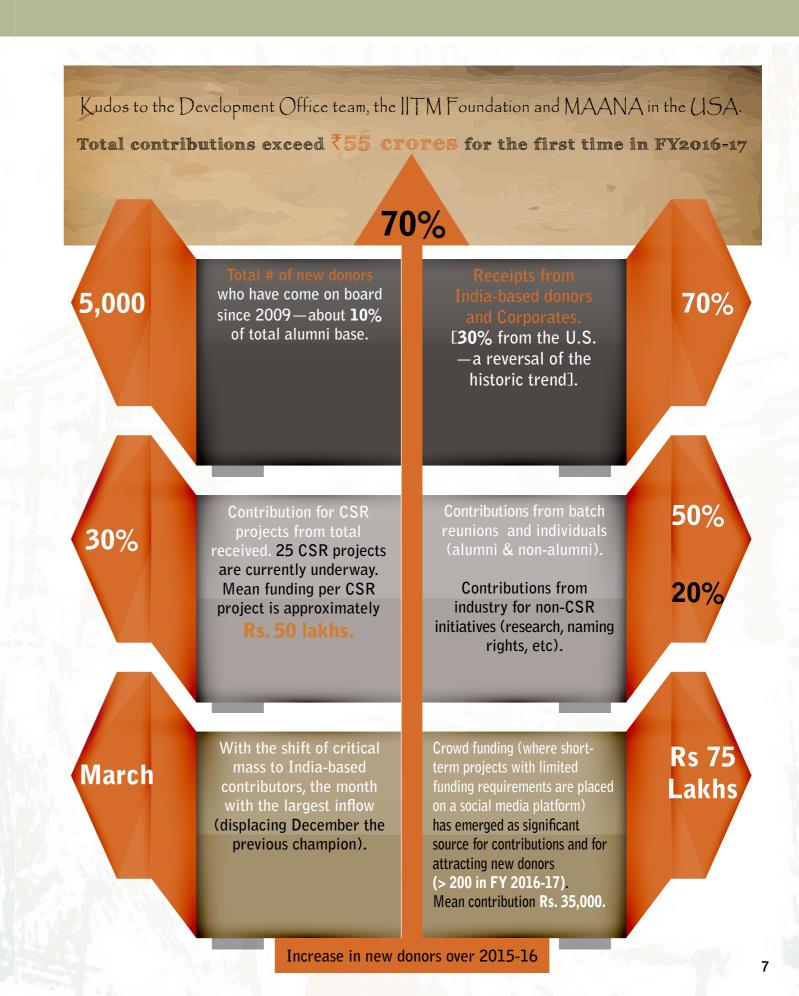
- administer scholarships and awards
- solicit alumni funds towards student travel, facilities, projects, etc.
- facilitate student mentoring by alumni

#### Serve the faculty community:

- promote interactions between visiting faculty and local alumni
- promote campus and department visits by alumni
- promote research & consultancy relationships between faculty & alumni

#### Serve the alumni community:

- support networking activities and events, such as reunions
- support alumni communications, such as monthly newsletter
- support alumni registration in database
- work closely with IIT Madras Alumni Associations (IITMAA, IITMAANA, etc.) on alumni related matters
- support Pan IIT activities (e.g., Club) and events (e.g. Annual Meets)



## MESSAGE FROM

## DIRECTOR, IITM



#### Dear Alumnus / Alumna,

It is with a deep sense of satisfaction that I pen this message to the IITM Giving Report 2016. There are so many firsts and so many highs this year that one does not know what one should call out first. Let me therefore begin with a big THANK YOU to all our dear alumni and friends! Your contributions - in time, money, and mindshare - mean a lot to us and make a world of difference.

With the Best Institute tag twice in a row, IITM is on a steep ascent. Our Research Centres - nearly twenty of them - have come into their own; several path-breaking technologies have been brought to market to meet national challenges, and globally cited papers have brought the Institute strong visibility in the world of our academic peers. Our startups are winning awards, drawing investment, generating revenue and employment and providing innovative solutions to several pressing needs of society.

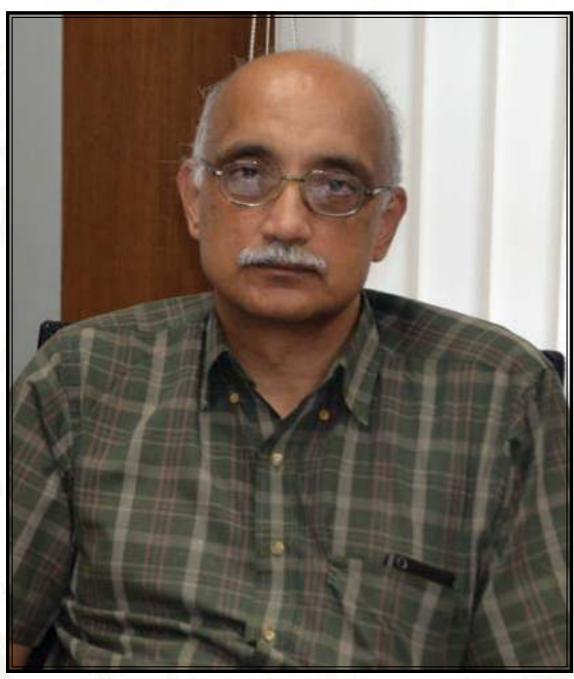
This is the time for all good alumni to join the party! Every little act of yours to help our Institute scale even greater heights will make a difference. Whether you join your batch to beat all other batches with the mother of all contributions, or make your own distinctive donation for a cause dear to you; whether you visit campus and interact with students to share your experiences, or connect your company to our faculty to discover new collaborations or make a CSR grant; whether you mentor our startups and help them fine-tune their products and discover new markets; or whether you simply drop by to relive old memories, every time you think about your alma mater and do something to help, it makes a huge difference.

This report provides some glimpses of the joy several alumni have derived from their giving this past year, and the immeasurable benefits accruing to the Institute from their generosity. On behalf of the Institute, I once again thank all of them, and invite each one of you to re-connect with your very own IIT Madras.

#### - Prof. Bhaskar Ramamurthi

## MESSAGE FROM

## DEAN, I&AR



Dear Alumnus / Alumna,

Here is another edition of our "Annual Giving Report", detailing our receipts and deployments of your generous contributions over the year. It has been another watershed year for IIT Madras and for our Office. Many new highs have been achieved, and the path forward has never been more promising.

While we celebrate our # 1 ranking in India among engineering & technology institutions, as per NIRF, it is important to dwell on the contributory causes. Our "Strategic Plan 2020" remains our roadmap, and we believe that as long we execute our plan, and meet our objectives, the recognition will follow. Similarly, while we reached an all-time high in our find-raising during FY 2016-17, we are most enthused about the manner in which our Development Office in India and our Foundation in the U.S. are shaping up. With dedicated alumni volunteers lending their time and energy, and professional Staff to take the activities forward on a full-time basis, we are poised for unprecedented growth on this front.

A question I get asked occasionally is the need for contributory funding, and my usual response is that "GoI funding meets our needs, contributions fulfill our aspirations". For example, the tuition fees for all financially-needy undergraduates who are admitted to IIT Madras are taken care of by a combination of Government funding and alumni grants. However, awards to recognize excellence in various spheres, travel grants to enable participation in international Workshops and competitions, infrastructure on campus such as the Centre for Innovation (CFI, funded by my Class of '81 during our Silver Reunion!) are well served by our ever-so-generous alumni community. Similarly, while faculty and graduate students can attend international conferences using GoI funding, their associated visits to Universities and research labs to carry out collaborative research is typically covered through alumni funds. In many instances, the institutional development process is "intensified" by the catalytic role that alumni and other well-wishers play, enabling realization on an accelerated time scale.

While industry has always interacted closely with IIT Madras, and Research Park has further enhanced the interaction, the CSR mandate on Indian industry has opened a new avenue whereby industry can sponsor translation of faculty R & D into tangible results on the ground. Several such initiatives are described in this report. This is a classic win-win-win for industry, IIT Madras, faculty and society. Our industry partnership in the CSR realm continues to gather strength, with impact assessment now underway to gauge the net effect.

Though fund-raising is a science in the U.S., it is not yet so in the rest of the world. We have acquired many learnings in our journey over the past decade, and you will see them reflected as we move forward. Building a large unrestricted Endowment for the Institute, whereby annual returns can be deployed by the leadership for maximum impact, remains our "holy grail". We have a 2020 goal of Rs. 500 crores (with a stretch target of Rs. 1,000 crores!), and we are about a third of the way there. With your continued goodwill and support, I have no doubt that we will get there.

Thanks for everything, and keep the IITM banner flying high & proud....

- Prof. R. Nagarajan



#### VISITING CHAIR

Dr. Venky Harinarayan [1988/BT/CS] 2013 Distinguished Alumnus Dr. Anand Rajaraman [1993/BT/CS] 2013 Distinguished Alumnus

#### **Amount**

#### **USD 1 Million**

Silicon Valley-based Distinguished Alumni of IIT Madras, Dr. Anand Rajaraman and Venky Harinarayanan, have donated \$1 million to create a corpus that will fund Visiting Chairs in CSE (Computer Science & Engineering) to lead research on data-driven approaches to solve important problems. The Visiting Chairs will enhance teaching and research efforts in this area, and help attract outstanding young faculty, students, research scholars and postdocs to the CSE Department at IIT Madras.

#### **Chair Occupants**

- 1. Jeff D. Ullman, Professor Emeritus, Department of Computer Science, Standford University
- 2. Randy Katz, Distinguished Professor, EECS, UC Berkeley
- 3. Hari Balakrishnan, 1993-BTCS & 2013 DA, Professor, EECS, MIT

## Giving back, catalysing growth

When people reached out for their morning newspaper on September 8th, they could not have known what to expect. Making news across all major dailies in the country was a story from within the forests of IIT Madras, a story that spoke not only of the dogged pursuit of excellence within the Institute but also of the community spirit and loyalty that students and alumni have nurtured over decades.

'Two alumni pay back their alma mater with \$1m donation,' read Times of India, while The New Indian Express spoke of 'Visiting Chairs donated by US-based alumna'. The story was the same, one of a generous gift back to the Institute that had molded two individuals many years earlier. Dr. Anand Rajaraman and Venky Harinarayanan, both recognized as Distinguished Alumni of the Institute, graduated five years apart with undergraduate degrees from the Department of Computer Science. Moving on to pursue Silicon Valley careers and settle down in the United States, both Rajaraman and Harinarayanan have seen the industry flourish and evolve first hand, and been a part of the growth story themselves. It was in response to these global trends that they decided to give back to their Institute, contributing towards Visiting Chairs in the department. The USD 1 million donation is being used to create a corpus that will encourage research on data-driven approaches to pressing international problems. "Data-driven approaches are transforming the world we live in. The impact of data and algorithms is being felt in every field of human endeavour – industry, sciences, humanities, and government, "Dr. Rajaraman said during his announcement of the donation in New Delhi.

For IIT Madras, the opportunities for the Venky Harinarayanan and Anand Rajaraman Visiting Chairs Program open are endless. With constant collaboration and communication with leading minds in the field, the Computer Science department at IIT Madras is geared to build capability in an area so full of potential. Prof. Bhaskar Ramamurthi, Director, IIT Madras, also conveyed hope that the Program will inspire a multiplier effect, one whose repercussions will be felt through the undergraduate, postgraduate, research as well as teaching verticals. To ensure the standards of high-quality research are maintained, a committee has been constituted to provide advice on the screening and selection of the Chair Professors.

The endowment announcement has been greeted with appreciation even from outside the gates of the Institute. Professors from internationally reputed universities have indicated their willingness to occupy the Chair, and have welcomed the development as a means to promote collaboration between the international Computer Science community and leading education and research centres in the country. It is one more step in the direction of global partnerships, facilitating experts in today's age of technology to work towards finding solutions to shared problems and common concerns.

Though hosted by IIT Madras, the impact of the Venky Harinarayanan and Anand Rajaraman Visiting Chairs Program cannot be measured just yet. Its announcement and inception is merely the beginning of the story of two graduates nurturing growth and development in an Institute that laid their foundation. The Chairs Program is the story of inculcating internal competencies and inviting the best talent to the Department of Computer Science, IIT Madras. At its core, it is the story of taking one more step forward in contributing to the global conversation on data-driven research, the new frontier of technology.

## INSTITUTE CHAIRS

- · Intended for senior IIT Madras Professors to reward exceptional performance.
- Selected faculty will be identified as "(Named) Institute Chair" until retirement; financial benefits will be provided for an initial period.
- May be endowed with an initial corpus of Rs. 65 lakhs (\$ 100,000).
- · Chairs will be named by IITM in consultation with the Donor.

## Saying thank you, being grateful

As an institute, IIT Madras has striven to pursue excellence in research and teaching simultaneously. The professors on campus are not only dedicated to the quest for cutting-edge developments across the fields of their choice, but also to being effective educators in the classroom, molding the future generation of researchers, thinkers, and doers. It is to felicitate the best of these professors, individuals who have spent many years of their lives committed to the shared pursuit of learning and teaching, that multiple new Institute Chairs have been introduced at IIT Madras. These professors will occupy these Chairs until retirement, and will initially receive financial benefit as well.

## Girija & R. Muralidharan Institute Chair

Girija and R. Muralidharan [1968/BT/EE]
Chair Occupant
Dr. B. S. Murty
Professor & Head, Metallurgical and Materials Engineering Department
IIT Madras

When R Muralidharan graduated from IIT Madras' Electrical Engineering department in 1968, he had no way of knowing that his name would find itself immortalized at the Institute decades in the future. Many years after graduation, he and his wife Girija, found an innovative way of giving back to the Institute – by pledging their life insurance policy. Speaking of how the culture of regular testing and hands-on workshop experience is the reason he became a good engineer, Muralidharan describes his years soon after graduating. "At training in Germany, I wrote a protest letter to the training management that the module they had set for me was too basic. It was a waste of time. Everything I am as an engineer is rooted in IITM." Years later, in conversation with Prof. Nagarajan (Dean, International and Alumni Relations), his wife and he decided to donate their USD 100,000 life insurance policy to the institute, a first-of-its-kind way of giving back. "I wanted to institute a rolling chair. Materials was my first choice since that is where the frontiers of innovation lie today. Things are getting smaller but more complex, and Materials makes that happen." The Girija and R Muralidharan Institute Chair is currently occupied by Dr. BS Murty, Professor and Head of the Department of Metallurgical and Materials Engineering Department.

## V Balaraman Insititute Chair

1981 batch alumnus
Chair Occupant
Prof. Ramesh Babu [1990/PhD/ME]
Professor, Mechanical Engineering Department
IIT Madras

## Prof. MS Ananth Institute Chair

Drs. Ashok and Kamala Krishna [1974 & 1983/BT/CH, respectively]
Chair Occupant
Dr. Shankar Narasimhan [1982/BT/CH]
Professor, Chemical Engineering Department,
IIT Madras

While some alumni have turned to instituting chairs as a way of expressing gratitude to the Institute at large, for others it is a means to show admiration for a single professor who impacted their lives greatly. In the case of Drs. Ashok and Kamala Krishna, both alumni of the Institute, it was Prof. MS Ananth, former Director of IIT Madras and Professor in the Department of Chemical Engineering. As Head of Technology in Chevron, Ashok had already arranged for a Chevron Chair and contributed to the Chevron Lab, both in the Department of Chemical Engineering. Instituting a Chair almost seemed like the next logical step. "We both knew we had to give back to the Institute that had trained us. It was but natural for Kamala and me to create this chair in Prof. Ananth's name, a person we both admire greatly. We hope this chair will remind all future faculty and students of his seminal contributions to the Institute." The Prof. MS Ananth Institute Chair is currently occupied by Dr. Shankar Narasimhan, Professor in the Chemical Engineering department.

## Qualcomm Institute chair

#### Qualcomm

Chair Occupant
Dr. R. David Koilpillai [1984/BT/EE]
Professor, Department of Electrical Engineering
IIT Madras

The Institute has also benefited from endowments from corporates as well as from donors who request anonymity. The Qualcomm Institute Chair is occupied by Dr. R Koilpillai, Professor in the Department of Electrical Engineering, while the V Balaraman Institute Chair is currently held by Dr. Ramesh Babu, Professor in the Department of Mechanical Engineering.

Whether by individuals or corporates, named or otherwise, these Chairs stand testimony to the impact IIT Madras as an institution has had on individual lives. Students across generations remain grateful to the Institute for not only providing them a strong educational base but also for the skill sets and the exposure they gained to make their mark in the world. By instituting Chairs, these donors are saying a profound 'Thank You' to senior professors who have spent decades nurturing the next generation of graduates who will carry the IIT Madras name forward.

## INFRASTRUCTURE ON CAMPUS

## Leaving One's Mark, Literally

#### By 2016 Batch

Every year, the graduating students of IIT Madras step into their new roles as alumni of the institute by giving back. Starting off a new chapter of their relationship with IIT Madras on a note of gratitude, students of every year's graduating class choose to waive their caution deposit in favour of the 'Batch Project,' a tradition that is gradually gaining traction over the years. The project is aimed at creating a sense of belonging and responsibility amongst the newly-minted alumni, providing them the opportunity to leave their mark even as they gear up to face the outside world. Says Abhishek Sharma, Alumni Affairs Secretary of 2015-2016, "the pride you have when you see that you have contributed something important to the campus infrastructure is evident when alumni come back. Batch Projects are by far the easiest way to leave an imprint. You contribute a very small amount (compared to the value and scale of the project) and still get bragging rights on changes that improve the quality of campus for years to come!"

For the Batch of 2016, their "bragging rights" came by way of the walkway between the Humanities and Social Sciences Block (HSB) and the Classroom Complex (CRC), all the way up to the Building Sciences Block (BSB). The newly revamped pathway was suggested by Prof. David Koilpillai, the Dean of Planning at the institute, taking into account the budget proposed and the feasibility of the project. Once the suggestion was in place, the student council interacted with the batch in question to seek their approval and support.

Regulars at IIT Madras would know that the HSB-CRC pathway is quite a populated stretch, frequented by students regardless of department and degree on their way to classes and labs. What was once a dirt path littered with stones and pebbles today is today paved, smooth, and embossed with the Batch of 2016. Even as the graduates stepped out into the world, they made sure to leave their footprint behind at IIT Madras.



#### By Mehta Family Foundation

Once again, the Mehta Family Foundation stepped forward to support the mission of fostering more talent, catalysing more research and training more minds in the field of biosciences, making it possible through their goodwill and generous contribution to undertake the construction of the second building as well. The year 2013 the vision emerged and hit the drawing board. Plans were drawn up and the building designed. On Thursday, March 24th, 2016, the first floor slab was laid on the completed foundation, setting the team up for a long-winded but visionary journey of creating facilities that foster excellence. And today, ground plus six floors stand tall in testimony to that benevolence. The whole building itself is expected to be completed by end 2017.

With this increase in space and capacity, it is expected, the researchers and students of the department will be able to take full advantage of the resources at their disposal, benefiting from their access to a leading research facility.

#### CSR PROJECTS

## Nurturing Conscientious Entrepreneurship

In a world that forms judgements on the parameters of economic growth and development, entrepreneurship plays a rather crucial role in understanding success. Environments conducive to entrepreneurship are those amenable to risk, challenge, and eventually, growth. Yet, in societies characterised by deep inequalities, these entrepreneurs have a dual role to play; they are uniquely positioned to even out the creases and level out the playing field while simultaneously acting as a marker of growth.

In a 2015 article on social entrepreneurship in India, Klaus Schwab, the founder and executive chairman of the World Economic Forum, noted that India was placed second highest in terms of net income inequality amongst thirty-four countries in the lower-middle-income group. He went on to comment that "social entrepreneurs are a key stakeholder segment to engage in delivering such basic services and opportunities efficiently and effectively to the underserved in India," a responsibility that has seen increasing adoption in the last few years. It is to enable this adoption, service provision, and resulting growth, that the Centre for Social Innovation and Entrepreneurship, IIT Madras, has partnered with the Social Impact Lab of the University of Southampton, UK. Supported by the British Council, this collaboration has resulted in the launch of The UK India Social Entrepreneurship Education Network, or UKISEEN.

UKISEEN is a peer-led network of academics, educationists, and practitioners from across the UK and India that uses the latest in digital technology and social media to enable knowledge transfer and resource sharing. The goal is the "establishment of high quality social entrepreneurship teaching and learning," a task directly in keeping with the British Council's commitment to "support social entrepreneurship become embedded in the curricula and ethos of higher education institutions. "It is this dedication to catalysing a commitment to social entrepreneurship in the classroom that has fuelled many of UKISEEN's activities this past year.

At the launch conference in April 2016 at IIT Madras, the team discussed a range of pertinent issues from the use of technology to social entrepreneurship and leadership in curricula. Playing host to over eighty participants, the conference held on campus also provided the opportunity for students to interact with industry leaders and the wider network of experts present for the occasion. It was then decided that the first year will see a focus on four main components namely 'Global Social Exchange,' an online competition on the sixth Sustainable Development Goal (clean water and sanitation), building an active online community, conducting regular webinars, and hosting an international student research symposium.

With IIT Madras known nationally for its commitment to the "start-up culture," this collaboration takes this a step further. Today, the institute is not only committed to promoting the start-up trend, it creates the environments necessary to promote socially responsible, deeply impactful enterprises, molding a generation of conscientious entrepreneurs.

Projects Funded	Donor Name	Amount (₹)
Social Enterprise Education programme for CSIE	British Council	15,24,250

## Protecting the Environment, One Village at a Time

It is public knowledge that India is well on its way to becoming the most populous country in the world. While this demographic statistic coupled with the percentage below the age of 30 gives India an enormous economic advantage, the swelling population comes with its fair share of difficulties. Chief on this list is the environment, with the growing numbers putting an inordinate strain on natural resources and often resulting in pollution, inefficient waste management, and unhealthy living conditions. It is these expectations of impending crisis that IIT Madras seeks to work against. By embarking on a project titled 'Sustainable Waste Management and Resource Recovery for a Healthy and Clean Village,' the Institute is publicly committed to ensuring that the resources and expertise at its disposal benefits the wider community as well, resulting in healthier living conditions and reduced pollution overall.

Supported by the Corporate Social Responsibility department of Technip, IIT Madras has adopted Thollazhi Colony, a hamlet about fifty kilometres from Chennai city. Working with the Panchayat officials, the Institute hopes to intervene in the areas of solid waste management, health and hygiene awareness, construction of community toilets, cleaning of existing water bodies, aiding drainage and wastewater treatment systems, as well as potentially ensuring drinking water systems. Given that most of the houses in the panchayat are permanent structures and all roads are of concrete, basic infrastructure has already been ensured. IIT Madras is therefore committed to transforming Thollazhi Colony into a model clean and healthy village for others to emulate. Not only will this hopefully catalyse the sustainable development of surrounding environments, but citizens at Thollazhi will be able to prevent the spread of communicable diseases, improve water availability and general health, and ensure additional income sources through resource recovery.

The task at hand for the team is immense. With a majority of the community practicing open defecation, the only pond in the village heavily polluted, and untreated waste water flowing directly into agricultural fields, the need for intervention is evident. The team from IIT Madras with the timely support of Technip has embarked on this task, working from the ground up, chipping away at the mountain. The conviction is simple - one clean village, one model settlement, one set of processes brings the country one step closer to responsible waste management and reduced environmental degradation.

(Thollazhi was adopted following the initial adoption of a village in Theyyur Panchayat. Due to the lack of cooperation from the local Panchayat and animosity from members of the community, the decision was made to shift activities to another village despite having worked for five months after launch of project. It was thus that the team came to be associated with Thollazhi).

Projects Funded	Donor Name	Amount (₹)
Sustainable Waste Management and Resource Recovery for the Healthy & Clean Village	Technip Solutions	20,00,000

## Local Solutions, Global Connections

Internet connectivity and ways to bridge the growing "digital divide" have been important issues in the last few years as the country seeks to capitalise on the technological bandwagon to spur growth. With an article as early as 2009 speaking of India's ranking as 115 out of 223 countries on the basis of average internet connection speeds, there has only been increasing indication of the intensity of this issue. While the number of connections, particularly through 2G mobile internet, has been rapidly growing in the last few years and an estimated 34% of the total population have access to the internet as of March 2017, there is a large inequality in this growth. Given that a majority of these connections are centred in urban and peri-urban environments, various actors have now committed to ensuring internet connectivity reaches rural populations as well, allowing poorer served communities to gain from technological adoption as well. IIT Madras, with its technical expertise and commitment to the larger community, is a major player in this project.

While various policies have been made at the national level promising commitment to increasing the number of broadband connections in the near future, the ground realities are starkly different. Many villages in India today require not just internet connections but rather a commitment to understanding specific local needs and infrastructure requirements. This is where IIT Madras has stepped in. In association with Nokia, the Institute's Centre for Excellence in Wireless Technology has set forth to design and develop cost-effective wireless broadband solutions for rural India, a project which in the words of Babu Narayanan KJ (Chief Technologist, CEWiT, IITM) "poses technical challenges as well as (being) for a social cause."

Since December 2015, the team at CEWiT has engaged with literature on the subject, debated the pros and cons of LTE and WiFi, undertaken field measurements for rural channel modelling, and designed the overall rural network. The next steps involve simulation of the models, gaining understanding of the equipment provided by Nokia, and setting up a lab.

With the CEWiT team chipping away steadily at discovering economical, locally-rooted solutions for the nation's connectivity problem, the nation's technology community is moving that much closer to unlocking a wave of potential that is thus far lying untapped. If rural India gets on the grid, India is truly that much closer to capitalising on its demographical advantage. As Narayan signs off, "economical and reliable rural broadband connectivity is perhaps the biggest challenge to achieving a 'Digital India'. This project is targeted to overcome just that using unlicensed bands with the best of wireless technologies."

Projects Funded	Donor Name	Amount (₹)
Design and Development of cost effective wireless broadband solutions for Rural India	Nokia Solutions & Networks India Pvt. Ltd.	119,77,500

## Solar Powering Classrooms

At the 2015 COP21 climate conference in Paris, Prime Minister Narendra Modi publicly announced his hope that solar energy would lead the way to sustainable electrification in the years to come. "The world must turn to the sun to power our future," he is quoted as saying, a commitment that India took seriously. Between May 2014 and March 2017, India quadrupled its solar-generation capacity, a figure currently at 12,289 MW. In this trend of dogged commitment to renewable energy, Tamil Nadu tops the rankings nationally, coming out as the leader in solar power capacity addition. It should come, therefore, as no surprise, that the technology and expertise at IIT Madras is being utilised to contribute to this drive of ensuring more sustainable, renewable electricity to all.

The IIT Madras chapter of Engineers Without Borders (EWB IITM), affiliated to EWB India, has committed its resources to the issue of sustainable energy. Under the guidance of Prof. Srikanth Vedantam of the Department of Engineering Design, the team is working towards enhancing renewable energy capacity while being specifically focused on ensuring access to clean and safe drinking water, sanitation, and low-cost housing. Towards this goal, the team has undertaken a project at the Government Girls Higher Secondary School (Ashok Nagar, Chennai) to provide solar electrification to the entire institution. With 3600 students on roll, the school is spread across five teaching blocks, one of which was adopted for the pilot study before rolling out the project to the entire premises.

The pilot project saw twelve classrooms being electrified, with all CFL lights and DC fans being replaced with LED tubelights and DC fans. Existing wiring was utilised for power distribution, though the team recognises the possible need of rewiring in the future. Each of the five blocks are expected to have a separate rooftop solar photovoltaic unit.

Much of this project was made possible through the Corporate Social Responsibility wing of e-Care India Private Limited, with the financial support going a long way in facilitating EWB IITM's intentions. With the support of actors like e-Care and the guidance of mentors like Prof. Srikanth Vedantam, IIT Madras hopes to see the rise of more such student-driven, student-run initiatives that represent one of the institute's core values — using technological excellence for the greater good of a wider community.

Projects Funded	Donor Name	Amount (₹)
Set up of Roof Top Solar Photovoltaic System in Government Girls Higher Secondary School	E-Care India Pvt Ltd	6,00,000

## Clean Groundwater, Healthy Communities

The words 'environmental pollution' are today part of common parlance, in everyone's vocabulary independent of economics or geography. With the growth of industry and the dogged pursuit of "development," over-exploitation of resources and untreated waste disposal have fast become some of the prime concerns in mushrooming urban centres. Chennai is, needless to say, a prime target with both the Cooum and the Adyar in desperate need of help. Yet, as experts in the field quickly realised, even as various stakeholders recognise the need for intervention, supporting evidence studying the sources and extent of pollution as well as the quality of water in the city's water bodies is scarce.

With multiple governmental bodies taking responsibility for monitoring various water bodies, the study of potential sources of contamination is a black hole, falling between their different self-defined jurisdictions. Given that groundwater is the largest source of water for domestic needs and many semi-urban and rural industries, its quality cannot be taken for granted and ignored. It is this gap that the team from IITM is looking to bridge.

The team, supported by Cholamandalam MS, seeks to provide information on groundwater quality in the vicinity of potential sources of pollution while also focusing on providing suggestions and recommendations for the prevention of water pollution in the area. They go about this ambitious task by installing wells at pre-identified potentially contaminated sites and periodically studying the samples from them. The team will thus not only be able to provide real-time suggestions for water management and remediation, they will also aid in the protection of in-land water sources that act as the lifeline for numerous hamlets around it.

So far, the work has been steady, a promising start to a project full of potential. Choosing to begin in the Perungudi area of Chennai, seven wells along the periphery of the dumpsite were monitored and samples were analysed on physical and chemical parameters. The samples were then drawn up in comparison against average drinking water standards, the numbers speaking volumes of the stark difference in quality, especially from wells closer to the marshland. Today, the team recognises the need to widen the network of wells to get a more holistic understanding of the state of water contamination in the city. To achieve this goal, the team has proposed an expansion of the project's scope to adjacent areas as well, and has introduced water level gauges in all inflow and outflow canals to increase ease of monitoring.

Not only does this project place IITM in a position to help wider society lead productive, healthy lives, but it also marks the biggest collaboration between Cholamandalam MS and IIT Madras. The people at the brand are important well-wishers of the institute, and also support other projects including one that is currently seeing fruition with the creation of Bharati, a unified script for all Indian languages, being developed at IIT Madras now. If these are anything to go by, neither the team at Cholamandal nor the leadership at IIT Madras seem satisfied with small assignments or goals. The aim always is to change as many lives as possible.

Projects Funded	Donor Name	Amount (₹)
Energy, Efficiency & Environment—Identifying hotspots of environmental pollution	Cholamandalam MS General Insurance Co. Ltd	5,00,000
Education Entrepreneurship—Popularizing Bharati Script—to express major Indian languages		4,15,000
Merit-cum-Means Scholarship		10,00,000

## Manufacturing Dreams, Facilitating Growth

It is no coincidence that the 'Best in Campus' category at the Economic Times Startup Awards 2016 had an inordinately large representation from IIT Madras. Four of the five finalists in the category were incubated at the institute, a proportion that only speaks of the focus on innovation and entrepreneurship that has defined the campus in recent times. The institute's Research Park is the country's first such university-based space, providing further support for the institute's thriving ecosystem comprising of 103 technology start-ups. Responding to the speed of growth and development of the ecosystem, the Research Park has recently allocated 10,000 square feet more for incubations and start-ups, in addition to the existing 35,000 square feet. There seems to be an insatiable appetite for innovation at IIT Madras.

The IIT Madras Incubation Cell acts as the nodal hub for all entrepreneurial activities on campus, with other sector-specific incubators like RTBI, Bioincubator, and MedTech focusing on individual industries. Independent of which body supports the firm, IITM start-ups provide platforms for faculty, staff, students, and alumni to work together with the shared vision to create, develop, and innovate in areas including manufacturing, clean energy, healthcare, education, and agriculture technology. The strong base in social entrepreneurship as well as the fact that about thirty companies have faculty as co-founders or minority shareholders reflects IIT Madras' commitment to bridging the gap between excellence in the classroom and realistic, practical solutions that impact wider society.

However, the business of innovation does not come cheap. Every entrepreneur's dream is speckled by worries of finances, funding, and how to see intentions come true. It is to fuel these dreams, spur them on to organic growth, and emerge the most effective versions of themselves, that IIT Madras Incubation Cell reaches out to corporates like ANSYS and Banca Sella. Through their Corporate Social Responsibility initiatives, ANSYS and Banca Sella bring IITM closer to positioning itself as a leading entrepreneurial hub in the country, one only slated to grow further and scale up support to include seed funding across business stages. Thanks to the support of companies like Cholamandalam Investment and Finance, Goldman Sachs, Titan and American Express, ANSYS and Banca Sella, thirty incubatees have grown to raise a total investment of Rs. 390 crores from angel investors and venture capitalists. In the year 2014-2015 alone, a group of less than fifty start-ups made more than Rs. 75 crores as turnover. The IIT Madras Incubation Cell, it would seem, is supporting everyone's goals – of corporates aspiring to support growth, of the institute aiming to nurture innovation, and of entrepreneurs seeking to contribute to society. At IITMIC, they manufacture dreams.

Projects Funded	Donor Name	Amount (₹)
Incubation Cell	Goldman Sachs	100,00,000
	Banca Sella	4,00,000
IIT Madras Rural Technology and Business Incubator (RTBI) & Incubation Cell	Ansys Software Pvt. Ltd.	7,00,000

## TTK Center for R2D2

The Center for Rehabilitation Research and Device Development (R2D2) lab at IIT Madras is involved in research related to human movement, the influence of orthotic and prosthetic devices on human movement, and the design and development of mechanisms, products and assistive devices for people with impairments.

With support from the TTK Group, R2D2 is now the "TTK Center for Rehabilitation Research and Device Development". The Center was inaugurated by Shri. TT Jagannathan, Chairman TTK Prestige and Alumnus of IIT Madras, on January 19, 2015.

Mr TT Jagannathan remembers his days at Ganga hostel very fondly as that was where he made many lasting friendships. At the time, Mr Jagannathan aspired to be a teacher, but destiny had other plans for him. He says a telling difference from his college years is that there is more research on campus now which he commends. He is proud to be able to give back to his alma mater, as he says all that he is today, is thanks to the institution. He feels lucky to have been at IITM. He entered the campus, a mere boy, but left its gates, an adult, well adjusted and confident. Although his schooling was mediocre, his teachers at IITM were outstanding. He loved every minute of his life on campus and wants to help in any way possible to keep the tradition going.

The project beneficiary is full of gratitude and praise for Mr Jagannathan. She says the centre has made it possible for the team to continue developing assistive devices - something they are extremely passionate about. This is the only centre in India focused on R&D of assistive devices for people with locomotor disability. The challenges are many, but the opportunity to make a significant impact is tremendous. The development of functional and affordable assistive devices will improve the quality of living for millions of people. The support from TTK also serves as a launch pad for a startup company that has been incubated to act as a market channel for the products developed in the centre. This is critical as support for both R&D and the conduit is important to ensure the translation of the technologies developed to the real world at affordable prices.

Projects Funded	Donor Name	Amount (₹)
TTK Centre for Rehabilitation Research and Device Development (R2D2)	Shri. T.T. Jagannathan [1970/BT/ME], TTK Prestige Limited	40,00,000

## Venture Capital and Private Equity Report

ICICI Securities Limited has agreed to support the publication of the India Venture Capital and Private Equity Report for three years starting from 2016 under the Education Domain of the CSR program of ICICI Securities Limited.

IIT Madras has been publishing an annual report on the Indian Venture Capital and Private Equity industry since 2009. Each report presents an in-depth analysis on a particular theme pertaining to the Indian VCPE industry—the 2016 report focused on Start-ups. Eminent industrialists and entrepreneurs formed the Editorial Advisory Board for the 2016 report.

The report breaks new ground in the understanding of the start-up landscape in India. Key features include:

- (i) Analysis of the trends in Start-ups since 2005;
- (ii) Focus not just on start-ups but also on the start-up ecosystem such as incubators, accelerators, angel investors, venture funds, legal and regulatory framework, and so on;
- (iii) Study of the start-up pool and not just the companies that have successfully acquired funding.

The findings of the report which was released on 5th November 2016 at the TiE-IITM Thought Leadership Forum held during TiECON Chennai, the annual conference on entrepreneurship of TiE Chennai, is expected to benefit start-up founders, policy makers, and investors.

Projects Funded	Donor Name	Amount (₹)
VCPE Report	ICICI Securities Limited	1,25,000

## Quality Education Close to Home

With the face of education changing rapidly around the world, Massive Open Online Courses are proving to be a gamechanger, offering ways of accessing the best opportunities in higher education from the comfort of one's living room. Yet, despite the mushrooming popularity of the medium, there existed until recently an obvious lacuna – Indian students could access the best from around the world, but often could not find courses by professors from the best institutes within the country. It was to bridge this gap that the National Programme on Technology Enhanced Learning (NPTEL) was born.

A collaboration between seven IITs (Bombay, Delhi, Kanpur, Kharagpur, Roorkee, Guwahati, and Madras) as well as the Indian Institute of Science (IISc, Bengaluru), the project was launched by the Ministry of Human Resource Development in 2003 with the intention of hosting courses across a range of fields including engineering, science, management, and the humanities. Today, the NPTEL channel on YouTube holds the honour of being the most subscribed channel in the world (close to 800,000 subscriptions as of May 2017), and the programme plays host to over a thousand web and video courses at www.nptel.ac.in.

As of March 2014, NPTEL began offering online certification courses (NOC) for short-, medium-, as well as long-term commitments. Courses usually last anywhere between four and twelve weeks and do not involve an enrolment fee. Students interested to avail of the certificate can then choose to appear for an in-person exam that marks the completion of the course. By the end of 2016, the program had recorded 10 lakh students' enrolment, of which 45,000 were certified. The platform seeks to provide students with the opportunity to gain knowledge on subjects that may not be delved into in the classroom, while ensuring that the tangible certificate also aids them in their future professional pursuits. This encouragement of the pursuit of knowledge also catalyses the creation of a truly employable generation of graduates, addressing an issue that has been plaguing the nation's education policy for some time.

None of this would have been possible if not for the continued support of Aricent's Corporate Social Responsibility Wing. This contribution has allowed NPTEL to offer a 50% waiver to students who are unable to pay the exam fees, provided the student produces the necessary paperwork. This allowance has been invested in equipment, course creation, as well as fee waivers for deserving students. With companies like Aricent and platforms like NPTEL, everyone truly does have access to quality education.

Projects Funded	Donor Name	Amount (₹)
National Program on Technology Enhanced Learning (NPTEL)	Aricent Technologies (Holdings) Limited	101,00,000

## Ensuring the Right to Water

The intention of AM Foundation is very simple – to help organizations effectively implement activities under their Corporate Social Responsibility wings. It was one such initiative, to aid Manali Petrochemicals Limited, that AM Foundation reached out to IIT Madras to provide technical expertise on their next project – providing drinking water to select villages in the Vilangadupakkam Panchayat of Thiruvallur district. The road ahead of them was rather long and the work unquestionably rigorous, but the team from IIT Madras and AM Foundation could not be deterred.

At the onset, the team collected first-hand information on the present state of water supply, interacted with the Panchayat committee and shortlisted three villages for implementation. It was then IIT Madras' responsibility to conduct studies focused on identifying what specific interventions should be undertaken, and the urgency with which the villages required them.

While the team from IIT Madras recommended setting up a cost-effective, efficient water treatment plant as a solution to the current scarcity of potable water sources in the villages, the survey conducted by the institute team revealed another worrying result. The willingness to pay for such potable water seemed rather low, hinting at the need for community engagement and awareness projects to bring about a change in attitudes amongst the residents to ensure the sustainability of the intervention. Solid waste management and restoration of surrounding small water bodies were also identified as pressing issues to be looked into.

With the necessary paperwork in place and the plans in the pipeline, the team procured land for the water treatment facility from the government and proceeded to analyse the raw water quality in the vicinity. Once this was completed, they undertook a series of technical tests to plan out the functioning of the treatment plant. Today, the plan is well under way, with the team working on the design of the treatment and distribution systems. Fully confident of the timelines, every day is a step closer to the finish line. Every day is one step closer to citizens in three villages of Thiruvallur having access to drinking water at their doorstep. Every day is a step closer to ensuring that many more people have access to the basic right of potable water.

Projects Funded	Donor Name	Amount (₹)
Consultancy Fee for Surveying Villages	AM Corporate Social Responsibility Foundation	15,65,000

## Low-Cost Innovations, High-Impact Solutions

Eighty kilometres from Bengaluru on the Kunigal Main Road lies the village of Belagavadi. Home to 250 families, two schools, and a community hall, the fact that it lies along a main road makes no difference to poor connectivity and public transportation options. Electricity is also hard to come by in this village, with residents losing power for anywhere between six to nine hours a day. Despite the state government's promises of 'Nirantara Jyoti' (eternal light), the village is often left to wallow in long spells of darkness. It is to dispel this that IIT Madras partnered with Sasken Technologies. In collaboration with Bengaluru Electricity Supply Company Limited (BESCOM) and Rural Electrification Corporation (REC), the goal is to power 220 homes in the village.

IIT Madras is known around the country for its expertise in innovative technology, and the solar DC inverterless system is an example of just that. Developed as a solution for off-grid and near-off-grid environments in the country, this allows for the provision of clean, affordable electricity that can not only electrify off-grid homes but also act as a power back-up to those that are on the grid. The team at IIT Madras has ensured that energy loss is minimised during conversion, and have focused on highly efficient system design to ensure that the technology represents the ultimate integration of solar, batteries and the grid. Coupled with its data logging capabilities (it is Bluetooth enabled), the system allows technologists to track usage patterns, performance, and ensure timely maintenance. It is for this reason that Sasken is not the only organization that has expressed interest in the technology. Organizations like Verizon have jumped on the off-grid solar system installation bandwagon too, and the team from Verizon is working with IIT Madras to ensure the electrification of settlements in Telengana.

While the Telangana project remains underway, the project with Sasken saw the completion of installation in all 220 houses at the cost of about Rs. 55 lakhs. As of March 2017, the team handed over all required technical equipment to the respective households. Yet, the team at IITM and Sasken are only too aware that the true success of this project lies in its adoption by the local community, with the people expressing a sense of ownership and commitment. In order to catalyse this, the project team has set up a locally-based chain of command, provided a local-language manual and guide to each family, established a local technician team, and a supervisory team from the nearest village. Through the months of their work, the project team has aimed at one simple thing to provide the citizens of Belagavadi locally rooted solutions to their most pressing concerns. Today, the people of the village could not be happier. From allowing children to study after sundown to improving the overall quality of life of the residents, this is sure to go a long way.

Projects Funded	Donor Name	Amount (₹)
Inverterless System	Sasken Communication Technologies Ltd.	55,00,000

## Engineering Sustainable Mobility

Whether it is amongst the student body, the teaching community, or the general public, IIT Madras is known for its constant commitment to cutting edge research, perhaps best represented in the various Centres that the institute plays host to. One such new initiatives is the Centre for Battery Engineering and Electric Vehicles (C-BEEV).

Today, the newly minted Centre is in collaboration with research and development teams, industry players like Mahindra and Mahindra, as well as government-sponsored actors to explore the many possibilities that exist in the space of sustainable mobility. The Centre is currently engaged with developing battery bank drivers, low voltage DC fast chargers for electric vehicles, and solar DC backup solutions for telecommunication towers amongst other projects. All team members receive hands-on practice and on-the-job training during the development and testing of all prototypes, making C-BEEV not just a haven for advanced research but also a go-to opportunity for all those seeking to learn while also directly contributing to the work at hand.

Irrespective of the project they are involved in, the teams at C-BEEV create prototypes and put their designs through multiple iterations after receiving feedback on performance. With anxieties on non-renewable sources of energy and the need for sustainability mobility options becoming a global concern, spaces like C-BEEV catalyse solutions whose impact will reach far beyond the gates of IIT Madras. By using in-house expertise to address such issues, IIT Madras is time and again reinforcing its commitment to the most pressing issues in the world today.

Projects currently in progress include:

- a) Battery Life Cycle Tester
- b) Battery Bank Drivers
- c) Li-Ion Cell to Pack & BMS
- d) Switched Reluctance (SR) Motor based Electric Vehicle
- e) Low Voltage DC Fast Charger for Electric Vehicles
- f) Solar DC backup solution For Telecom Towers
- g) Programmable DC Electronic Load Project was successfully completed in Oct-Nov 2016.

Projects Funded	Donor Name	Amount (₹)
Centre for Battery Engineering (CBEEV)	ABB India Limited	42,90,000
	Mahindra & Mahindra Limited	30,00,000

## Microgrids for Village

The Government of India has set an ambitious target of 40 GW new power generation capacity in the next five years from Grid Connected (GC) roof-tops and Small Solar PV Plants (SSPP). Several village, semi-urban and urban clusters have potential to generate renewable power locally, from as low as 1 KW to a few 100 KW, consume and share within, as well as augment the grid under surplus conditions. To make effective use of such vast numbers of individual GCs and SSPPs, it is critical to connect several locally distributed nano and microgrids, allowing optimum usage of renewable power across many users depending on needs and other dynamic supply/demand conditions. On the grid-side, interconnecting and inter-leaving these distributed microgrids within the existing distribution system and infrastructure may additionally provide economic benefits for the people.

IITM proposes to pilot a Village Microgrid (VMG) in collaboration with ABB. The pilot project will be deployed in partnership with the Rural Electrification Corporation (REC) Limited (A Govt. of India Enterprise) and Jharkhand Bijli Vitran Nigam Limited (JBVNL). 200-250 homes in a grid-connected village (with frequent load-shedding) in the state of Jharkhand will be powered using a combination of solar power and AC grid power, along with a battery back-up. Before deployment at the identified village, the VMG system will be fully tested at the Centre for Battery Engineering and Electric Vehicles (C-BEEV) at IIT Madras. It will be a scaled down version of the full VMG system to be deployed in the village.

The project aims to optimize available energy from different sources, and to efficiently power homes where both AC and DC appliances can be operated. The village will be provided electricity 24 x 7 through an intelligent power management system, a remote monitoring and load-management techniques. The team will also model and design interconnection of different VMGs to form a Multi-Village Micro-Grid (MVMG).

The proposed microgrid will be a combination of the main AC grid, solar plant and a centralized battery bank; each or a combination of the three can be used based on supply-demand match. An intelligent controller will be used to control the supply from one or a combination of sources and the homes in the village will also be equipped with different types of AC and DC appliances and devices. The primary thrust of the work will be to develop a power-management system enabling optimum power exchange between grids and microgrids and intelligent load management to optimize benefits.

The Phase 1 and Phase 2 project activities have been completed. Deployment is next on the cards.

Projects Funded	Donor Name	Amount (₹)
Micro grid systems for village electrification	ABB India Limited	30,00,000

## Centre for Rehabilitation Engineering and Assistive Technology

The Centre for Rehabilitation Engineering and Assistive Technology (CREATE) is a multidisciplinary translational research and educational initiative. It was conceived during interactions with NGOs and inclusive schools. There is a social need for indigenous development of low cost technologies that can address the needs of people with different abilities and this centre focuses on that goal.

Projects Funded	Donor Name	Donor Name Amount (₹)	
Centre for Rehabilitation Engineering and Assistive Technology (CREATE)	L&T Technology Services Limited	30,00,000	

## Effective Waste Management, Sustainable Communities

For residents of Ezhil Nagar in Vichoor Panchayat, IIT Madras spells relief. Through a CSR initiative of Indian Additives Limited (IAL), the institute is engaged in ensuring complete resource recovery in the village, providing techniques for effective waste management, clean water solutions, and overall sustainable community living. With baseline data having been collected and a local team in place, the project is all set to roll out execution in the months to come.

Following the project launch over last year with the aim of creating community-based decentralised solid waste systems, the team trained a Panchayat-appointed supervisor and labour team on the nitty-gritties of the system adopted. Awareness campaigns and training sessions across the village as well as door-to-door collection and segregation of waste were undertaken. Once the project was launched, the team also regularly monitored data on collection and management to compile the net results of the project.

The floods of 2015 acted as a spike in the story, throwing an unexpected curve ball at the project's timeline. With Vichoor Panchayat badly affected by the overflow from Poondi lake, the water levels did not recede for well over two months. All local and state government personnel in the area were plunged headfirst into relief operations, and the team from IIT Madras ensured that resources and relief packages were dispatched to Ezhil Nagar on an as-need basis. With the village back to normal, the institute team refocused on the task at hand – transforming Ezhil Nagar into a model village, a beacon of waste management.

In July 2016, the plans for a composting plant were approved and work got underway. With a total capacity of 150 kilograms a day, this facility will ensure that Ezhil Nagar will not only have the means to process their own waste, but they will be able to do so with a negligible carbon footprint. This plan was followed up by the intention to construct a storm water drain for three hundred houses.

Over the last two years that IIT Madras has worked in Ezhil Nagar, the progress has been phenomenal. From a village littered with garbage on the streets to one with a composting yard in the making, the village is well on the road to becoming a fully sustainable settlement with efficient waste management systems and a citizen group committed to maintaining their village spotlessly clean. With the support of Indian Additives Limited and the guidance of IIT Madras, there seems little to stop Ezhil Nagar.

Projects Funded	Donor Name	Amount (₹)
Sustainable Waste Management and Resource Recovery for the Healthy & Clean Village	Indian Additives Limited	67,00,000

## TCS RESEARCH PROJECT

"The Development of a Dynamic Traffic Congestion Prediction System for Indian Cities" is a project sponsored by Tata Consultancy Services Limited. The project aims to provide ways to interpret road traffic by studying traffic engineering. The prediction would forecast traffic patterns two hours into the future.

Presently, GPS is the only tool that is used to predict the traffic and road conditions. The project is aiming for better accuracy and will utilize a multiple combination of sources such as police and security cameras to predict the conditions of the road".

#### WORKSHOPS

## Computational Brain Research Workshop

## Shri. Kris Gopalakrishnan [1977/MSc/PH] & [1979/MT/CS] & 1998 DA

The year 2013 was momentous for the field of brain research. It was the year former President of the United States Barack Obama floated BRAIN or Brain Research through Advancing Neurotechnologies, an initiative that sought to support the "development and application of innovative technologies that can create a dynamic understanding of brain function" (White House Office of the Press Secretary 2013). It was also the year when Europe came together to launch the Human Brain Project, a ten-year venture to build "collaborative ICT-based scientific research infrastructure...to advance knowledge in the fields of neuroscience, computing, and brain-related medicine." (Human Brain Project Framework Partnership Agreement). Only a couple of years later, India joined the collective bandwagon. Led by the Centre for Computational Brain Research (CCBR) at IIT Madras, India lent its resources to the global attempt to understand the brain, its functioning, and its relationship with technology.

At CCBR, the vision is simple — to explore the interface between neuroscience and engineering. This interface, it is believed, will lead to a clearer understanding of not only the brain but also engineering tools. The Centre aims to simultaneously help drive both technological advances and the building of brain-inspired hardware and software architectures while also analysing and probing neural circuits. Thus, by studying both man and machine, it would seem that both stand to gain.

The relatively nascent field of computational brain research is gaining importance on the global stage. Across the world, the scientific community seems to be asking one simple question — are there fundamental principles that apply both to intelligent machines and biological brains? Can machine be made more like man and can man be inspired by machine? Does the interaction between the two result in the betterment of both? If so, how? It is in pursuit of these answers that CCBR was launched in 2015.

Set up under the umbrella of IIT Madras, the Centre was funded by Kris Gopalakrishnan, an alumnus of the institute and co-founder of Infosys. Known for his philanthropic commitment to the fields of education and scientific research, CCBR was the perfect platform to bring the two passions together, ensuring the development of both education and science. At CCBR, professors and students work together in a collaboration fuelled by a shared vision – to understand brain connectivity through the analysis of high resolution mouse brain images and modelling of neuronal activity, and to improve the efficiency of machine intelligence. Spanning various departments, the Centre is committed to utilising the best resources in the pursuit of knowledge.

It is this commitment to excellence that saw the establishment of three Distinguished Chairs under the aegis of the Centre. Each funded by an endowment of Rs. 10 crores, also from Mr. Gopalakrishnan, the Chairs are presently occupied by visiting professors from universities abroad, and offer an opportunity for scientific collaboration and resource sharing in the field of computational research. Prof. Partha Mitra (Crick-Clay Professor of Biomathematics at Cold Spring Harbor Laboratory, USA), Prof. H.N. Mahabala Distinguished Chair at CCBR, initiated the Mouse Architecture Project that is dedicated to systematically generating a high-resolution brainwide connectivity map that illustrates the connections between different brain regions. With expertise across the fields of physics, engineering, and biology, his research both personal and under the banner of the Project as well, greatly complements the vision of CCBR, both in the aspects of technology as well as neuroscience.

Occupying Prof. C.R. Muthukrishnan Distinguished Chair is Prof. Anand Raghunathan, the director of the Integrated Systems Laboratory in the School of Electrical and Computer Engineering at Purdue University, USA. Apart from his core competencies that span system-on-chip design, domain-specific architecture, computing with nanoscale post-CMOS devices, and heterogeneous parallel computing, Prof. Raghunathan also believes vociferously in the power of computational research as a driver of the Indian growth story. "Building computers that interact more naturally with humans (for example, through natural language and gestures) is one potential outcome that can have great impact in India and other regions where the digital divide is still quite large," he once said to IANS.

CCBR also greatly benefits from the expertise of Prof. Mriganka Sur, currently Shri. N.R. Narayana Murthy Distinguished Chair and the Paul E. and Lilah Newton Professor of Neuroscience at Massachusetts Institute of Technology, USA. He is also the Director of the Simons Center for the Social Brain at the Institute, a centre he founded after acting as the head of the department of Brain and Cognitive Sciences for fifteen years. With a research interest in using both experimental and theoretical approaches to understand the development and plasticity of the cerebral cortex, Prof. Sur brings with him rich experience in the field of cognitive research.

Led from the front by these field experts, CCBR is perfectly poised to contribute to the global discourse on computational research, a field that is being hailed as having the potential to change the way both healthcare and technology are consumed today. Studying neural circuits and neuronal activity would potentially allow healthcare professionals to identify changes in the brain early, intervening before areas of concern manifest as clinical symptoms and disease. Simultaneously, studying the brain would allow computer scientists to develop increasingly human-like algorithms that would directly positively influence the quality of processes such as image recognition and user interface. The benefits, it would seem, are unquestionable. A commitment to computational brain research results in a two-pronged gain – smarter technology and healthier humans, and a clearer understanding of both.

It is argued that the human brain is one of the greatest challenges of the twenty-first century. Scientists and technologists alike are permanently engaged with one seemingly unresolvable question – can man emulate machine and can machine match man? It is that question, coloured by the details of efficiency and competency, and fuelled by the details of the modern-day data explosion and smart device revolution, that computational brain research seeks to answer. The Centre for Computational Brain Research at IIT Madras occupies the sweet spot of scientific expertise coupled with the possibility of collaboration, allowing technologists and researchers from within the country as well as abroad to come together in pursuit of these rather elusive answers. Under the banner of CCBR, a community of students and professors alike sharpen their skills in a rather niche area of expertise, constantly engaging and committing to the pursuit of knowledge. Under the banner of CCBR, the Indian scientific community is poised to contribute to the biggest debates of our time.

#### **Chair Occupants**

#### 1 st Chair Occupant

- Name of the 1st Chair Prof. H.N. Mahabala Distinguished Chair
- Chair Occupant Dr. Partha Mitra (Cold Spring Harbor Lab, New York, USA

#### 2nd Chair Occupant

- Name of the 2nd Chair Shri. N.R. Narayana Murthy Distinguished Chair
- Chair Occupant Prof. Mriganka Sur, MIT, Cambridge, USA

#### 3rd Chair Occupant

- Name of the 3rd Chair Prof. C.R. Muthukrishnan Distinguished Chair
- Chair Occupant Prof. Anand Raghunathan [1992/BT/EE & 2017 DA], Purdue, USA

First inaugural CCBR Workshop held on Jan 4-8, 2016 in IC & SR - Conference Hall 2

Total no. of participants - 90+

#### Goals:

- Pedagogy ("neuroscience for engineers")
- Outreach/community building

Poster presentation held on Jan 7th. Workshop Dinner Reception with spouse held on Jan 7th @ Westin, Velachery.

#### Session Chair & Speakers List

S.No	Name	From	Remarks
1	Prof. Balaraman Ravindran	CSE, IITM	both Session & Speaker
2	Prof. Hema Murthy	CSE, IITM	both Session & Speaker
3	Prof. Kamakoti V	CSE, IITM	Session
4	Prof. Krishnan Balasubramanian	ME, IITM	Session
5	Prof. Nagarajan R	CH, IITM	Session
6	Prof. Nitin Chandrachoodan	EE, IITM	Session
7	Prof. P S Kumar	CSE, IITM	Session
8	Prof. Partha Mitra	CSHL, CCBR	both Session & Speaker
9	Prof. Rajasekar Manokaran	CSE, IITM	both Session & Speaker
10	Prof. Sukhendu Das	CSE, IITM	both Session & Speaker
11	Prof. Sutanu Chakraborty	CSE, IITM	both Session & Speaker

#### Speakers List

S.No	Name	From
1	Mr. Gopichand Katragadda	CTO, Tata & Sons
2	Mr. Kris Gopalakrishnan	Infosys - Bangalore
3	Prof. Anand Raghunathan	Purdue University, USA
4	Prof. Atsushi IRIKI	RIKEN, BSI, Japan
5	Prof. Fred Sigworth	Yale University, USA
6	Prof. Jitendra Sharma	MIT, USA
7	Prof. Kaushik Roy	Purdue University, USA
8	Prof. Mikhail Belkin	Ohio State University, USA
9	Prof. Mriganka Sur	MIT, CCBR
10	Prof. Peter Littlewood	Argonne National Laboratory, USA
11	Prof. Pulkit Grover	Carnegie Mellon University, USA
12	Prof. Ramesh Rajan	Monash University, Australia
13	Prof. Toufiq Parag	Howard Hughes Medical Institute, USA
14	Prof. Trichur Vidyasagar	University of Melbourne, Australia
15	Prof. Upinder Bhalla	NCBS, Bangalore
16	Prof. Vijayalakshmi Ravindranath	IISC, Bangalore

#### Remote Speakers

ı	S.No	Name	From
ı	1	Prof. Ruslan Salakhudnikov	Toronto University, Canada
	2	Prof. David Kleinfeld	UCSD, USA
ı	3	Prof. Al Aho	Columbia University, USA
	4	Prof. Dmitry Chklovskii	Simons Center for Data Analysis

## Pan IT Biotech Workshop

#### Sponsored by Mehta Family Foundation

- IIT Madras Bhupat & Jyoti Mehta School of Biosciences organized 1st PAN IIT Biotechnology Meet from 16th - 18th October 2016 in Kodaikanal
- Co-ordinated by Prof. Rama Shankar Verma.
- Professors from IIT Madras and other IIT'S gathered and discussed about their research works.
   Meeting was a grand success.

Beneficiary interview of Prof. Rama Shankar Verma

"The project helped in meeting and arranging an organized club for the biotech faculty from various IITs. This helped us create a group and develop projects for funding and research."

"If I had to launch a pet project I would work on Stem cell and tissue regeneration. It is a method to develop a protocol for different methodology to create a tissue which can be transplanted. It will be a game changer in the future, where tissues grown outside the body can help others".





## **HUMAN INSTITUTE STORIES**

## HEALTHCARE INNOVATION CENTRE

## Deepak Khanchandani Scholarship

Deepak Khanchandani Family contributed towards this scholarship in memory of Deepak Khanchandani [1983/BT/EE]

#### About the Scholarship

- Endowment created for Rs. 25 lakhs.
- Interest accrual of this endowment will be used for providing a scholarship amount of Rs. 2 lakhs to one student whose parental income is between Rs. 4.5 lakhs and Rs. 8 lakhs /annum.

In addition to the scholarship, they also contributed Rs. 25 lakhs for equipping the Workshops in IIT Madras Research Park. No Workshop has been conducted till date.

## Ramanan Scholarship

Ramanan Family contributed towards this scholarship in the memory of late R Ramanan [1976/BT/EE]

#### **About the Scholarship**

- · Endowment created for Rs. 25 lakhs.
- Interest accrual of this endowment will be used as a fellowship to aid economically underprivileged, meritorious students to pursue their dreams. Eligibility criteria is given below
  - Top rank in JEE advanced exam
  - Parental annual income is between Rs. 4.5 lakhs Rs. 6.75 lakhs
  - The first year student will be either B.Tech/ Dual Degree in EE



Development today is characterized globally by falling death rates, a phenomenon greatly influenced by access to improved healthcare and medical facilities. Countries all around the world are increasingly focusing on the betterment of healthcare technologies, ways to improve both ease of and access to healthcare across customer bases. The Indian story is no different. With the healthcare industry expected to grow at a compounded annual rate of 16.5 percent in the lead-up to 2020, the Ministry of Health is simultaneously focusing on technologies catering to specific diseases. (Indian Brand Equity Foundation, Ministry of Commerce) It would seem that the growth in the healthcare space is intrinsically linked to advancements in technology.

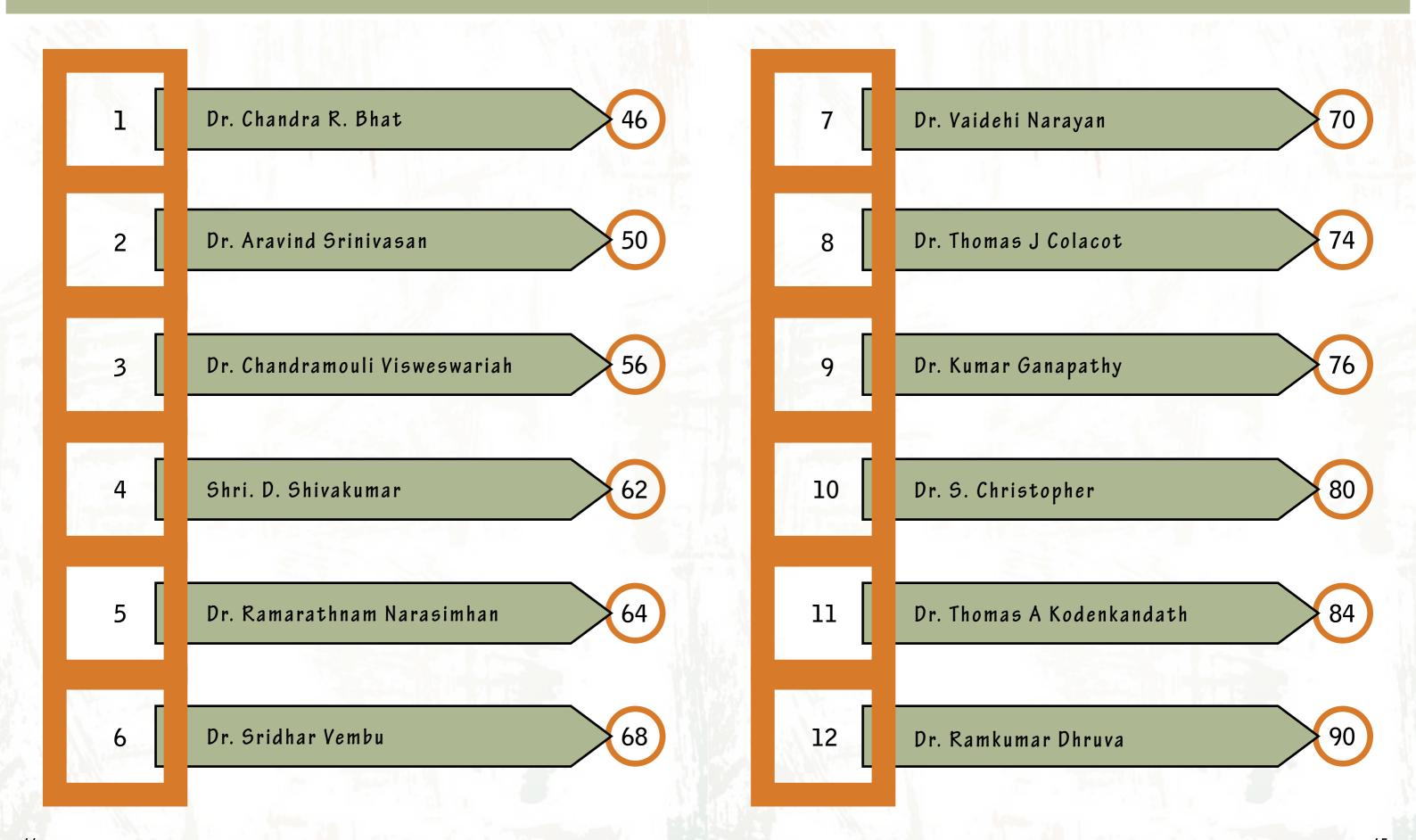
It should, therefore, come as no surprise that IIT Madras is working towards contributing to the advancement of this industry. With access to the best expertise and equipment in the technological arena, the Institute is looking to put these resources to the most effective use to solve issues in the field of healthcare. It was with this intent that the Healthcare Technology Innovation Centre (HTIC) was instituted. Supported by J Mitra and Co Pvt. Ltd., the Centre is a joint initiative of the institute and the Department of Biotechnology (Government of India). It is a multi-disciplinary research and development centre that seeks to involve technologists, doctors, healthcare professionals, and government actors to develop solutions and drive innovation in the national healthcare provision space. Today, HTIC is focusing its resources on perfecting the iQuant Analyser, a quantitative immunofluorescence reader that scans the Quanti range of rapid lateral flow immunoassays.

The iQuant Analyser is a desktop instrument designed for Tier 2 and 3 laboratories that are thus far dependent on centralized facilities to perform key tests. Envisioned as a solution to the cost and access barrier, it seeks to make immunological testing accessible even in smaller establishments. Today, one hundred units of the first version of the device have been manufactured, and development of the second version, with a larger display, is well underway. Along with the Analyser, the team has also developed Quanti test kits, a point-of-care tool to allow for rapid quantitative blood testing of key immunological markers. Committed to innovation, the team is simultaneously focusing on creating a prototype of Phone Quant, a mobile phone-based immunoanalyser designed to work on the standard smartphone camera.

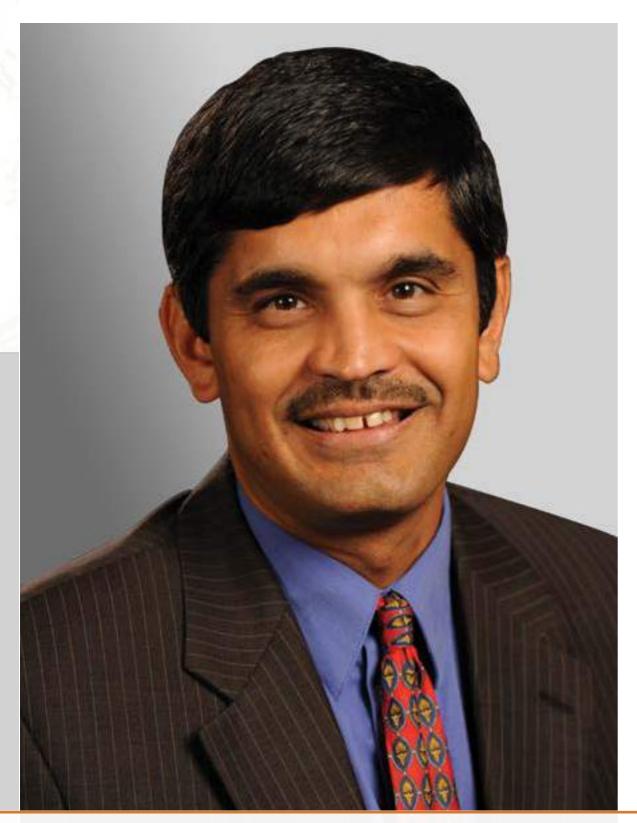
While the impact of new innovations in the healthcare technology space is unquestionable, the road to creating market-ready devices is long and arduous. Throughout the journey with the iQuant Analyser, the team at HTIC followed a multi-pronged approach, working on product development, instrument research and development, as well as production process and manufacturing simultaneously. With an unparalleled commitment to detail, the team not only paid attention to everything from packaging art to intelligent algorithms for quality control, they ensured that feedback was continually collected from end users and integrated into the development of the Analyser's second version. Today, the team at HTIC has received Rs. 3.5 crores in funding, used less than a third of it, and is focusing on scaling up production with Indian manufacturers. HTIC, it would seem, is fast becoming a nurturing ground for the shared pursuit of affordable healthcare provision through technological advancement.



## DISTINGUISHED ALUMNI AWARDS



## Dr Chandra R Bhat



1985/BT/CE Director of the Center for Transportation Research &

Professor of Civil, Architectural and Environmental Engineering
University of Texas at Austin

r Chandra R Bhat is alumnus of Civil Engineering from the Class of 1985. He is currently the Director of the Centre for Transportation Research and holds the Adnan Abou-Ayyash Centennial Professorship in Transportation Engineering at The University of Texas at Austin. He is one of the Distinguished Alumnus Awardees for the year 2015. It was a privilege to be able to interact with him. He was here to receive the award personally and we managed to get some time with him. Here's what he had to say:

When we ask him about his insti name, he tells us that he had no insti name but was called Chander by everyone. He tells us that his father was a professor at IIT Madras, in the Electrical Engineering Department and therefore he was a day scholar. "I studied at KV IIT and it was a very close-knit community for me". Despite being a day scholar, he was still linked with Godav hostel.

When asked about the highlights of his insti life, he talk about Inter IIT. "I played center for the Institute basketball team. I went for quite a few inter IIT meets – I remember the ones in Kanpur and Bombay particularly well." His height made him the right person for this position! We asked if we won any of them and he exclaims "Oh yes, definitely. We won two of them. We were quite good!". We also speak about any particular skill he learned during his studies at IIT. He tells us that networking was one vital skill he got introduced to at IIT. "This is one quality that comes to use throughout your life. I also learned a lot from the diversity that prevailed on the campus. The diversity infused a sense of tolerance towards different philosophies and ideas". He speaks to us about the continual learning that he experienced. "I learned that you can never stop learning. That's one amazing quality IITs instill in you". He reiterates this throughout the interview.

Inter IITs were as big as it is now, too. "These meets meant more than just winning medals. It reflected the sense of solidarity that prevailed on campus." When we ask about any memorable incidents that strike him, he recalls Schroeter and GC (General Championship). He vividly remembers the hostel chanting "Who won the GC? GODAV" to rub it into others' faces. "I don't recall any Saras-Godav rivalry during our time, as you have described it now".

Dr Bhat is professor at the Civil Engineering department at the University of Texas, Austin. So we ask him how he compares IITs to other universities abroad. He responds by saying that "I learned a whole lot of calculus in High School and at IIT, whose utility I never understood back then, but it has really helped in the long run!" However, he describes the method of teaching as "descriptive" and "bookish". He sighs and says "Things were quite bookish during my time. The system here needs to inculcate self confidence in the students to take control over their studies. This will push them to challenge and question preexisting notions. He goes into specifics to talk about how he expects undergraduates from IITs to be better in Probability, Statistics and Matrix Algebra. He says that he feels the same way about graduates from the US too. "It's not that we don't have the potential at IITs. We might get the best brains of the country, but only good training can unleash this potential". On the other hand, he is highly grateful for having had professors at IIT he describes as "phenomenal". "The teachers I had were beyond words. We were taught our fundamentals really well. This contributed to our enthusiasm for the subject. Another advantage here is the stimulating peer group, which contributes to the enthusiasm to 'learn more'."

When we asked Dr Bhat about whether he chose civil engineering by choice he tells us that the situation has not changed. It all depended on the ranks. He says, "I guess that's something we just need to get used to. In some universities in the US, you get more than a year to decide what you want to major in. Such a setup is suitable for someone who is unsure of where they're headed".

Dr Bhat specialized in transportation engineering. We asked him about why transportation piqued

his interest. He tells us "Transportation engineering is more than just traditional engineering; it encompasses both the engineering element and the social element in a harmonious and continuous fashion". He describes it as an interdisciplinary field, as his work involves behavioural sciences and how humans make choices. "These choices in turn have implications in engineering and how we design our services." He is also currently working on greenhouse gas emissions and reducing motorized transport. "Transportation is about elevating quality of life, as quality of life is essentially determined by accessibility. I basically work towards bringing more equity among, and accessibility to, citizens." Transportation is quite broad and is involved with subjects ranging from Probability, Statistics, and Matrix Algebra to Operations Research and Psychology. He believes that, particularly for civil engineering, it is vital to have an inter-disciplinary curriculum, that incorporates a flavour of management courses in our core courses too.

We also speak about the transportation problems in India and viable solutions for them. He believes that there's no magic bullet that's going to save us from the crisis in the transportation sector. "The number of cars have multiplied and it's quite logical. If you're earning, it's natural human tendency to buy things previously beyond reach. I think the government should invest more in public transportation rather than building wider toll roads." Dr Bhat believes that India has a really good pre-existing solution of mixed land use where one has shopping malls, eateries and residential areas all within walking proximity. "A perfect example of this, is in Mount Road in Chennai. You find so many things within close proximity which allows people to walk. We should focus on these kinds of urban design features rather than building exclusive enclaves devoted for residence and eateries." These enclaves engender more dependence on motorized transport.

We asked him why he chose to enter academia and become a professor. "I worked for 8 months at a traffic consultancy firm after my MS. To me, it wasn't stimulating enough. I immediately knew that academia is where I belonged. Teaching and research are exceptional models of leadership and service" he says. He feels that they give meaning to his life. He is also extremely touched and moved to have received the DAA, particularly because it's from his alma mater. We talk about his batch mates and whether they're still in touch. "Definitely, we're still in touch. But I personally have not been as much in touch as I'd like to be.

We finally wrap up and ask him for any words of advice he'd like to pass on to the students. "Go with your gut, follow your passion and don't be arrogant. That's going to be hard for the current generation because everyone is busy understanding the science of money. But at some stage of your life, you're going to realize that it's just not about the money. Each one of you has the responsibility to help the lives around you and that should be your focus". Dr Bhat feels that we are all privileged to have been raised in an environment that has provided us with the finest calibre of education. He agrees with the fact that everyone has worked hard to get into the IITs but we were all really lucky, and it is incumbent upon us to not forget our responsibility to the service of society. "Translate your talent to improve the lives of those around you".



## Dr Aravind Srinivasan



1989/BT/CS
Professor, Department of Computer Science
University of Maryland

r. Aravind Srinivasan (graduated in 1989 with a B.Tech in CSE from IITM) is a professor of Computer Science and at the Institute for Advanced Computing Studies at the University of Maryland, College Park. He was awarded the Distinguished Alumnus award, 2016 at Alum Night held on the 23rd July 2016. His areas of research include algorithms – especially randomized algorithms, networks, machine learning, algorithms and modeling uncertainty in computational biology, and network science, algorithms & technology for public health. We caught up with him the day before the ceremony, as he was in the campus teaching a GIAN course on Randomized Algorithms.

Q. The department of Computer Science was founded in 1973, the B.Tech program started in 1982, and you started in 1985. What pushed you to the young field of CS? Did you have higher studies in mind?

My main interest was in math, and I wanted to get into a field that was significantly mathematical. One field that was suggested was electronics, and CS was an option. I also factored in what was popular then, and CS was quite popular at that time also.

Q. So how has the popularity of CSE changed with time? Did it have the same demand it has now when you were studying?

Right now, the industry is booming and that has pushed up the popularity for computer science. Computers were not as ubiquitous in society those days as they are now, so interest has definitely increased over time.

Q. There is this mentality here that someone from the CSE department is assured of a good placement and high package, and people from other departments don't have the same level of placements. Is that thought process prevalent outside the country?

Yes, it is true that different fields have different distributions of salary. It is true that at the undergrad level, computer science probably has the highest pay packages, thanks to the software industry. But really, as we all know, what we earn later on has to do with the quality of our work. So this refers to just the initial salary. But if you do a masters, finance probably pays more. But this is probably true only in regard to starting salaries.

Q. Do you think that this is related to the fact that engineering is such a common field of study in India? Has that perhaps been pushing computer science to the top of the preference order?

In India, I think it is due to the growth of the IT industry. That probably contributed more to the popularity of computer science.

Q. In India we find a large number of engineering grads moving into finance or consulting. Is this common in the US as well?

I believe so. And I think it's a good idea for society to give freedom to move around and explore. People think of IIT as a safe option, and we cannot blame them. I believe that significant freedom to choose is the best thing we can do for students.

Q. This was one of the reasons given behind the recent fee hike imposed on IITs- that not enough engineering graduates end up becoming engineers. Your take on this?

I don't know the exact numbers- but I am grateful to India. My annual tuition free was 200 rupees, my monthly ``mess" (food) fee was more than this annual fee! But seeing that education is an expensive path, I don't see a problem with such fee hikes, provided that students who cannot afford it are being given scholarships. And this is still less than that of private institutes, where the standard of education and infrastructure is probably not as high.

#### Q. You've done a lot of work in public health networks. Can you tell us about that?

If you look at an infectious disease, you can think of it percolating through a network of contacts. So now we're sitting together - if we shake hands, you might get the disease from me, if I already had it. And you may meet someone else and the process continues. In other words, you can create a virtual network where people are constituents and you can create links between them- like shaking hands, or coughing, or being in the same lift. This is a social contact network as opposed to an online social network. And you can imagine the disease percolating through a network through an initial subset of the population. This is actually where the term "viral" comes from, with regard to social media- these phenomena spread exactly like viruses do. So it could be social networks, or human networks or networks in the brain- but the underlying mathematical formulation is the same- there is an initial subset that is "infected" (maybe with a disease, maybe with an idea) and they expose it to the larger population. Social media companies are very interested in this kind of growth, as they see it as a means of advertising. Though the phenomena are different, our algorithms are similar.

#### Q. So is this how you navigate between fields like biology & public health and theoretical computer science?

Though you are a trained CS man, you do work in computational biology. Actually, there are three aspects common to my research- algorithms, randomness and networks. My core background is in (randomized) algorithms. How does probability play a role here? Back to our disease analogy. If I have a disease and sneeze around you, it isn't certain that you will get it. There is incomplete information and you have to study the statistics to come up with a probability that you contract the disease when I have it. We come up with models like this. Similarly in viral ideas, we model complicated phenomena by observing their spread through a network. So randomness is the second aspect of my work. Third is the network. Network models are everywhere nowadays- from social networks to human-made networks (e.g., the Internet, the Web, power grids) to networks where diseases can spread. So I like the interplay of these three. But independently, I'm also interested in learning more about biology and sustainable growth. So I don't just want to apply my knowledge to those fields, I want to see what the big questions are there, and see if I can make a contribution to them.

#### Q. How hard is acquisition of data for your social media research?

It is quite challenging. Thankfully, I have some collaborators who work with the acquisition of real-world data. Some companies don't give data. It is important, but we are fortunate enough to get access to what we need.

#### Q. Is data easier or harder to come by in your biology work?

It depends on the domain. If you get funding from the government, which is what most scientists do, there is a push to make your data public so that others can benefit from your knowledge.

## Q. Machine learning is now a buzzword in society. What is about machine learning that makes it garner this much attention?

Machine learning is much more than pattern matching. Pattern matching is- say for example that I'm trying to read a foreign script without learning the language. Then if see coca cola written a certain way I can assume that that must be its written notation. ML is a step beyond- it is about generalization. A computer can easily memorize things. But if I'm given many examples of elephants through pictures and I'm given pictures of white things and tiny things, I can come up with a simple hypotheses that "elephants are not white or tiny". This kind of general conclusion that we can draw is what makes ML special. In several domains now we have so much information. For example, our cell phone carrier has so much detail about where you were, how long u spent there, who u spoke to, etc. Similarly websites also collect lots of information through cookies. Companies now collect so much data, that it allows you to come up with statistically significant hypotheses. You can get petabytes of info just sitting at your computer. So we can come up with superb hypotheses and

inferences. So just consider the internet of things. More and more home appliances are going to collect data. You can control your thermostat or your fridge through the cloud. Companies have so much information that (hopefully) do not compromise your privacy. The sheer magnitude of data available that was not previously there, promises several insights that were just not possible in the past. Data from images, medical data and so many more sources lead the push. And these inferences are beyond statistics, in as much as we need much less data to draw conclusions. Statistics allows you to say things like IF condition A is true and condition B is false, then C will happen 60% of the time. But to draw conclusions like this, we need gigantic quantities of data. ML here can come up with much more accurate inferences.

#### Q. Do we have to program what inference to look out for?

Not always. There was this lab at Cornell University, where the professor came up with a machine-learning approach to come up with known physical laws, like gravitation. So we just tell it some basic stuff like "the law we are looking for is spherically symmetric" and ask the machine to observe systems for long times -- they actually came up with valid laws. We can come up with scientific inferences with minimal human interference. This is being driven by two things. Firstly, machine learning algorithms are becoming very powerful. Secondly, lots of significant data is available. If you want to find a disease that affects one in a million people, you are going to need to see at least 3-4 million people to have a decent chance of finding it. But now combining imagining data acquired around the world, combined with the powerful algorithms and supercomputing, we can infer some very new things.

#### Q. What are neural networks?

Neural nets are things that people hypothesize that are present in the brain. The idea is based on the neurons present in the brain. Now these neurons can fire meaning it emits an electric signal. So we can imagine it as a simple electronic element that has 3 wires. For simplicity let's say each wire can be on or off, 0 or 1. And if at least 2 of the inputs are on, it fires a pulse. If the inputs are A, B and C, we can say the output is 1, if and only if A+B+C >1. This is a simple threshold gate. A neural network is composed of elementary gates like this, and the elements could be more functional than just threshold identifying. For a long time, these have been useful in pattern matching. Now we are thinking of deep nets, that are composed of layers of elements and these have been able to do a lot of interesting face recognition and so on. So there is a lot of buzz about them.

## Q. Can you tell us about your work at Bell Labs? What are the differences between industrial research and academic research?

I worked on internet telephony, and also content distribution on the internet along with algorithms and theoretical computer science. In industrial research, your research has to be more or less oriented in the direction of the company, and in academic research, in principle, you can chose to formulate your own problems. Most funding in the US is government based, but there is a lot of private backing too.

#### Q. Your advisor here was Professor Pandu Rangan. What role did he play in shaping you?

He was a motivating teacher and mentor - to an infectious level. He inspired us to read research papers, and he was always ready to discuss them with us.

## Q. You are here early teaching your GIAN course. How effective do you feel the GIAN program will be, and what should its objectives be?

It seems like a fantastic idea to me. As you know, there is a shortage of faculty in the country and students want quality education. So I feel this is a way of scaling up if these can be recorded and made available to students in the country. I think this can solve the scalability issue through electronic distribution. I believe NPTEL makes videos available to interested colleges like this.

## Q. Could you compare the outlook towards research in India and abroad? How are the student-teacher relationships different?

In India I know only of the IITs and a few such places (e.g., IISc, IMSc, TIFR, CMI) in India. The US has several more universities that are established, so you feel you are part of a larger community. India has a strong research community, but the sheer numbers are smaller. The US perhaps offers more opportunity through conferences that are primary drivers of new learning and collaboration, especially in fast-evolving fields like Computer Science. And about the student-teacher relationship. I thought it was very good in the IITs. I would say there isn't much of a difference, as we encourage students to speak up and to ask questions without fear of being wrong.

## Q. What do you think about the new startup culture that has permeated India? Do u see it as a drain in the number of people entering academics?

I think it is great, it will go a long way to solving job shortages here. I don't see why everyone has to be an academic. People should do what they like, and startups if they can scale up and offer jobs, it's a great thing.

#### Q. Have you gone around the campus? Can u tell some changes that you've observed here?

Yes I have. It's wonderful. The campus has grown more green and more diverse, there are more people here from other parts of the country, and there are more women. The non-engineering programs have also grown.

#### Q. You're opinion on student suicides that have been happening on campus?

I don't really know enough to comment. But interestingly, despite all the news saying that life has gotten harder, most indicators for quality of life have gone up in many parts of the world. We get a lot of negative news, as news agencies try to sensationalize news. There weren't any suicides in my time here, but generally speaking, I feel indicators of social life have gotten better. But with regard to the suicides, without knowing all the facts I don't think it's fair for me to comment.

Q. How important is innovation in the modern world? Is it possible to make it a habit? Perhaps a way to make it more frequent in daily life?

I feel that if failure is not ridiculed, it would help. One reason why Silicon Valley is so successful is because failure is encouraged- one can talk freely about failure. Even in the classroom, asking "silly" questions should be encouraged. Let people fail 10 times, and then they will succeed. But if every failure is treated as a shameful thing, people won't make it. I think innovation is great. In India for instance, our wired telephone network, our wired infrastructure, wasn't that great. But we just leapfrogged it by going to wireless. We didn't build a great wired network and then move to wireless. Similarly in Africa. Innovation allows you to leapfrog problems- progress 20 steps instead of one at a time.

#### Q. Could you share some of your happiest memories here on campus?

My last year was very happy, when I was fully into my research. It was intensive, but I really enjoyed it. Besides that, I loved going for movies at night and coming back from mount road at 11 pm by cycle. We went out a lot like that.

#### Q. How does IITM compare to leading research institutes abroad?

I would say the IITs are doing very well. However, if you look at a place like MIT, the sheer magnitude of resources they have make it an unfair comparison. The endowment for Harvard, for example, for a

tiny sized university is perhaps around 40 billion dollars. With that kind of money, resources, and alumni support, they are able to attract students and faculty from anywhere in the world. One thing I am very happy about is that our institute involves alumni very actively, and I believe the network can play a very positive role. The resources that a few select institutions abroad have sets the bar too high to compare with. It's not that money can solve all problems- but say, to fund a new field, they can pour the kind of money needed quickly, and we will take a lot more time. Money isn't the only factor. Immigration is easy in the US, it's simpler to get a work visa there. Rather than compare with them, I think we should set goals that that we can reach, like develop startups, mentor programs for students, involve alumni more, etc.

#### Q. Why is India so good at economizing?

When you consider ISRO, the cost per km to Mars was cheaper than a Chennai auto. They are the most economic form of putting satellites into orbit and they have an amazing success rate. Similarly, medical goods manufactured here are heads and shoulders cheaper than their competitors abroad, with the same quality. Labor cannot be the only factor here.

I think constraints can be a benefit. Constraints foster creativity. Paradoxically, it is true sometimes that the more constraints that are placed, the more creative the approach. At the same time, major constraints could lead to fall in quality. It's a fine boundary, but creative constraints can be a significant step to birth innovation. Being inspired by your work also helps along the way. With ISRO, it was a matter of national pride. Being passionate about your goal combined with creative thinking is an amazing combination.

#### Q. What is your take on privatizing research?

Craig Venter made leaps in genome sequencing by taking research out of the realm of pure academia. Should this be encouraged in the future?

There is no silver bullet here. I think government should fund, and at the same time, we should involve private entities. Creative research needs latitude, so whatever funding it receives should not have many strings attached, but at the same time should have strong peer review and feedback.

#### Q. What are your interests besides your research?

My dream is to be more helpful to society. Instead of hobbies, let me tell you what my ambitions are. Society has been very good to me, and I'm trying to do something in return, especially to those less fortunate. My work in public health is something I hope can make a contribution. Besides that, my efforts have been ad hoc and small, so I cannot really say too much.

Q. Given your position, is it not fair to say that you can make larger contributions through your work?

That's a good point. In fact, my own research has been veering more in the sense of what is in the public good these days. I wish to make a lasting contribution as a thanks to society. This animates me a lot.

#### Q. If you could give one piece of advice to students of the institute, what would it be?

I feel that several people are factors in our success; remembering them and contributing to something that is bigger than yourself is a great thing. Be happy and make others happy. If you're a successful entrepreneur, then support others, especially in a value-added manner. I don't mean just charity, perhaps invest it in something that will transform people's lives for the better. This will solve a lot of problems in the world. If your success and happiness can be aligned to also caring for many, I think it would be a truly wonderful thing.

## Dr Chandramouli Visweswariah



1985/BT/EE

IBM Fellow

Smarter Energy and Environmental Science

&

Director, Smarter Energy Research Institute (SERI)
IBM Thomas J Watson Research Center

#### Q. Describe your time at the institute. Any fond memories that you would like to share?

The Institute taught me everything I know. I grew up in Bengaluru and my parents were very protective. So, when I came to IIT I was 17 years old, a very scrawny person and for the first time I was my own person. I had the freedom to decide what to do with my time, how to use my money, what I'm interested in doing, how I should I do it, etc. So this really changed me from a boy to a man, a very profound transition which happens to thousands of students on this campus every year which is what makes this a very very special place. It is not special because of the monkeys and deer present here but the special thing is to take young girls and boys and transform them into adults. You come out as a totally different person from what you were before. When I graduated, I was the last of the five year batches to pass out and we had one full year of a huge range of workshops, and in 2009 when I and my wife built a house it came in very handy.

First aspect of my memories was that it gave me some lifelong friends, people you would live with day and night, went through every joy and sorrow with them in the hostel wings, I can never forget that. Here, you are immersed unlike other colleges where you have the option to stay in the hostel or not.

The campus gave me an opportunity to involve myself in many, many activities. In my days we had a campus publication called "Campastimes" and for good reasons we felt it wasn't up to the mark. So a friend of mine named D. Shivakumar (Shiva) and I started a campus magazine called "Spectator," me and him being the founding editors. Rajesh Gupta did the production, Rafiq drew cartoons, and Bucket (Balakrishnan) helped with sports coverage. We worked very, very hard; writing, drawing, producing. We used to type it on a typewriter and we used to go to the Ad Block, cyclostyle and distribute copies to all the hostels. It was very intense but I learned a lot in the process.

I was also involved in organising Mardi Gras. I was involved in Just A Minute, WTGW, Debate, etc. What I enjoyed the most is people from a lot of other colleges used to come and it was a chance to interact with them. The energy on the campus with all these people in the Institute was just off the charts. So the second aspect of my memory of those 5 years is that it had so many activities to fill the day.

The third part would have to be the brilliant and extraordinary professors and mentors I had during my time. Prof. Indiresan was the director, he had soaring visions and ideas about what technology could do for the world. Prof. Mahabala and Prof. Bhatt were my co-advisors, one from computer science and one from electrical engineering. Prof. Anthony Reddy who taught me Electronic circuits was a very strict professor. He would make us build tricky circuits in the lab and measure them and he wouldn't let us go until they were perfect. He would sit in the front of the class and his hobby was to paint fish for hours upon hours until you got your project right. If there was anything wrong with the circuit you built he would literally throw it out of the window and would ask you start over again. If you asked Prof. Reddy a question he would quote Shakespeare and would say somewhere in the sentences lies your answer. Prof. V. G. K. Murthy was another extraordinary teacher. It was amazing, the level of intellectual atmosphere that was present. In short, it was a remarkable journey.

#### Q. How does it feel to be a DAA?

It is a huge honour that has been conferred upon me and I'm really gratified. I couldn't believe when I heard about it and I wanted to make sure that I was able to come and be a part of Institute Day celebrations. When I first got into IIT my aunt visited us from our village and she asked me where IIT was. I said Chennai and she said, "What's wrong with you, why didn't you get a seat in Bengaluru?" I answered in return saying, "No aunty, this is supposed to be a special place, which is really tough to get into." To which she replied "What kind of degree do they give?" and when I said B.Tech. she in return said, "Oh! Textiles, I have heard of that." She asked me about the name of the college and when I said IIT she

mistook it with ITI training. For my family it was very strange for someone to go somewhere else to study. Honestly, when I first came to Chennai my parents were very scared about letting me go and I came here not knowing what to expect and all these years later to be given this award is mind-blowing.

#### Q. Tell us about your collaboration with the City of Rio.

I work for IBM and IBM has a program called Service Corps in which they choose a set of IBMers and they ask you to do some volunteer work. They have two parts of this program: Corporate Service Corps and Executive Service Corps. I was in the Executive Service Corps and what they do is to find a problem in some part of the world and they talk to a non-profit organisation or mayor of the city offering our services free of cost so that they could benefit from our expertise. So after the city agrees to our offer, IBM forms a team of Executives from all over the world and 4 months prior to the assignment we talk on the phone 3 times a week discussing the problem that we are trying to solve ahead of time. Then we show up at the location and we spend 30 days and try to make a difference by solving their problems or give them ideas on how to go about things.

In my particular case, the issue was to prepare Rio for the 2016 Olympics and there were sub-topics under these, with mine being making Rio a more sustainable city. The job was to make a report for the mayor of Rio on how to prepare for the Olympics but to do so in such a manner that the residents of the city would get benefits far over and above the Olympics. Everything from ethanol buses to recycling to making the city greener to reducing pollution to renewable energy were considered. We made a whole framework and study for how the city of Rio should approach the Olympics with the dimension of sustainability built into all of that. My colleagues had other aspects, we clubbed all our reports and submitted it to the mayor.

First of all, it was a great bonding experience with my fellow executives. Second, I learnt a lot about Brazilian culture and its history and its problems. Third, I had full access to all the facilities and top level clearance to get anything I needed. Fourth, it proved to me that I could be successful not just as a specialist in my area of training, but also as a generalist. Plus, I had never worked for that many hours in a day in my life, we were dropping from exhaustion by the end. It was the kind of experience I would recommend to anyone.

I'm happy to say that the city of Rio accepted most of our recommendations we made.

## Q. Having 94 patents and over 100 research papers under your name, what do you think it takes to be successful in research?

Good luck and having a good team around you helps a lot. If you are lucky and open up a new field or come up with a new way to solve a problem, suddenly you have many avenues and sub-problems to solve. In that manner things like research papers and patents pile up.

To those who want to pursue research I would say "Trust but verify." "Trust but verify" is very important in research. Just because some big shot Professor says something doesn't mean it's true and it doesn't mean it's the best way. Doesn't mean anything unless you internalise and actually check if it is the best way. You have to feel it in your bones that this is the right thing, and if you don't feel that way be very persistent in pushing your idea. But also be prepared at some point to say now that I have studied the subject completely and now that I have scrutinised all options, I surrender.

A lot of curiosity, a good team around you and not taking anything for granted are good approaches for research. Apart from these you also need to have a good instinct. I can generate a thousand ideas and they might still mean nothing. It's similar to playing soccer. If you try to score from mid-field, it doesn't make any sense. You have to know which shots to take and when to take them. It takes a lot of hard work, but I

feel it's the most rewarding thing you can ever do. To invent something that nobody has ever done, that's a very thrilling thing.

#### Q. Trust but verify. Could you give us some instances where this has helped you?

I was in my 3rd year of my B.Tech. We had a circuit class where we were taught about capacitance and resonance. In one of the examinations, there was this question where we were asked to find the capacitance such that power is maximum. I didn't know the resonance formula, so I differentiated and substituted and did the algebraic operations and found the capacitance. I got a zero while everybody else got 4 points. To verify, I calculated the power using both the values, and the value I had calculated gave higher power. \*Apparently, having resonance and maximum power are not the same thing, but everyone was assuming this\*. In the later days, at IBM, I was involved in designing microprocessors. In microprocessors chips, we have these custom circuits which are designed by hand. In 1998 I realised that the designing can be done by computer. People having an experience of about 10-20 years told me that it can't be done. But I started the project. After 3 years, we were doing all the circuits automatically, no more hand design. We were achieving higher speeds. It was hard at first, due to various constraints. So never take no for an answer.

While designing a digital chip, making sure that the chip is operated at a certain frequency is called timing. The smaller the transistor, the better. But you cannot control the dimensions on the chip. Because it becomes such fine lines, there are inevitable manufacturing variations which come into the picture. All these variations were threatening to stop the progress of the chips. I proposed statistical timing, that is, the use of statistics to time the circuit, which was a completely new way of designing circuits. It took me 8-9 years to build it all up, to implement the statistics. Now we use statistics to time all the chips designed or manufactured at IBM.

What I want to say is when somebody says it will never work, doesn't mean it will never work. You have to trust, but verify.

However, be careful what you commit to, it may be harder than you think. If you commit to something and don't deliver, you lose your credibility. So be persistent, have a good team, don't take anything for granted, and have very high ambitions.

#### Q. Sir, can you share with us your journey after IITM?

I graduated from IIT in 1985. I went to Carnegie Mellon University. I had a wonderful Professor there. Prof. Ron Rohrer was my life teacher. He taught me more than just research. In 1986, I finished my Masters. I went to Bell Labs in New Jersey for a summer internship. I finished my PhD in 1989, after which I joined IBM Research. At first, I was a part of many projects, moving from one to the other. But then I started research in design automation of custom circuits and that created a real impact. Following that, I started my research in variations in chip manufacturing. Around that time I realised I won't be able do this as an individual. So I was assigned a team of researchers. After my research in variations I was asked if I could leave the Research division and join the server division, which makes the actual system, to bring the idea into production. I took a risk and left Research. I always wanted to make a real difference. In this division, I had a team of about 80 people and we truly delivered the entire methodology. We showed everybody that this could be done and it was yielding much better results. I worked there for 5 years.

After working with various chips and chip designs for 20 years, I realised I needed a new chapter in my career. I was just appointed an IBM fellow, which is the highest technical recognition for an IBM employee. And I got very interested in energy systems. So I went back to Research. I have a team now and we focus on energy and environmental science, which I consider two faces of the same coin.

#### Q. Could you please brief us about your research in energy systems?

Energy is the heart of everything we do. Whether it's economic development or quality of life or education, we need energy. In the last 200 years our progress has been based on energy. But the problem is we are very dependent on burning fossil fuels for energy. This creates a lot of pollution. We are effectively treating the sky has an open sewer. As a result the carbon dioxide concentration in the atmosphere is increasing. According to the United Nations, 350 ppm of CO2 is the safe limit. Today, we have over 400 ppm of CO2. As a result, the temperature is also going up. Due to which not only does the ice melt but water covering 2/3 of the earth expands. In this way, the oceans rise and extreme environmental events occur. So basically, global warming is caused by humans and we are getting into a regime where even climate scientists cannot predict what is going to happen. This is going to affect future generations. So we really have a crisis on our hands. We have to replace the energy we are using now with clean and safe energy. This is a grand challenge that humanity is facing right now. And this is achievable, something we are already working towards. Solar panels, for example, are getting cheaper. We have more solar farms and wind farms now. As we rely on intermittent, weather-dependent sources of energy, we need to plan and orchestrate our grids differently. We are building a suite of energy analytics tools that will comprise the "Operating System" of future grids. We work on weather prediction, renewable energy forecasting, demand forecasting, grid modeling, grid orchestration, as well as water quality, air quality, anything to do with the environment and energy.

#### Q. How did you find IITM after all these years?

I have noticed more buildings, more hostels and more stadiums. It seems a bit more crowded. Also, the new generation of students is so much more savvy and smarter. They have so much more knowledge about how the world works. It's wrong of people to say that this generation doesn't know anything. Perhaps they can't do arithmetic in their head or use log tables like my generation, but students are actually smarter and better than ever before. And it's good, because we have huge problems to solve. Otherwise, I see the monkeys and the spotted deer and the greenery is still intact and all the good things about this campus haven't changed.

#### Q. Any message that you would like to share with the students of IIT?

First of all, consider yourself lucky as you are at a very special place with a very special history.

Don't study all the time. There are so many other things that are out there to do. Make use of all the facilities.

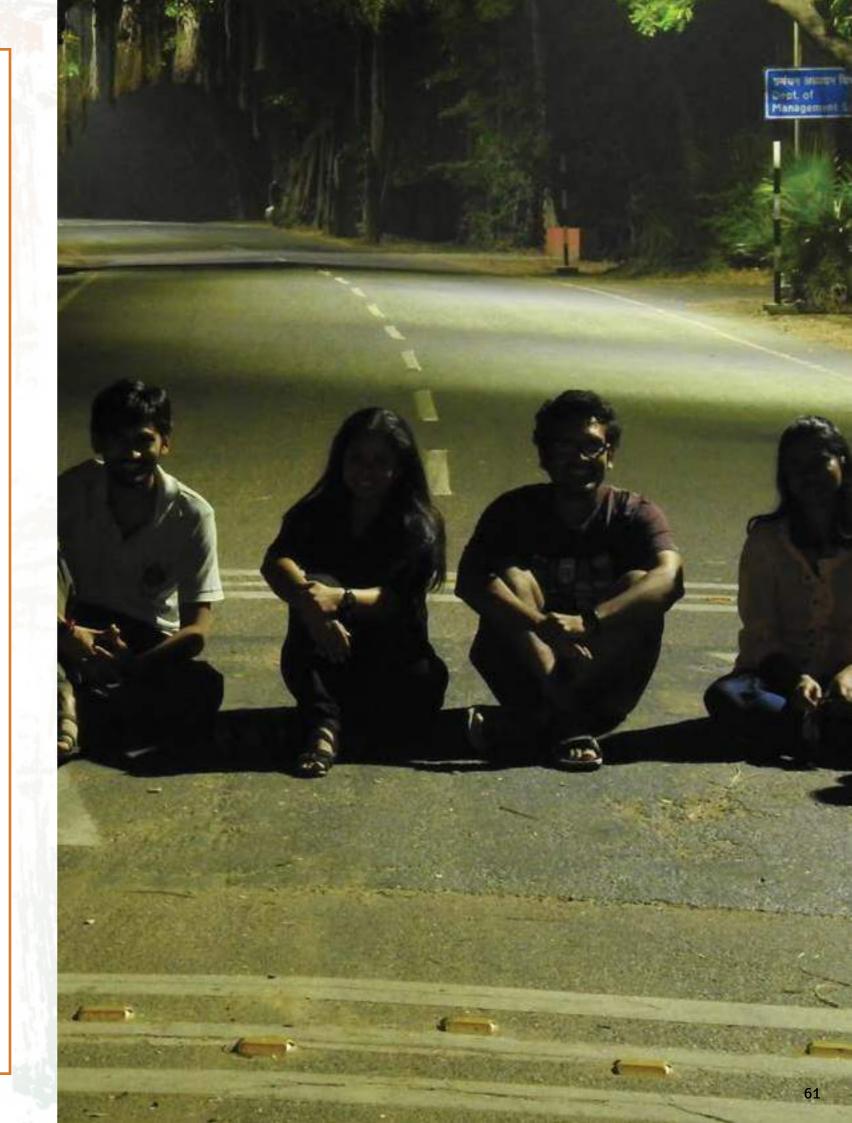
Thirdly, I would say find something that kindles your passion, something that you find extremely interesting and satisfying because if you can make something like that your profession, you will spend any number of hours doing it and getting better at it.

Finally, people from IIT have a very strong technical background but is that enough to be successful. To be successful you need 3 sets of skills: The first is your technical set of skills, your skills in your chosen profession which is undoubtedly strong in IIT students.

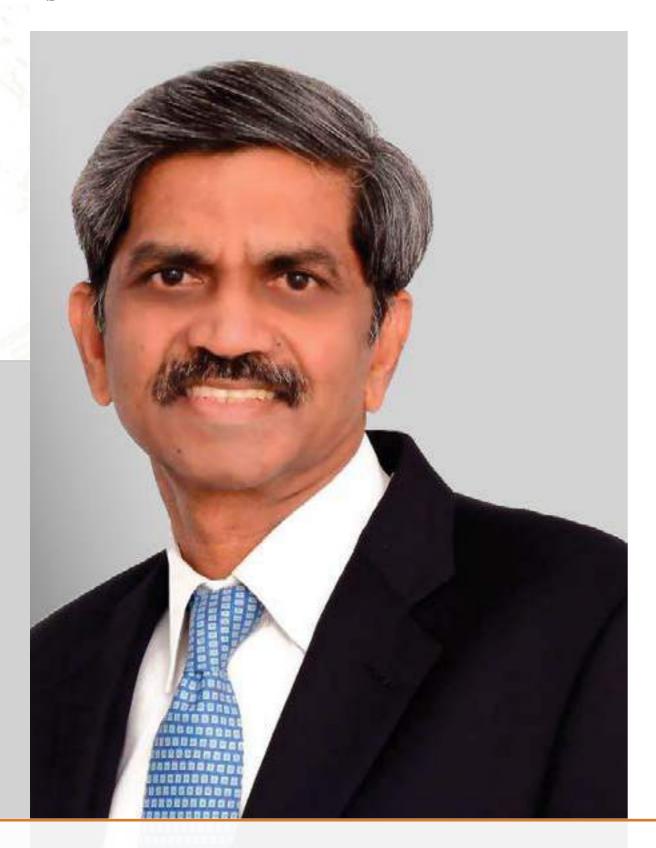
The second set of skills is to have a business sense, to have an idea about how the world works, how to sell your idea.

The third is people skills. One person can only achieve so much but if you want to change the world, you need to be able to collaborate with people and to do that you should be able to sell your ideas to others so that they would be able to collaborate and build something. We should make sure any latent IIT "elitism" doesn't stop us from being excellent team players.

So if you truly have this trifecta of skills mentioned you can achieve anything.



## Shri D Shivakumar



1982/BT/AE
Chairman & CEO (India Region)
PepsiCo India Holdings Pvt. Ltd.

here you start may not be in your control, be it by city, economically or your surroundings, however the end is entirely in your hands..."

Popularly known as 'Shiv', the current chairman & CEO of one of the leading beverage companies, PepsiCo India, graduated from IIT Madras in 1982 with a B.Tech and went on to pursue an MBA degree from IIM Calcutta. Here's a brief account of my interaction with the Distinguished Alumnus Awardee for 2016, Mr. D. Shivakumar.

Remembering his days at IIT Madras, Shiv says, "I entered this campus as a boy and grew into a man, prepared to face the outside world. IIT Madras teaches you a huge sense of community and teamwork. Each hostel has its unique culture." Recalling his hostel life at Narmada, he says, "I realized the value of a good culture only at IIT Madras. The growth of Narmada hostel in culturals and sports was quite overwhelming. I was the happiest guy to learn of Narmada's Schroeter win a couple of years after we passed out. After all, our efforts of moving the hostel from a counter culture unit to a better purposeful one had paid off." He also remembers Mardi gras (now Saarang) as a huge talking point. He specifically mentions Just A Minute (JAM) and quizzing events, and remembers a couple of jammers from his insti days Like Abhijeet and Debjani.

Sports like Cricket, Tennis and Football have always fascinated Shiv. He has played cricket and tennis for IIT Madras in its years of glory, a period when IIT Madras used to dominate Inter-IIT sports meet registering 8 wins in a row. He is also a huge fan of English football club Manchester United. On any given day, he would love to watch a Manchester United match, and he remembers the dream team of 1999, the year when Manchester United became the first and only English team to complete the treble. Shiv also has close relations with Shahrukh Khan for his days at Nokia, which was a prime associate of IPL franchise KKR. He values all kind of sports mainly for the qualities like teamwork and determination.

Shiv has proven his mettle as a marketer across multiple brands in India's best-run companies like PepsiCo, Nokia, Hindustan Unilever and Philips. Having worked with more than 50 brands, he has been integral to their growth. Through his commitment to innovation, new business models and ecosystem partnerships, the brands have grown in terms of sales as well as geographical diversity. Shiv has also been a student body representative during his insti life. He says, "A good leader is one who is a good learner, a team player and leads when necessary and follows when necessary. Also, the context in the situation sometimes builds the leadership skills in you. As an institute secretary at IIT Madras, I learned to bring people to work for a common cause relevant to the student community. Further, the learning curve here at IIT is very steep and one should make the most of it."

One can clearly infer his fondness for reading (especially biographies) when he quotes personalities like Nelson Mandela, Sir John Harvey Jones, Jack Welch and many more in a go. Shiv believes that one should invest in himself, make time to pursue his/her interests like reading about such personalities may garner inspiration to achieve something bigger. Knowing his views on entrepreneurship, Shiv believes one should not be afraid to try and says that it's great to see youth trying to pursue their passion. Entrepreneurs create new jobs which is very important for the growth of our nation.

Shiv has also loaned his time delivering lectures at leading B-schools including IIM Calcutta. He has also delivered a lecture at IIT Madras earlier and looks forward to collaborative research with DOMS. During the interview, he also explained the consistency of a brand by taking an interesting example of the Bond movies. The Bond movies have evolved over time from cold war to the current way of storytelling. However, the music, technology and the journey to a new place still remain some of the highlights of a Bond movie.

On a closing note, I leave you with his message to students of IIT Madras. He says, "Choose your passion. Follow your dreams. When you work hard and don't enjoy it, it will only create stress. So, enjoy what you do. Enjoy your work because the start may not be in your control but the end is. You can decide where you want to be after your life at the institute."

## Dr Ramarathnam Narasimhan



1982/BT/ME
Professor
Indian Institute of Science
Department of Mechanical Engineering

#### Q. Please tell us about the journey you've take after IIT i.e. IIT M to Caltech to IITB to IISc?

When I was doing my B.Tech, I was inspired by the exemplary teachers we had into going into the academic line. They had outstanding careers and spent so much of their time on students.

In spite of me working on a lot of industry related problems for my final year project, I came to the decision of going into the teaching line. This automatically resulted in me choosing to do a Ph.D. At the end of my B.Tech, I got an offer from Caltech and joined there for doing M.S. and Ph.D.. This was the summer of 1982. By the winter of 1986, I had successfully defended my Ph.D thesis. After that, I did a Post Doctorate for about 9-10 months and then came back to India to take up a job offer in IIT B amidst offers from other IITs. I taught B.Techs there for a while before joining IISc, Bangalore in 1991.

## Q. We've learnt that you mostly work in the areas of crack growth, non-liner Fracture Mechanics etc. Can you tell us briefly about your work and contributions to Mechanical engineering?

My research work lies in the border of Mechanics and Material Science. I was always interested in Applied-Mechanics although my basic degree is was in Mechanical Engineering. My PhD thesis was from the Applied Mechanics department too.

I used to relish courses like Strength of Materials and towards my final years in UG, I took up a lot of electives offered by the Applied Mechanics and Aerospace departments. Over a period of time, given the nature of how research has been developing, more and more people have gotten into working in the borderline of materials and mechanics. I do a lot of work in materials modelling instead of working on mechanical components and mechanisms.

Some of my work involves the fracture behaviour of ordinary metals, polymers and more recently metallic glasses. So my work has been primarily to understand the mechanics and fracture behaviour of materials using simulations.

#### Q. What do you love the most about your work now?

I like to do simulations a lot. Probably, because, that's what I did for my Phd thesis. An example of this is applying continuum methods for modeling various mechanics phenomena and developing advanced computational techniques to do so.

Nowadays the compulsion is that unless you do experiments on your own, you will not be able to understand a phenomenon fully. So we have now begun to conduct our own experiments, earlier we used to collaborate with other groups.

## Q. Tell us about your time at the institute. Is there any particular incident which you would like to share with us?

The first two years here were very intense. The freshie year, especially was laden with alternating weeks of intense workshop. The other week was filled with academics. In spite of having only 2 weeks a month for teaching, the portions were never compromised. We had really good teachers and they used to make us do the whole of books like Resnick Haliday, Piskunov etc.

We had to put in a lot of work in the hostel to catch up with what was being taught in the classes.

In my second year, we had a new director -Prof. Indrasen. He introduced two new changes that I believe are still continuing now.

1. Relative grading system: It changed a great number of things. Now, we needed to actually compete with our colleagues. We also couldn't expect grades as we did before.

2. Periodical assessment: After this, many had to change their IIT code of life - which was "Do anything but academics or slack off for most of the semester and begin studying when the end-semesters were within one month." Now, we had to keep ourselves updated with our class notes regularly.

Finally the BTP was taken very seriously. We used to spend a lot of time and effort on it. Also, in the final year, a lot of people used to apply for universities abroad, that meant preparing and taking exams like GRE, TOFEL etc.

Overall, the academic pressure was quite tight for people who were even a little serious about their academics.

We also used to have fun. We had annual Hostel nights, Diwali celebrations etc. People played various sports in both institute grounds and hostels quadis. Hockey and Badminton were the most popular ones. We had cultural and literary activities throughout the year with Mardi Gras as the grand finale.

Q. Did you ever think about making it big back then? How do you feel about being one of this year's DAAs?

It's a big thing! Getting recognition from your own school, acknowledging that you've done something worthwhile after graduating. It means a lot, national awards don't compare to recognition from your undergraduate school because, we all had our formative years here. This is the place where our career got defined.

Q. How would you describe yourself in one word?

Single word - Die Hard Academician. He tried hard to bring it down to two - Passionate Academician.

Q. What is your opinion on many IITians and as a matter of fact, engineers across the country taking up non-core jobs?

It's sort of an unfortunate scenario, but I'll call it "keeping with the times." Most of the well-paid jobs now are in non-engineering fields. For example, hardcore mechanical engineering jobs and even R&D in Mechanical engineering fields do not pay as much as jobs in Banking, Finance and IT sectors. I would not blame youngsters for taking up these jobs for money is very important. But if you look at the overall country's perspective, the backbone of the country can only be built through basic engineering. We need to be able to make and design our own products. I just wish more students would join core jobs and national labs, because only then we'll have a strong engineering base and be able to compete with other countries.

Q. Coming to that point, there are students in the institute who in spite of all the above perks, choose to pursue research careers or careers in core fields. But we see a lot of them complaining that they are not getting results even after spending a lot of time under professors doing projects. Kindly give advice to such students?

In research, when you start working on a problem, only 10% of the time you spend will be useful and might result in something tangible. So once you get into research career, you must be prepared for many endeavours which will terminate as dead ends and cause a lot of frustration. But the 10% that you can get, might really make a difference to understanding a particular problem or developing a particular product. So one must always strive to get into that 10% and not get frustrated by the other 90%. For example, when ISRO started, they made a lot of mistakes which resulted in a many failures. But they kept at it, tried to eliminate all possible sources of errors by putting in place, various fool-proof protocols. All that has now led them to a state where every launch is a success. They have built a strong engineering base. So, while doing engineering research, you must learn from your mistakes and be able to build on that knowledge, make protocols and intelligent course corrections which will put you on the path to reach that 10% which matters.



## Dr Sridhar Vembu



1989/BT/EE Co Founder & CEO Zoho Corporations

eard of Zoho corporation? The company providing SAAS services has been competing successfully with some of the core products of Microsoft, Google and Salesforce.com.

Yes, all of us Indians can be proud of what Zoho has achieved, but, we at IIT Madras can take that a step further.

Sridhar Vembu, a B-Tech alumnus made it all possible through his sheer work and determination. In the world of growing VC influences and a host of series fundings that businesses undergo, Zoho is the shining light of the bootstrap model of building a business.

We were indeed lucky to get a few minutes with the man who journeyed from a village in Tamil Nadu to the CEO and Co-Founder of a company worth a billion dollars if valuated.

#### Q. Can you tell us about the change from advent net to Zoho?

As the business grew and we branched into new areas, we needed a more memorable brand. Zoho is a much easier to remember name, that's why we adopted it. Naming it after our most popular offering made sense.

#### Q.Can you tell us about the Bootstrap model of approach?

The idea is to grow the business by reinvesting the profits. Initially growth would be slower because investment is constrained, but over time, this model proves durable and you get to take advantage of compounding. Zoho is going strong after 20 years.

#### Q. Any memories from insti life?

The best memory is all the friendships and all the long discussions, everything from girls (we were young boys after all!) to philosophy to politics. There was also no attendance rule at that time - it was only passed in our 3rd year, and it was only 55% then. I took advantage of that and would skip classes often. I don't remember much studying, expect the night before the test.

#### Q. Would you like to give some advice to the students?

If you are doing well academically, feel good. If you are not doing well, don't feel bad. In both cases, it is the absolute truth that your GPA won't matter when you get to the real world. What you do with your life is what matters. Whatever you choose to do, get to the root of things. Ask basic questions, learn and explore. Keep an open mind.

A man who made himself through sheer grit and determination. A simple man, with ever a smile on his face was with us for just over a 10 minutes before he rushed to his parents and wife to have dinner with them.

Any extra minute with him would have been a more than welcome gesture but what he gave us is worth a lifetime to reflect upon.

## Dr Vaideli Narayan



1981/MSc/CY & 1986/PhD/CY
Professor of Molecular Immunology
Beckman Research Institute of the City of Hope

ne of this year's Distinguished Alumni, Dr. Vaidehi Narayan obtained an M.Sc. degree in Chemistry from IIT Madras in 1981 and continued on to get her Ph.D. in Theoretical Chemistry from the Institute in 1986. Subsequently, she was a postdoctoral fellow at the University of Exeter (UK), the University of Southern California (USA), and the California Institute of Technology (USA). She then became the Director of Biomolecular Simulations at the Materials and Process Simulation Centre at California Institute of Technology, and a Visiting Associate at the NASA Jet Propulsion Laboratory. Since 2006, she has been a Professor of Molecular Immunology at Beckman Research Institute of the City of Hope National Medical Center (USA). Publishing under the name N Vaidehi since her time at IIT Madras, Dr. Narayan has over on hundred peer-reviewed articles and invited reviews to her credit. We were glad to be able to conduct an informal interaction cum interview with her.

The first question raised: what prompted you to shift from chemistry to molecular biology? "I think that these days, science has lost boundaries", Dr Vaidehi says. She goes on to explain that she uses techniques in computational physical chemistry to understand the molecular underpinnings of our immune system.,. It's a team effort, she tells us, and the immunology department has faculty in as diverse areas of expertise as mass spectrometry, biology, and NMR. "So I haven't really shifted focus", she says, "I develop computational methods and apply them to molecular immunology." She jokingly tells us that the fact that she teaches cell biology, despite having no knowledge of it whatsoever when leaving IITM, is proof that anybody can cross boundaries and learn other fields of science.

We ask Dr Vaidehi how she came to discover where her interests lay. "My first choice was to study Mechanical engineering, but my mother didn't allow it", Dr Vaidehi tells us. Nor were her second and third choices – BSc Maths and Physics respectively – accepted. Finally, she settled on Chemistry. But then, she says fondly, the professors at IITM opened her eyes. "They taught even physical and organic chemistry in a logical way, so you didn't have to learn anything by rote," she tells us. She mentions Professor CN Pillai and Professor K.K. Balasubramanian, who taught organic chemistry, and Professor MS Gopinathan, who sparked her interest in quantum mechanics. She pursued quantum mechanics without regard to job opportunities and the like. "Maybe it was a naïve decision", she says, "But now they want people who know quantum mechanics in pharma. Things change; the important thing is to do what you like".

She tells us that her thesis work on quantum mechanics at IIT looked only at atoms. "I would look at people on the road, and wonder, 'how is this relevant to them?'" And so, Dr Vaidehi looked for postdoctoral opportunities to work with proteins and larger molecules.

She speaks nostalgically of the amount of time she spent in the computing centre. "There were only card readers back then, no terminals. You had to punch cards and submit the deck as a job, and then wait two hours only to find out that you'd made a small mistake in typing the job control language. If you worked in computational research you had to live at the computer centre!" She tells us fondly that she made a lot of friends in the CS department. They would run jobs for her, as the queue was arranged in such a way that your job got done faster if you were in computer science.

We speak a little more about Dr Vaidehi's time at IITM. She recalls for us several small details of her life — the way that people had to get up early on Holi to get to the lab, so as to not get caught in the celebrations; the excitement on Hostel Day, when all the girls dressed up because boys could enter the hostel; the pizza place within the campus; the trips to Velachery to drink tea; Liu's Waldorf, a Chinese restaurant (which exists outside the main gate to this day!) which was, back then, the location of all celebrations.

She tells us that there was a one is to ten girl to boy ratio – about forty BTech girls, thirty in MSc, and thirty or forty PhD students; a hundred to a hundred and twenty girls, all told. "There was only one girl in Mechanical Engineering; everyone called her the 'Mech Brain', no one knew her real name!" she says with a laugh.

Dr Vaidehi was part of the student council of the chemistry department, called "Resonance". Each year the second years on the council would choose first years to take up the positions. The council would, among other things, organise lectures and get together once a month and discuss student related issues; no faculty involved. These issues were later taken to the faculty if required.

At this point, an interesting question is raised: how do Indian post doc students fair abroad? It's harder to get grants here, and we leave with less papers for the length of our tenure, after all.

"I'm one of the associate editors of an international journal, and they always send me any publication from India – even if it's not in my field of expertise - because I understand their circumstances," Dr Vaidehi explains. "If they've done fewer experiments, what I look at is if they've over interpreted their data; it shouldn't be very speculative." Dr Vaidehi admits that selecting postdocs is very competitive, and that people often filter by the number of papers an applicant has published. "But I've had failures, where I think a person will do very well as a postdoc fellow but they don't, and postdocs who don't perform to my expectations – and people who do much better." She explains that she has a system where she interviews students, and has her fellows do so as well; she doesn't base her assessment solely of what's on paper. "You can still do good science if someone gives you a chance, and more and more people are doing that," Dr Vaidehi asserts.

We now ask her to tell us about her work as an educator. She explains that she first started volunteering in her daughter's school in California, because students were not inspired to do science. She had them do hands-on experiments based on the unit they were learning. "So for example, each student sowed seeds; some use water, some coke, and so on, and we observed the results on the plants' growth." She adds that CalTech ran a program called SEED – Science Elementary Education and Development – on government funding, and that under it she and others developed hands-on experiments for children and carried them out using the grant money.

"It's so much fun when students learn science hands on instead of learning Newton's law by rote, when you actually do stuff", Dr Vaidehi says passionately. "After my daughter graduated I continued working with the children because I liked the reaction I got."

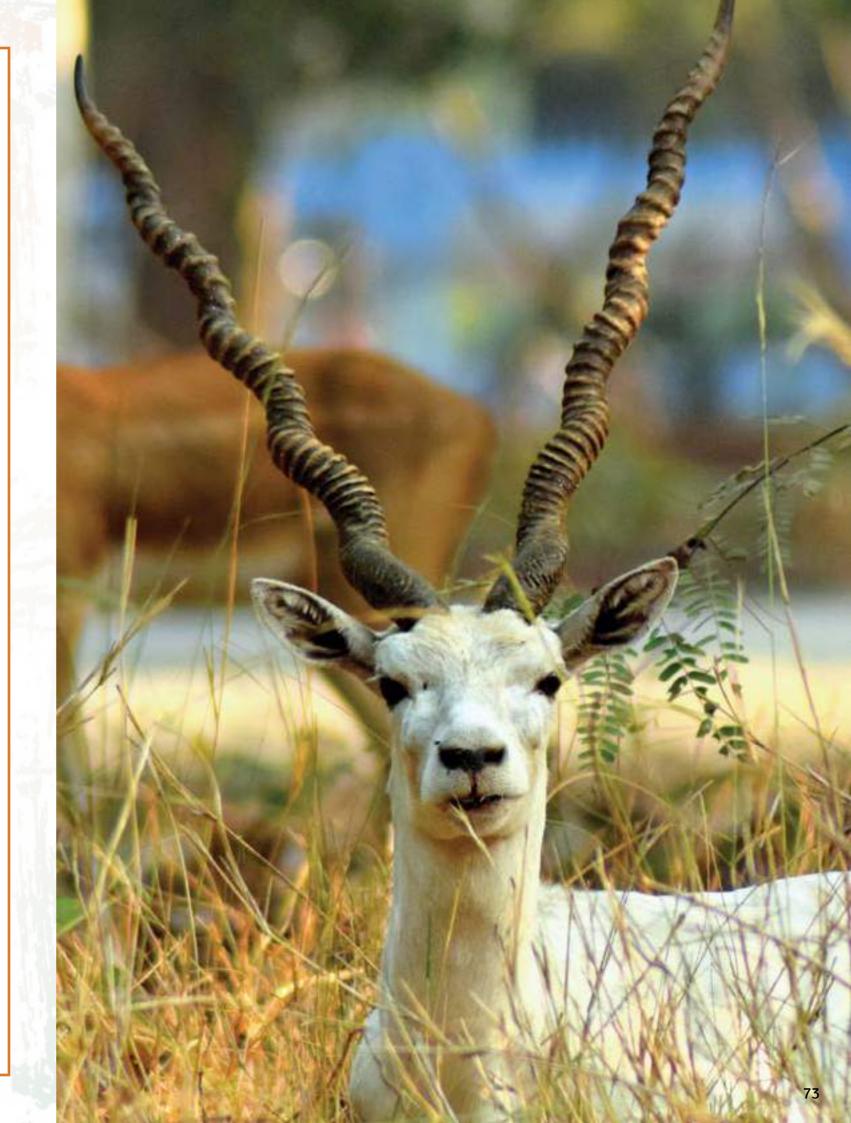
She tells us that many educational institutions partner with high schools in underprivileged neighbourhoods. High school education is free, paid for by property tax, she explains — which means that good neighbourhoods have good schools, but underprivileged ones do not. She also worked with children from under-previleged minorties,. "Children think that engineering is very hard," she says. "But you make them build something, and tell them that by doing so they've become engineers, and they get the feeling that they can do it too. That's the kind of thing I continue to do."

She confesses to another motivation behind working with children. "In academia, reviewers can slash down your article, criticise it ruthlessly; on those days I go to the school. No matter what, they still like to see me!"

"I often go through my hospital too; I walk through the hospital and I see the small kids, and I think that this is why I do this. It keeps me grounded and centred."

We proceed to talk a little bit about stereotypical gender roles. Dr Vaidehi states her opininion, that there is a great deal of societal pressure in India for a woman to behave a certain way, and that the expectations of a working woman in a household are more than those of a working man. She admits that this was part of her motivation behind settling in the United States. She expresses her wish for a more equal division of labour among Indian families.

We conclude our conversation with Dr Vaidehi's message for the students: "Pursue your passion; success will come by itself. Because you like what you do, you'll do it well and you'll be successful. And make every day happy, you don't know when it'll all dissolve." In the words of John Lennon, "life is what happens when you're making other plans."



## Dr Thomas J Colacot



1989/PhD/CY Global R & D Manager Johnson Matthey Catalysis & Chiral Technologies

#### Q. Can you tell us about your time in insti?

My time in insti was very intense. The Chemistry Dept. was like a monastery. Many of the profs. were strict, though we learned a lot from them, not only about chemistry, but also about life. Maybe that's what made us acquire the "IIT BRAND" back then. The discipline IIT taught me helped a lot in differentiating myself from others. The best part about IIT was the bicycle rides. I used to ride at least 5-6 miles everyday. It is a very good exercise for the students. One interesting thing during my stay would be the huge computers that were just coming up. We used to have punching cards to get access to the computer in order to solve a program like crystal structure and it used to take 3 WHOLE MONTHS for the computer to solve it. We had to book our slots with the computer and sometimes we used to end up with access to the computer at ungodly hours like 3 a.m. The eateries outside Tharamani gate was the place we used to frequent to satisfy our hunger at these times. Another interesting change my batch witnessed was the installation of ceiling fans in our hostel rooms, until then we used to manage with table fans. Back in those days, Tharamani was still a slum area and I know people who bought real estate property with their scholarship money from insti. Although frankly speaking my best memory of insti would be the Special Fried Rice and Mutter Paneer Curry Cauvery Mess used to serve on Saturdays for dinner, followed by the movies at OAT.

#### Q. How has insti changed over the years?

This generation is highly blessed with the gift of communication. Back in those days, we didn't have any internet facilities, we had to look up some magazines or research articles for openings in colleges abroad, and fill out the manual applications and send them. Back then, half of the colleges wouldn't even have received our applications due to the poor postal services or address changes back. Other than that everything else is pretty much the same.

#### Q. Can you talk a bit about your passion towards chemistry and your current area of research?

I always had this passion to see how I can practically apply the concepts learnt from my text-books, that is what drove me to chemistry. I did my PhD here in inorganic chemistry which didn't have much application back then, so I shifted to Organometallic Chemistry during my Post-doc. I then went on to work on catalysis, cross-coupling technology viable for applications in drug synthesis, organic light-emitting diodes (OLED) and liquid crystals, catalysis for organic synthesis. My company, Johnson Matthey was the first to develop a catalytic-converter which is now being widely used in automobile exhaust systems. I was lucky enough to be in a position where I could do fundamental research (in understanding the structure and activity relations important in developing organometallic based catalysts) and make money for the company out of it, which is a very rare combination to achieve in the corporate world.

#### Q. What is your reaction on receiving the DAA award this year?

A lot of awards I received earlier, including the Royal Society of Chemistry award, American Chemical Society award, etc had cash money, appreciation, etc. But when your alma mater recognises you for your work, it's a whole other thing. This award really means a lot to me. I am pretty sure, among all the awards I receive, this will be the one I will always cherish. IITM is always a special place in my mind.

#### Q. Any advice for our readers?

Charity should become a part of the curriculum. IIT is giving us immense wealth in terms of knowledge, it is our responsibility to give back to the society too. Mentoring and leadership should happen at every level. I suggest students to take diverse courses during their stay here. It helps broaden their skill-sets along with giving them a whole new perspective to life. IITM has the cream of the crop, as far as students go. They should think about how they can change our country for the better, by creating more clean streets, classrooms, bathrooms, as well as develop a culture for ethics, religious tolerance etc. You are all fortunate to be a part of IITM.

## Dr Kumar Ganapathy



1987/BT/EE

Co-Founder, Virident

Global Vice President, Organization Strategy and Products, HGST USA

#### What made you choose Electrical Engineering as your major at IITM?

Electrical Engineering department is one of the prestigious departments at IITM where my uncle was a professor. I wanted to remain at Chennai, so given my All India Rank of 575 in IITJEE 1983, choosing IITM Electrical Engineering was a clear choice for me.

#### Any memories of IITM you would like to share?

The best memories at IITM are with friends. I had a lot of deep relationships built during my time here.

In our first year, the courses offered by the physics department were quite tough. All incoming students are usually very good and come from the top of their high school class, so physics courses made us struggle bringing our egos to the ground level teaching us to fight and be resilient. That was a great memory.

The electrical department had a number of amazing professors and lots of good memories there. We used to mess up our experiments for B.Tech projects (semiconductor area) which upset the graduate students. They were working on their PhD thesis very hard and seriously, but the undergraduates took it casually and had fun. Some of professors were famous for their difficult exams - again they test not just our EE skills but also our ability to cope with pressure.

I represented inter IIT sports team in gymnastics. Gymnastics was one of the easier ways to get into inter IIT team. We also played hostel football regularly which created many lasting bonds with hostel and wing mates.

Friendships are the best memories, I would say.

#### Was it an obvious choice for you to pursue research in Electrical Engineering after your graduation?

Yes, it was. But I switched my field later. I worked on Electronics in my later part of my graduation. During my PhD in University of Illinois at Urbana Champaign, my work was inclined more towards Computer Science and Engineering. I worked on array processing, DSP algorithms and architecture. After my Ph.D, I worked in Rockwell semiconductors for 5 years designing DSP chip sets in cell phones, ADSL modem where I became a Technology Fellow. After that I have been a technology entrepreneur for past 18 years. I have been working on start-ups for a very long time.

#### Can you tell us more about your famous start-up, Virident?

Virident was the most recent start-up I worked on. It took 7 years from start to finish. We mainly focused on storage for enterprises. In 2006, when iPhones first arrived, we used the same memory as the iPhones and built fast storage for new web properties such as Facebook, Linkedin, eBay as well traditional enterprises. In 2009, when there a stock market meltdown due to real estate crisis in the United States our company Virident almost died. But, we managed to get through the tough periods, and successfully pivoted and rebuilt Virident products. Virident was acquired by Western Digital for \$685M in 2013.

#### What motivated you in becoming an entrepreneur?

I am an accidental entrepreneur. When I was a fellow of Rockwell semi-conductors, I pitched my idea to the vice-president of the company. However, in a big company it's hard to get your voice heard, and my idea was not pursued considering the risks involved. I decided to take a chance as I had a deep understanding of the DSP technologies that were critical for VOIP market, and knew a few venture capital investors who had worked with me.

#### What does it take to start a start-up?

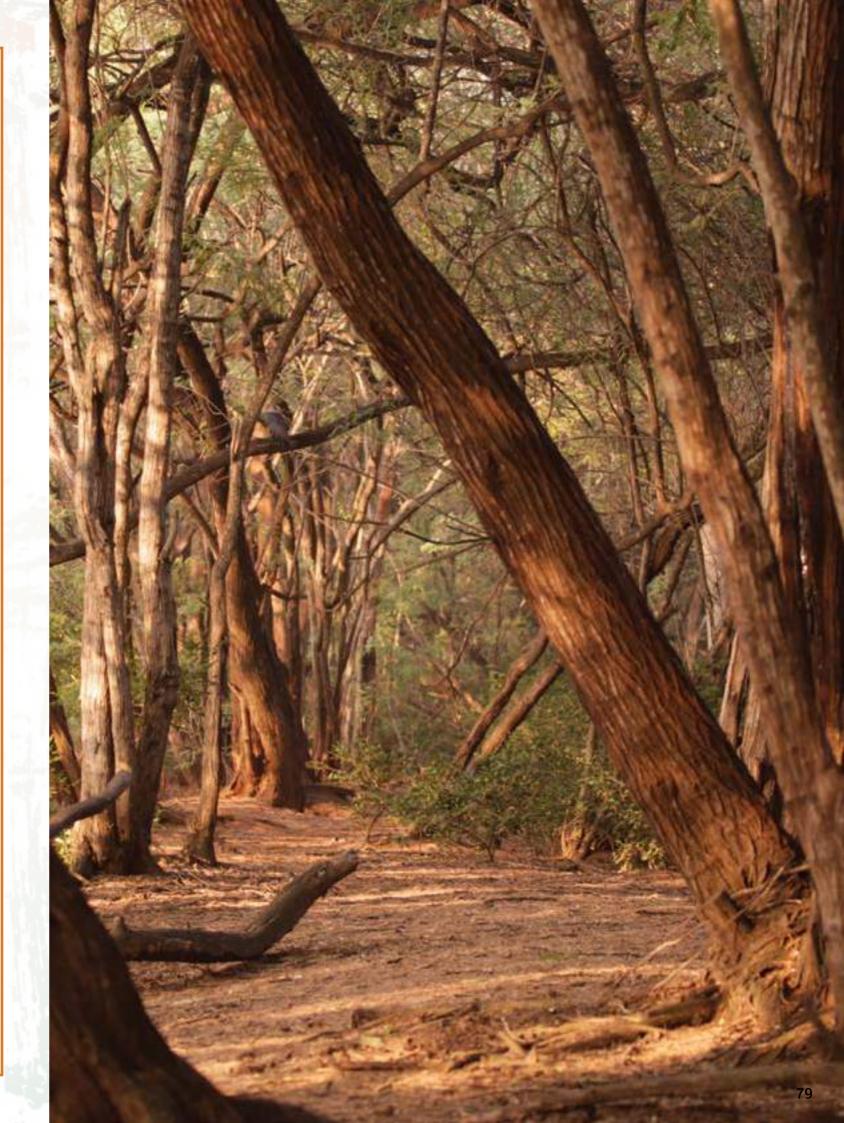
To build a start-up, you need good ideas, a strong and trusted team, and take the plunge to work hard. Things go wrong all the time - success depends on grit, resilience and problem solving capability at many levels - people, product engineering, market, customers.

In Silicon Valley, entrepreneurship is a way of life. In the Bay area, you can recruit people who understand every aspect of ecosystem. They understand how to work in a start-up, how to build a complex product, how to market and sell products as a start-up against large incumbents. This magic combination of venture capital, expert talent and risk-taking is what makes Bay area unique and has helped me in my entrepreneurial journey.

#### Any ideas for students who are interested in starting a company?

The first thing to succeed in a start-up is integrity and trust of the team. Especially coming from IIT background where everyone is intelligent, but you need to build a world class team to succeed in new emerging market opportunities. To work cohesively in such a smart team, the trust of all the team members is essential. Also, you should pick an idea and space, where you have unique skills or knowledge, which is changing rapidly with inflection points that enable small startups to succeed quickly.

Dr. Kumar Ganapathy graduated with a B.Tech. degree in Electrical Engineering from IIT Madras in 1987, receiving the Siemens Gold Medal. He went on to complete an M.S. in Electrical and Computer Engineering from University of Massachusetts, Amherst in 1989, then a Ph.D. in the area of computing architectures for Digital Signal Processing from University of Illinois at Urbana-Champaign in 1994. By 2013, he had co-founded two successful start-ups (VxTel and Virident), which were both acquired for a combined net worth of over \$1.2 billion. Dr. Ganapathy has over fifty patents along with twelve research articles. He is a recipient of IITM Distinguished Alumnus Award for the year 2016.



## Dr S Christopher



1987/PhD/EE Secretary

Department of Defence, R & D and DG, DRDO

Dr. S Christopher, one of the Distinguished Alumnus Awardees of the year 2016. He currently serves as the Secretary, Department of Defence Research and Development and Director General, DRDO. Prior to this, he was the Programme Director for the Airborne Early Warning and Control (AEW&C) and Director, Centre for Airborne Systems (CABS). He is the recipient of many awards including Scientist of the Year Award, 1998. He completed his Ph.D from IIT Madras in 1985.

It's not every day that an undergraduate sophomore gets to interact with the Secretary Defence R&D and Director General of DRDO. Just like anyone else would've been, I was highly intimidated by the stature of his position but was mistaken when we met in person. Despite being the man who is spearheading India in the armament race of the world, he was very warm, humble and receptive to all my clarifications. I was truly privileged to be able to talk to him.

Dr. S Christopher completed his B.E. (Hons) in Electronics and Communication Engineering from University of Madras and M.Tech in Microwave and Radar Engineering from IIT Kharagpur. He was a Project Associate and completed his Ph.D from IIT Madras in Antennae and Measurement Techniques in 1985. He completed his studies in India, unlike a large portion of his generation who moved overseas, which gave shape to the reverse brain drain. We ask him what made him to stay back. "I was determined to get into an IIT after my B.E. for M.Tech. So I joined IIT Kharagpur. Soon after this, I managed to move as project associate and also secure a seat for Ph.D at IIT Madras in my desired subject. Everything seemed to have fallen in place for me" he says. He tells us that he found his comfort zone in India. Factors such as people, atmosphere played a crucial role in his decisions. "I was given opportunities to study and work on areas that I loved, hence the question of going overseas never arose!" he explains.

Out of many of his groundbreaking achievements, one is being the scientist responsible for India's first indigenous AEW&C (Airborne Early Warning and Control) System. He throws more light on this. "After my Ph.D I joined Bharat Electronics, which was prime at that time, where I was advised to work on AEW system. In '88 I left Bharat Electronics to join Electronics and Radar Development Establishment (LRDE) of DRDO where I continued the 2nd attempt in the country to develop indigenous AEW or AWACS under the name of ASP (Airborne Surveillance Platform)". He developed the antenna for the project and described the experience as highly enriching as it was an opportunity for him to apply all the concepts and skills he had acquired at IIT. "Over the years I was promoted to become the in-charge of antenna as well as signal processing. Most of the groundwork was complete and we decided upon conducting trials for this airborne system over calm sea because reflections of the signal seemed to most ideal there. Trials took place on a Saturday, where I flew as one of scientists testing the radar system. Next day trials were also set to take place at the Arakkonam Naval Base. I was ready to fly in the aircraft but my boss suggested that 2 other scientists from my lab, go instead of me. Apart from them there were totally 9 people, both crew and scientists, on board". After a brief pause, he says in a disheartened tone "That flight never saw the light of the day. It crashed, killing everyone onboard". This incident led to the cancellation of the project until 2004, when it was revived. "The Secretary back then, suggested that I handle a new programme henceforth. So I abandoned other ongoing work at LRDE to pursue this new programme at another laboratory, Centre for Airborne Systems (CABS) of DRDO. Over the years the requirements got enhanced to cover satellite communication, endurance, consequent internal fuel tanks, air to air refueling and consequent additional rest crew seats etc. All the requirements could be finally captured and mutually agreed only by 2007". We also ask him about how India stands compared to other countries in this domain. He proudly says "Our AEW&C system costed us half of how much Pakistan purchased theirs for and this effort puts us amongst only four countries in the world who has designed and developed such systems. We also had the something called CSM which enabled the pilot and other controllers to listen to communications of the enemy. This enhances the airborne early warning, as before any aircraft takeoff there is normally a good amount of communication between the air tower and the enemy pilot. This gives an idea to the controller to get ready for what events that may unfold".

Dr. S Christopher has achieved the distinction of playing a crucial in role in developing the slotted array technology which beat the Russian's innovation which was more costly, and was exported to Poland. He gave an insightful description about this innovation and how it works. "Most of the communication happens through waves. Waves are fundamentally propagating energy. If one makes holes along the pathway of the wave (wave guide), the field associated with the wave tries to jump out but they escape so as to maintain field continuity. By controlling the energy trying to leak out from these holes by suitably positioning them, we get various distributions which form a narrow antennae beam" he explains. A lot of follow-up work was done on this technology, and was it exported to Poland apart from its use in India.

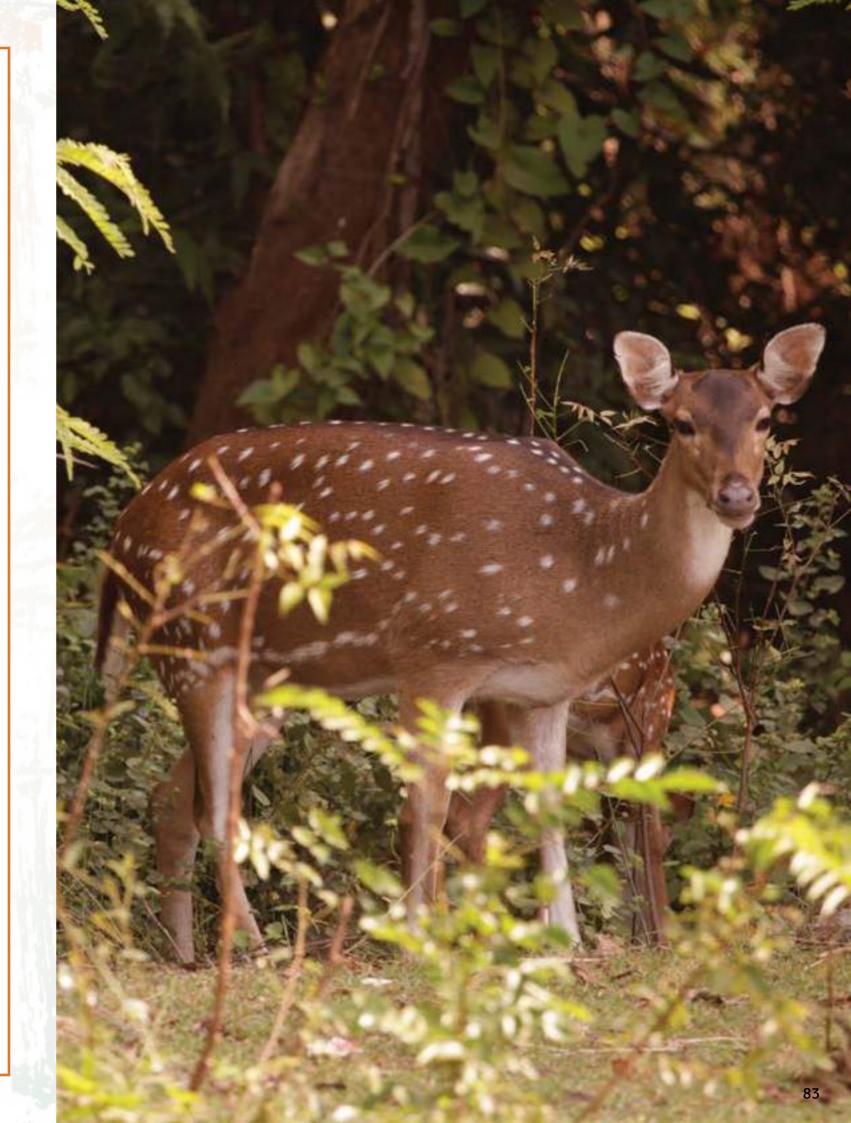
Over the years DRDO has shown considerable improvement in research output and has taken up many ambitious projects such ones on UAV, Ballistic Missile Defence Program, underwater weapons, etc. We ask him how DRDO is coping with the increase in number of project and tighter deadlines. "All labs are working hand-in-hand with many industries, towards meeting all requirements and deadlines'. He added "I guess the key is to maintain a low profile with the media and concentrate on work. This allows us to be more focused in our work". We go on to talk about the measures that DRDO is taking to tap innovating ideas form the student community. "DRDO has been outsourcing many projects to talented student groups. These initiatives are aimed at achieving synergy between DRDO and the students". He exclaims that they have been producing positive results through these initiatives and is delighted to stimulate student participation in DRDO's endeavors. He added that, recently he had signed an MoU for creation of Centre of excellence in Propulsion Technology (CoPT) at a cost of Rs.450 crores in two phases with directors of IIT Mumbai and Madras.

As a child, he developed the habit of dismantling electronic gadgets lying around as he was amazed by their intricate circuitries. "I was driven by fascination. During our time electronics and communication engineering was a hot topic, something new and seemed to be most suitable for me" he says when asked about what shaped his passion for instrumentation and communication engineering.

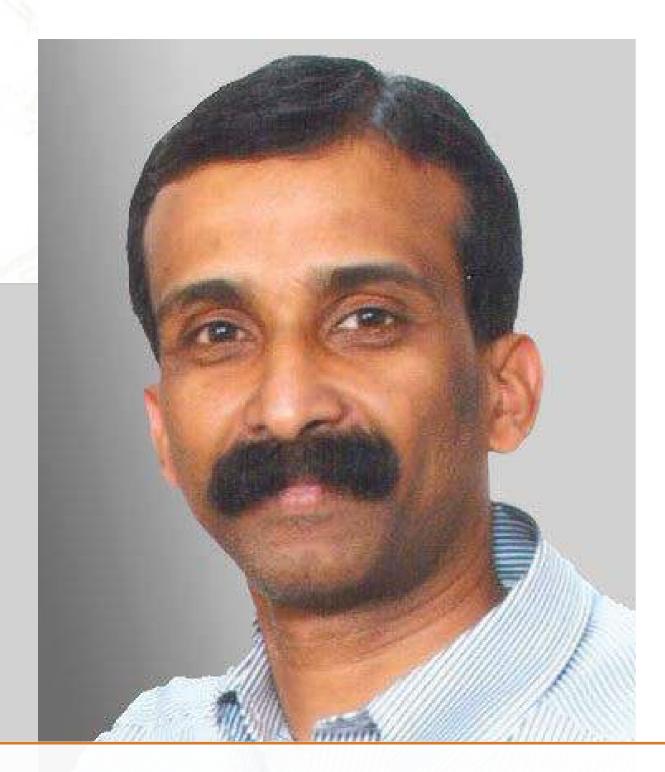
We also talk about his life in IITM. Most of his colleagues at IITM were his batchmates from IIT Kharagpur, which made his journey more enjoyable. However he considers is life at IITM to have been quite challenging as well. Dr. S Christopher completed his Ph.D under the guidance of Prof. M.S Narasimhan, in Electrical Engineering department, who was quite strict and stringent in his ways. "There were many people who failed to complete their Ph.D under him. Hence, I consider my Ph.D as a significant achievement" he exclaims. He tells us that his guide was highly skeptical about his students getting distracted from studies through marriage. However, during his Ph.D, his parents had found an alliance for him and he got married. As soon as his sister informed the professor about his marriage proposal, many friends of mine warned me that I wouldn't last long in the campus". Besides this there were other incidents that posed threat to his completion of Ph.D under Prof. Narasimhan. Despite all of this I was always bestowed with the highest responsibility of holding the lab keys" he says proudly. It was his dedication and hard working nature that won his guide's trust.

We end the interview by asking Dr. S Christopher what qualities he wished to see in the current generation of aspiring researchers and scientists. "The younger generation of researchers, without doubt, have better grasp of technical details and software. There have been instances where we've been outsmarted by them. Scientists have managed to cope up with the IT boom that has occurred over the decade. However, a shortcoming of the mentioned development is a decreased sense of intuition. It would be great if they developed the habit of approximation and estimation rather than resorting to the usage of calculator even for simple things he advises.

Unfortunately, due to lack of time we had to end the interview. Dr. S Christopher left after giving these simple words of advice "Never let others' opinion hinder the endeavors you embark upon. Ensure that you give your best shot at whatever you take up and focus is the key!"



## Dr Thomas A Kodenkandath



1990/PhD/CY Scientist, Hazen Research Co-Founder, Appli3D, LLC, USA

s a child I have heard of this concept of being the jack of all and master of none. As masters are al-ways worth more than a jack and they are needed to complete a task, it is important that an individual becomes a master of at least one subject or area.

However, there are times in life when an individual is needed to do more than one thing, and with perfection. For example, a need to define a good balance in personal and professional life. As part of a balanced life, an individual is needed to be good and efficient not only at professional work, but also at home, self-care, and on relationships fronts.

An individual who is good at more than one area is said to have multiple intelligence. For example Leonardo da Vinci visualised many futuristic concepts in science and technology, and developed practical engineering designs. At the same time, he was also a master of painting and had a sense of colours.

Dr. Thomas A. Kodenkandath, commonly known as Thommy, is one such person whom I have come across.

Thommy holds a PhD degree in Materials Chemistry from IIT Madras. At present, he works for Hazen Resaerch, Inc. and serve as one of the founders and the Chief Science Officer of appli3D, LLC his entrepreneurial effort. He resides in Highlands Ranch in the outskirts' of Denver, in Colorado, USA, with his wife and three daughters. He has extensive experience in the development of functional materials and innovative processing methods for enabling materials, thin film and energy technologies. Until recently he served as the Principal Investigator and Manger for a \$2.7M US Department of Energy Project for an advanced energy storage technology. Thommy is an inventor in 8 granted patents and more than 12 pending applications world-wide. He was part of many materials intensive projects technologies and was an integral part of the team at Ascent Solar Technologies, that developed first ever light-weight and flexible thin film solar cells on plastic substrates which was honored as one the best inventions of 2011 by TIME magazine. He has authored over 75 research papers and has served as the reviewer for National Science Foundation (NSF), Journal of Materials Research and Journal of Electronic Materials.

Above introduction is quite usual for an acclaimed scientist and IIT alumnus. The interesting additional credential is that Thommy is also an award winning and well-published cartoonist. Thommy is one of those few whose left and right brains, both, are strong. As a result, he is able to do justice to both area that he works into - technology, and cartooning. In cartooning, most notable awards won by Thommy are Kerala State Lalithakala Academy Award (2012), UNESCO - IUPAC Award for the International Year of Chemistry Poster completion (2011), Union of Concerned Scientists (US), Science Idol Cartoon Competition (2008). And most recently he received the IIT- Madras' Distinguished Alumni Award (2016) in the category of 'Excellence in Other Walks of Life".

Thommy was born and brought up in Thrissur, Kerala, in a big family having five brothers and one sister. He was the second son of his parents, Prof. K. P Antony and Mrs. Achamma Antony. His father was on the the faculty of Department of Chemistry, at St. Thomas College, Thrissur. Thommy's childhood was spent in simple manner - like many middle class families in India - in enjoying traditions, getting love and affection from family, and relatives, playing with friends siblings, and pursuing school education.

Like most of us, Thommy also has many moments to recall from his childhood, but the one he considers worth mentioning is related to his hobby of collecting editorial cartoon and caricatures clippings from newspapers. Again, collecting sports pictures, stamps, match-box covers etc. are activities that many kids did in that generation. But Thommy went a step further. He got inspired by his collection and he tried sketching a few cartoons during the time allocated for him completing his school homework. It resulted in him missing out on completing his school homework at times. This habit resulted in his first published editorial carob.

Neglecting school homework by a young boy is not something that is easily accepted by teachers and parents. Drawing cartoons during study time was considered as wasting his career building time. But his passion towards cartooning was unstoppable. And he would also fear showing it out to everyone. However it had to happen someday. Thommy goes back in time to recall this heart touching moment of showing one of his cartoons to his father.

Thommy said, "My father was a professor. He was very gentle person. But he was very strict about spending two hours, every day before and after dinner, in studying and doing homework."

"Then how could you steal time for cartooning?" I asked.

And Thommy shared what happened on that life changing evening. He said, "It was the evening when Kerala election results were announced and Mr. K. Karunakaran (who later became the chief minister of Kerala for many terms) was struggling to get the support of enough MLA's to form the government. So, instead of studying or doing my homework, I decided to make a cartoon depicting Mr. Karunakaran as a lottery ticket vendor. The cartoon came out really well."

As he was close to his elder brother Francis, who was also a good artist, Thommy shared his cartoon with his brother. Francis, who had won awards at the Florence (Italy) biennale and a national award, noticed his talent. Francis was so happy about it that he asked him to show it to their father. As a result, Thommy went to meet his father. That was a meeting that Thommy could never forget in his life.

He said, "My father was preparing for his next day's lecture in the collage. He was reading his Chemistry book when I went to show him the cartoon. It was around 10pm at night. I was very nervous, but took the courage and showed it. My father was very upset initially as I did it during my study time. But then to my surprise he immediately changed his reaction and said 'well done' and asked me to take it to the editorial office of one of the most popular daily paper, 'Express', of those times, on the very next day."

Since the main editorial office was far away and Thommy had to go to college, he decided to take it their town office which was on the way for him, but they rejected it.

As he came back home, his father was coming out to go to the college. He noticed that it was too early for Thommy to go and return back from the main editorial office. So he enquired about it and Thommy told him that it was rejected by the town office. He immediately told him to take it to the main office, even if that means missing a couple of hours of college.

Thommy laughed, "Rest is history."

He added, "I bicycled for over one hour to the main office, met the chief editor who laughed it at the first sight and told me that it will appear on the front page of Express the next day."

Thommy earned his first income of Rs. 25/- for his cartoon for Express. Thommy want to dedicate all his cartooning credentials to Shri. P. Sreedharan, the then editor of Express, who also presented him with many volumes of R.K. Laxman's "you said it" series.

With the encouragement from his brother and father, a new door for possibilities had opened for Thommy. Cartooning was no longer a secret activity for him. And he started to get right recognition for his talent. Thommy shared that winning Kerala state award was the next proud moment for him.

I asked, "How did your mother like your cartoons?"

Thommy went back in memory-lane again, and said, "She always claimed that we three (of her six children) came from her genes. She used to draw well especially a 'lady with a handbag', and she would

see her qualities when her kids expressed interest in drawing and cartooning. On the other hand, our dad used to claim it his way, claiming his 'perfection' of drawing benzene ring and other molecular structures in chemistry."

With a smile, I asked, "Any other hobby?" He an-swered, "Following my elder brother, I took up playing hockey seriously and played for the thrissur district and Calicut University. This hobby later fetched me 'grace marks' to earn my admission to the master's program.", Thommy also played three inter-IIT and won two silvers and a bronze for IIT-Madras

As they say, you can always connect dots back-wards, Thommy was doing the same while telling me the odds and ends of his life.

He said, "As my cartoons started appearing in the in the Express newspaper, the municipal chairper-son, Shri. Sankarankutty Menon, also saw them. He was an artist himself and knows my father well. So he suggested that my father should send me to attend a workshop on cartooning that was happening in Cochin. My father liked his suggestion and I went to Cochin. There, during the workshop, I met and got inspired by Abu Kutty and Mario."

He further added, "Though I remember getting compliments for most of my cartoons by people around, there were also times when it was not taken so positively."

He shared one such incident that took place during his final year BSc written examination, where the supervisor, who also happened to be a family friend, came to him and said, "Your cartoon is there, in today's newspaper too. Looks like, you are not worried about the exams".

Thommy admitted, "It was bit embarrassing."

Studies were going on at regular pace anyway.

Time progressed and the dual pursuit of career and hobby continued even after he joined for the PhD program at IIT Madras. For Thommy, a career in science and technology has always been the first preference whenever he was at the point of making choices. However in parallel, he used to participate in cartooning competitions, and publish his cartoons in Malayalam newspapers (weekend edition). Back at IIT, student magazines used to have his presence.

Recalling his IIT days, Thommy said with a smile, "I used to draw cartoons of my friends in my hostel, Cauvery. I have gotten in trouble on some occasions when a few of my friends took offence."

I asked, "How was it with faculty?"

He shared, "My thesis advisor was very appreciative towards my cartoons. He was gracious to congratulate me whenever I won a prize."

However as Thommy progressed with his PhD at IIT, and the PhD work started to look more demanding, he got a signal from his supervisor that he was not very happy Thommy spending his energy on an extra activity, such as cartooning. After noticing his cartoon on "Teacher Evaluation" on the cover of a student magazine, the supervisor called him for a meeting and told, "you know Thomas, publishing cartoons cannot fetch you PhD, only publication of research work can do that"

Thommy reduced his cartooning activities, probably out of fear of making his supervisor unhappy or may be because of the thought that working for a PhD degree will lead to a better career and future. For a few months, a few more of his cartoons kept coming in the Malayalam newspaper in his hometown. However, he completely stopped cartooning in his 3rd year at IIT.

Though his research was keeping him busy, Thommy did feel a void sometimes - as some means of happiness, or satisfaction was lost. It is true that career is important, but one often forgets that mind also needs distraction and rest. It may be by socialising, entertainment, sports or any other hobby. At one end, having a focused mind is needed to do a good job, on the other, having a relaxed mind is needed to do a quality job, and also for living a better life. Understanding and maintaining this balance for an individual is important.

So, the major change that took place for Thommy at IIT was that his cartooning activities were completely stopped because of work pressure. His PhD was progressing well. Thommy admitted that this way of working would have continued for rest of his life, if he would have not had that life changing moment of meeting RK Laxman.

Mr. Laxman, the legendary cartoonist, was invited for a guest lecture at IIT Madras as part of extramural lecture (EML) series. Typically, during these EML's the central lecture theatre (CLT) at IIT Madras is full with students and a few faculty families, as many people like to hear and see famous personalities. As expected on that day, CLT was houseful as RK Laxman was a popular personality.

Like many present during the lecture, Thommy also found a seat for himself for listening to the lecture. The only difference between Thommy and the rest of the audience was that Thommy had an overlapping area of interest with the speaker. And this beautiful co-incidence became the turning point for Thommy's life, as he got introduced to Mr. Laxman by Professor Natarajan, the student dean who knew that Thommy also has interest in cartooning.

Knowing that an IIT student has interests in cartooning also and his cartoons have been published, Mr. Laxman expressed interest in seeing Thommy's cartoons. So, after the lecture, Thommy got his cartoon collection from his hostel room and went to show the same to Mr. Laxman in his room at the IIT guest house.

Mr. Laxman liked most of his cartoons. Further, as conversation about Thommy's recent cartoons took place, Thommy admitted that he had not been drawing cartoons anymore. Mr. Laxman was surprised to know that Thommy had stopped cartooning because of his thesis work pressure. He said "cartooning is a God given talent to, and you shouldn't stop it". Mr. Laxman was inspirational and asked Thommy to pursue both, science and cartooning. He autographed one of his cartoons, which is one of Thommy's prized possessions and left him with many thoughts to converge upon. At one end there were things, important for life, like job, career, IIT education, money etc. All of this, in fact, is a dream for many. Earned identity and job helps one arrange the needful for living a smooth life, be able to create something new, and contribute back to the society. But 'inner peace' by creating an outlet for a talent - one is born with - is equally important.

Thommy visualized the bigger picture after meeting and speaking with Mr. Laxman. As a result, Thommy was forced to think of creating ways to balance his artistic side, along with a strong focus on his PhD work at IIT. And he has been living by this balancing act since then.

After the completion of his PhD, Thommy moved to the Boston to pursue a professional career in his area of research. Thommy and started publishing in Indian newspapers such as Malayalam Patram, India Abroad, India-New England and India West. . Further, along with the good progress in his professional career, he also won many awards in cartooning. Later, Thommy moved to Denver, and he continues to stay there with his family since 2007.

Thommy has been recognised for his cartoons, and active participation among societies which encourage arts at Denver. Cartooning has never been an activity of gaining financial freedom for Thommy, and it has been a source of self-satisfaction.

I asked Thommy if he had met Mr. Laxman again, and he replied, "No! I never met with him again after that life changing EML. However, I happened to meet famous Indian cartoonist Kutty in the US, and we have kept in touch further to that. However, the credit for me still continuing with cartooning goes to RK Laxman."

I also want to share that Thommy had sent me the abstract of his story, titled "My Encounter with RK Laxman", in mid-2014, and we had fixed the month of January in 2015 to cover his story. It has been a sad coincidence that Mr. Laxman passed away in the same month, when I have been speaking with Thommy to understand Mr. Laxman's impact on his life.

Along with that mention, Thommy shared a few of his award winning cartoons.

I asked Thommy about topics or cartoons which are close to his heart. And he recalled his work against 'same sex marriage'. Sharing one of his contextual-cartoons with me, Thommy said, "Same sex marriages became a 'fashion' when many 'celebrities' joined, and openly spoke about their sexual orientations. I recognise God had created a few like that. But I could not accept the new trend when many became 'homosexual' after many years of successful 'hetro-sexual' life. So, I have repeatedly done cartoons on this and one of them brought a lot of comments, and criticism, on the social media."

Another such topic covered in his cartoons, which also became a social media hit, was when RSS criticised Mother Teresa.

As my last question, I asked Thommy how he manages his time between his work, family and cartooning, and he answered that discipline is the key to his ability to manage it all.

Further, detailing on his schedule, he said, "To-wards the end of my workday, I spent a little time on activities related to cartooning. It helps me change my context. As I put my thoughts on paper, in the form of cartoons, it also helps me de-stress."

Thommy added, "Further to which, I spent quality time with my wife and three daughters at home. This time in evening is spent towards fulfilling related roles and responsibilities at home."

Speaking about his family, Thommy also shared that his mother still resides in his hometown in Kerala, India. And the big family - families of all his siblings and cousins etc. - gathers there to enjoy their vacations, to celebrate important occasions, and to renew their bonds.

Thommy has demonstrated how an individual could best utilise both his left and right sides of brains and also do the needful towards his family and the society.

It was really nice speaking with Dr. Thomas A. Kodenkandath (Thommy), a person having multiple intelligences, a fellow alumnus of IIT Madras.

## Dr Ramkumar Dhruva



1996/PhD/CY Senior Vice President Monomers-Asia Pacific, BASF

othing compares to that feeling of working your way up a company and reaching the higher rungs of the ladder. Meet Mr. Ramkumar Dhruva, Sr Vice President, Monomers, Asia Pacific at BASF East Asia HQ, Hong Kong, who is also a recipient of the distinguished alumnus Award 2016. Read on to find out more about what the institute taught him, his opinion on start-ups and about his career.

#### Q. Tell us about your time in BASF. How did you come to work there?

A.I've been with BASF for 20 years now. I did my PhD from IIT Madras in chemistry from '91-'96, and then I joined BASF. At that time BASF had put an ad in the paper, and so I thought "Why not?" and applied. Several of my friends also did, and we ended up having a picnic, going for the interviews in Bombay. Several experts from Germany had come, and after a series of interviews, and I was shortlisted for organic chemistry. I started my work a few months later at their headquarters in a place called Ludwigshafen, 90 km from Frankfurt.

As for the company, BASF used to stand for Badische Anilin und Soda-Fabrik. We celebrated 150 years recently.

In '96, there were close to 65000 people working there. It is still one of the largest integrated chemical manufacturing site in the world. It was like a city in itself. I started working in R&D, and after 2 years, I moved to production, from where I moved to product development. So I had a full range of experience in what the company did.

I also started my polymer research there; water based polymers, solvent based polymers and so on. Later on, I moved to production. We had to scale up what we did in the lab in the plant. So I became a deputy plant manager, and it was a great experience. We first tried our lab process in a small scale pilot plant reaction, and then scaled it up to a 50-100 tonnes capacity. Later, we had to use the product for it's application. We did this in product development. It was after this that I came back to India. I started as a Technical trainee, and it was a great experience & career growth as well.

#### Q. What has made you stay at BASF for such a long time?

Everyone always gets options in the course of their careers. But BASF is unique. See, currently we have 13 business units. I have already worked in several business units. Each of them have different value chain (product), industry & customer focus. So every time I want, the company has offered me something new.

There is no real need for me to look for challenging options outside. I started in leather and textile chemistry, then I moved to water based dispersion, after that I worked in coatings. Now I am responsible for Monomers (Isocyanates, Polyamides etc.,)

#### Q. In between, you had obtained a degree in management. What was the rationale behind that?

I took it up as a part of my career development. I was looking to see what was being offered at management institutions. It was a great experience at IIM Ahmedabad, and understanding problems of companies was made much easier through case studies. It's always easier to analyze in hindsight.

#### Q. Can you tell us about your life here? Which hostel were you in?

I was a day scholar, as I grew up in Madras. I have visited several other IIT campuses too - Delhi and Bombay and others. But the Madras campus has a unique charm about it. We have a house in Velachery, and the compound wall with my house was shared with IIT. So I used to cycle around, sleep in the lab and in general have lots of fun. I used to look forward to the OAT movies, then the cultural fest; Mardi Gras (which is what we call today Saarang), musical shows. I had privilege to listen to stalwarts like MS Subbulakshmi and Mandolin Srinivas. So even though as students we had tough lives, in terms of number of

hours, there are plenty of avenues of relaxation inside the campus itself.

#### Q. Do you have any specific memory of our campus?

There are so many of them. But one thing special here is that the focus of the faculty on students makes us a sort of family, which is unique. We had very close interactions with our professors; we knew their family, children and all. We still have their contacts. This isn't the case abroad; they lack the relationship that we have. This is a beautiful feature of our institute.

#### Q. What is about IIT that has held you in good stead in your career?

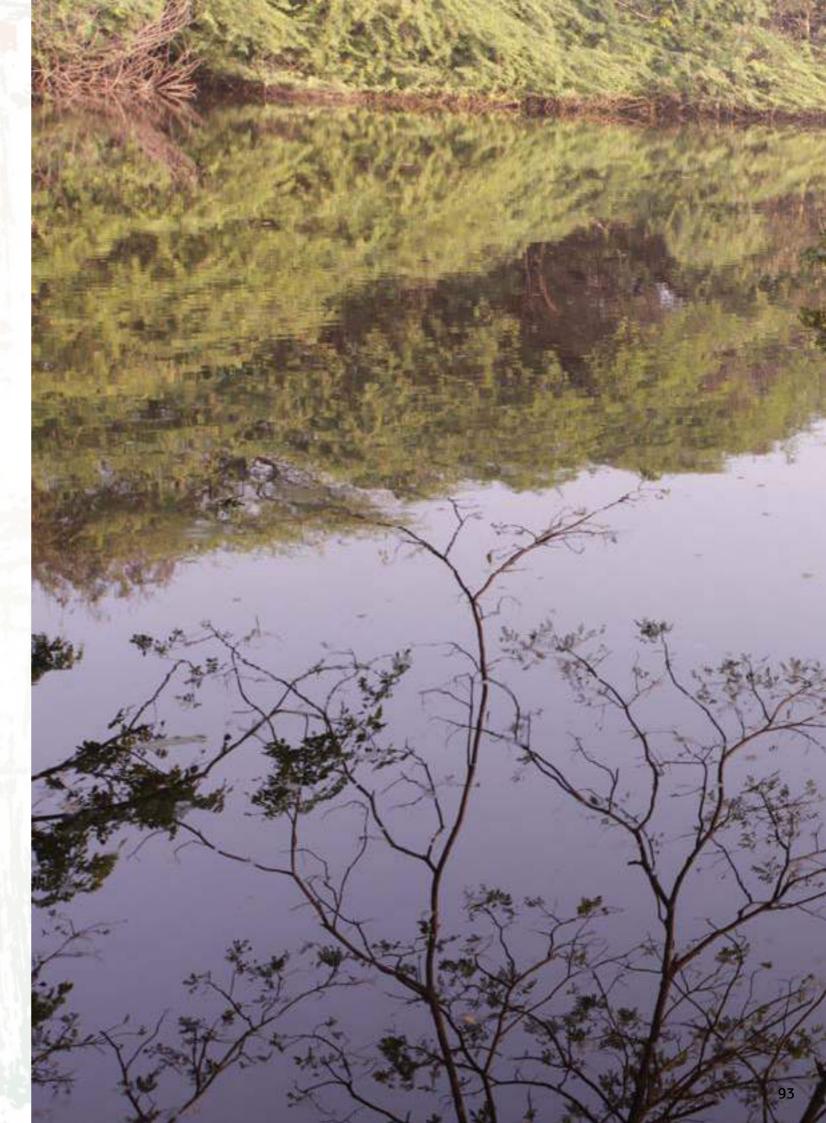
There are many, but if you ask me to pick some, it would be discipline, a sense of purpose, and also a thirst for knowledge- we go further than the basic level of understanding here. Many problems in the academic, corporate or research world can be solved by just identifying the core issue. This is because today, amidst so much information, we tend to lose sight of what's important. The mental and academic training that you receive here help filter away things and makes sure that you spot the right things.

Q. The Startup culture has bloomed in our institute a lot, with several startups coming out of our Research Park. Do you feel that it is a good idea for students to start out independently, or is some experience necessary?

I'd say both are equal but in today's world, when you look around, I feel that it is better to start up immediately. Gaining experience, while useful, also gives a boxed mindset. However, when you start up with that energy and drive in the prime of your life, that fear won't be there; the fear of failure. This is a very important thing. Go out there and enjoy, but also have a plan B. In India, backup is a way of life; even if we're going to the airport, we need multiple routes. With all this uncertainty, it makes sense to have a fallback option.

#### Q. Finally, what would you like to say to the students here?

What I would suggest to the students here is to enjoy and learn as much as possible and to not be scared; as soon as you leave and enter the corporate world, or start up you just don't have the time. As you grow in an organization, you will mostly be alone. Have a good friend circle to discuss, challenge and bounce ideas off. The world is unique and changing; innumerable options are becoming available so everyone has the chance to succeed. Make sure that you make use of it.



#### STAR DONORS



Vellayan Subbiah
1990/BT/CE
1990 Batch - Innovation and
Entrepreneurship Fund
Category-Endowment

The education and experience at IIT have been formative in defining me as a person and have helped me grow. The least I can do is give back to ensure that the institution helps others grow.

**JANUARY** 

### Gopalan Raman Friends of IITM

Lakshmi Raman Memorial Lecture in Mathematics Endowment & Scholarship Category-Endowment

"Parents shape our lives. Educators (and Educational institutions) develop our brains. Endowments for lectures, scholarships and awards have a lasting impact on both students and institutions. Western nations today harvest the fruits of their past investments in education. It is clear,

if we can, we should help educational institutions and learn from visionaries like Annamalai, Alagappa Chettiars. When I was growing up I asked "What can education do for me?". Now I ask "What can I do for education?" "

**FEBRUARY** 



Rajeshwari Ramanan W/O Late Ramanan Ramamurthy - 1976/BT/EE

Mr. R Rmanan Memorial Scholarship Category-Endowment

Mr. Ramanan Ramamurthy, who received his B.Tech in Electrical Engineering in 1976, was very proud to be an IITian. He was instrumental in mentoring technology startups that would go on to become successful ventures, displaying a facility in combining technical expertise with entrepreneurial sensibilities that was ahead of its time. He was involved in several forums supporting the Institute, including initiating career counselling for aspirants by ex-IITians in Hyderabad. I and my family wish for him to be remembered as an ambassador for IIT by instituting a fellowship to aid economically underprivileged, meritorious students to pursue their dreams.

MARCH



#### Wellcome Trust / DBT India Alliance Sponsor

DBT India Alliance Early Carrier Fellowship & Towards Designing Tunable Nano-Machines: Taking Advantage of Protein Disorder Category-Project JULY



#### Nokia Solutions & Networks India Pvt. Ltd. CSR

Design and Development of cost effective wireless broadband solutions for Rural India Category-Project AUGUST



Lalit Mahajan (J. Mitra & Co. Pvt Ltd.)
1968/BT/CH
HTIC Activities
Category-Project
SEPTEMBER

## Aricent

## Aricent Technologies (Holdings) Limited CSR

National Program on Technology Enhanced Learning for Aricent Technologies (Holdings) Limited APRIL

#### Usha Y Ramakrishna Friends of IITM

Prof. Dr. Y B G Varma Award for Teaching Excellence Category-Endowment MAY



#### Rama Koneru & Sudheer Koneru 1990/BT/MT &1990/BT/CS

1990 Batch - Innovation and Entrepreneurship Fund Category-Endowment

We both owe our education and experiences in our early adult formative years to IIT. The friendships and connections formed during our years at IIT are an indelible part of us. A big part of who and where we are today professionally as well as personally is because of our growing process in IIT Madras, the beautiful campus and the divine, serene, spiritual atmosphere there. In addition, Sudheer himself having gone through the process of two start-ups, is interested in encouraging entrepreneurship among young IITians.

JUNE



#### Aricent Technologies (Holdings) Limited CSR

National Program on Technology Enhanced Learning Category-Project OCTOBER



## veri<u>zon</u>

#### Indian Additives Limited CSR

Inverterless Solar System for Off Grid Areas in India Category-Project NOVEMBER

#### Verizon Data Services India Pvt. Ltd.

Inverterless Solar System for Off Grid Areas in India Category-Project DECEMBER

### LEADERSHIP LECTURE SERIES



"How to Make Your Mark in a Changing World" talk by Shri. Vijay Ullal (BT-CH-80) CEO & Founder, Victory Ventures on Feb 3, 2016



"Academic Capitalism in the 21st Century"
talk by Dr. Sridhar Tayur
(BT-ME-86), Ford Distinguished Research
Chair Professor of Operations Management,
Carnegie Mellon University,
on Feb 15, 2016



"Entrepreneurship & Opportunities in New India" talk by Shri. Vellayan Subbiah (BT-CE-90), MD, Cholamandalam Investment & Finance Co Ltd, on Feb 26, 2016



"Civil services as a career option"
talk by Shri. S. Gopalakrishnan
(BT-EE-90), IAS, Commissioner
of Civil Supplies & Consumer
Protection, Govt. of Tamilnadu,
on Mar 4, 2016



"Femto-to-Macro Scale
Engineering Applications
Covering Commercial-ResearchEducational Opportunities via
Nuclear-Centric Technologies"
talk by Dr. Rusi Taleyarkhan
(BT-ME-77), Professor,
Colleges of Engineering and
Science, Purdue University on
Mar 28, 2016



"HAIL - WHAT REALLY
MATTERS?"
talk by our alums,
Shri. Prasanth Vasu
(BT-ME-94)
& Shri. Bharath Madhavan (BT-ME-94)
on Apr 6, 2016



months"
talk by Shri. Mayank
Kachhwaha (BT-ME-08), Cofounder India Lends,
on Apr 8, 2016



"Aerospace Systems Engineering:
The Way Forward"
talk by Dr. Amrutur V. Anilkumar (BT-ME-82), Professor of
Practice of Aerospace & Mechanical Engineering, Vanderbilt
University is on Aug 11, 2016



"Speeding Innovation"
followed by a Town-Hall
discussion: "Energy Chat" – talk
by Dr. Vikram Rao (BT-MT-65)
Executive Director, Research
Triangle Energy Consortium,
Duke University,
on Aug 17, 2016



"Flights of Fancy & Asking for Trouble" talk by Dr. G. Venkat (BT-AE-92), Serial Entrepreneur on Aug 18, 2016



"Enjoy, Learn and Contribute--Leadership in Technology Stream" talk by Shri. A. Sivakumar (BT-ME-68) - Entrepreneur (Sigeda

Global) on Aug 26,2016



"My Experiences as Entrepreneur over 30 Years" talk by Shri. S. Kailasanathan (BT-EE-73), Managing Director, Microsense Private Limited on Sep 2, 2016



"Insights from a day in the life of aTrucker" talk by Shri. Vellayan (BT-CE-90) Managing Director, Cholamandalam Investment and Finance Company Ltd, on Sep 9, 2016



"HOW ARE YOU INTELLIGENT?" talk by Mrs. Harini Mohan & Shri. D. Chandrasekhar (BT-MT-70), on Sep 16, 2016



"The Coming of the Bots: The Future of the Human Workforce" talk by Dr. Santanu Paul (BT-CS-90), CEO and MD, TalentSprint Private Limited, on Sep 23, 2016



"Entrepreneurship Calling" talk by Shri Umesh Malhotra (BT-MT-90), Serial Entrepreneur, on Sep 30, 2016



"Effect of Economies on Social Enterprises"
video lecture by K Sridharan (Founder &
President @ Sankara Eye Foundation, USA;
Distinguished Alumnus, BT-CE-80)
on Oct 2, 2016



"Story of an Entrepreneur:
Sports, Big Data and Finance"
talk by Varun Gupta, (DD-BT-2010) alumnus & Founder, FinoZen, on Oct 21, 2016



"Lessons learnt while going from 0 to 1 in my startup journey" talk by Shri. Geetansh Bamania (DD-ME, 2011), Serial Entrepreneur, on Oct 28, 2016



"Social entrepreneurship Club" Lecture Series" talk by Shri. V. Sashi Kumar (MS-AM-89), Managing Director of Phonix Medical Systems, on Nov 1, 2016

## Other Lecture Series 2016



"What does Industry want?" talk by MS Srinivasan (BT-CH-77, IRO, IITM), at 4:30 pm on Friday, March 4, 2016

## BR Sengupto Lecture Series-2016

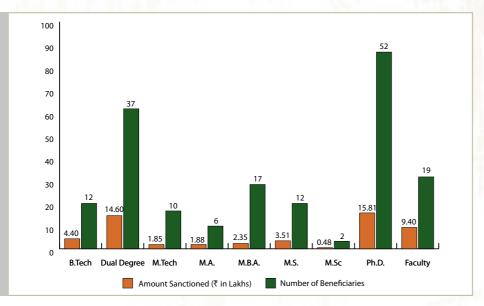


Memorial Lecture"
talk by Dr. Manas K Mandal,
Director General-Life Sciences,
Defence Research and
Developement Organisation
(DRDO), on Apr 4, 2016

"Prof. BR Sengupto

#### TRAVEL GRANT

- Established in 2001
- Designed to help students and faculty travel overseas to present papers at internationally recognized technical conferences.
- Also funds participation in summits, workshops, competitions, internships & exchange programs



Pranali Yawalkar [CS11B046], Dual, Computer Science and Engineering

I am a final year student of Computer Science and Engineering department at IIT Madras. I am enrolled in the Dual Degree (5 year integrated B.Tech and M.Tech) program since August 2011.

I have been working in the field of Data Mining and applications of Machine Learning for close to 2 years now. I have been enthusiastically undertaking courses such as Machine Learning, Data Mining, Indexing and Searching in Large Datasets, Social Network Analysis, Natural Language Processing,



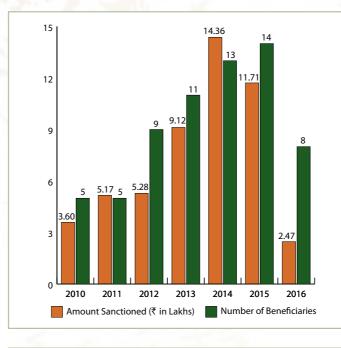
Knowledge Reasoning and Representation, and Memory Based Reasoning, which have helped me broaden my technical knowledge and get insights into the real world problems, work with varied datasets and understand the dynamics of big data and fast computations.

Fast and robust systems for anomaly detection are becoming extremely crucial in this era of data explosion. Our work submitted to KDD, Mantra, provides an efficient solution for anomaly detection on trajectories. KDD being a platform to publish Data Mining work on sizeable datasets to build scalable systems, clearly aligns with my research interest & ongoing work. I made sure to attend the brilliant tutorials before the presentations, took lead in presenting our work and networking with the pioneers of the Data Science & Mining industry. I enthusiastically grasped the ongoing groundbreaking work in this field as was presented by co-attendees. KDD being the first research conference I was attending, not only gave me immense international exposure to state-of-the-art research, and interesting & challenging problems of today's world, but also facilitated as the unparalleled platform to showcase my research work. I perceived the conference as an excellent space to connect with the attendees from academia & industry, received valuable feedback from them on our work & furthered potential collaborations. I kept a pedantic eye out for the most attractive & impactful domain I would wish to pursue my research in.

Attending the KDD conference was one of the best and most motivating experiences ever. Being a part of the large community of Data Mining and interacting with giants from Microsoft, Google, Linkedin, Twitter, etc in the silicon valley has definitely pumped me up for furthering research.

I am extremely thankful to the alumni of IIT Madras for extending the financial help to cover my expenses. As a student, it means a lot to me to get to represent my university at such a prestigious conference with the help of the alumni community. I will forever be indebted to IIT Madras for all the learnings it has given me for the past 5 years, and I wish to be one of those alumni who are helping the current student community reach greater heights.

#### Boeing Travel Grant



- Boeing Travel Grant Awards can be used for travel expenses connected with presenting a paper or project at an international conference related to Aerospace & Defense, or A&D related technology
- Till 2016, 65 students benefited from the programme, `51.71 Lakhs disbursedoverseas to present papers at internationally recognized technical conferences.
- In the year 2016, 8 students benefited and `2.47 lakhs disbursed

#### Pranav Suresh [NA11B050], Dual, Applied Mechanics

I would like to thank Boeing for supporting my travel for participating in the 68th APS Division of fluid dynamics conference. Attending this conference has given me a great opportunity to interact with experts working in the field of fluid dynamics from prestigious institutions such as MIT, Harvard etc. and present my research in front of a diverse audience. I would like to acknowledge the support provided by Boeing in this regard which has help me gain a huge exposure in my field.



#### Vignesh Kumar [ME13S016], MS, Mechanical Engineering

I would like to extend my gratitude towards your humble contribution for my Conference expenses. This Conference experience has opened up new horizons and developed my lateral thinking ability. I am sure that the experience and the contacts that I've got through this will travel long than I could visualize. All these would not been possible without the constant support from the alumni office and you who have partially funded my trip.



#### Sivakumar S [ME11D014], PhD Scholar

At the outset, I would like to express my profound gratitude to my Research Guides Prof. A. Seshadri Sekhar and Prof. B.V.S.S.S. Prasad, and the HOD-Mechanical for nominating me for the prestigious "The Boeing Travel Grant" to the Dean-IAR office.

I am happy to inform that I have successfully presented my research work at Florence, Italy.



My heartfelt thanks to The Dean-IAR, for the moral and financial support (to a tune of Rs. 50,000/- through The Boeing Grant), without which, I couldn't have

made it to the event. I would also like to thank The Deans office team for their help and understanding.

On a whole, the trip was a wonderful event in my research career, which had really served the purpose. Once again I thank one and all for the wonderful opportunity and the incredible experience. Last, but not the least, many hearty thanks to "The Boeing Company" and the officials for hosting this award for nurturing budding researchers like me and pave the way in establishing me as a technology expert in Gas Turbine Technology.

Boeing, I OWE YOU ONE!

#### SSAN ANANYA EDUCATIONAL TRUST

- SSAN ANANYA Educational Trust initiated in Aug 2013 by Mr. S. Swaminathan [1969/BT/ME] for supporting IITM students by providing interest-free loans to fulfill their aspirations
- In total 9 Students benefited from the trust

S.No	SSAN Roll No	Name of the Student	Degree	Department	Loan Amount Disbursed in 2016-2017 (₹) (Jun)	Loan Amount Disbursed in 2016-2017 (₹) (Dec)
1	SSAN-2013-01-001	Vaddi Sai Satwik	Dual	Electrical Engineering	75,000	75,000
2	SSAN-2013-02-002	Samruddhi S Jewlikar	M.Tech.	Biological Engineering	75,000	75,000
3	SSAN-2014-02-004	V P Ferril Samal	Dual	Mechanical Engineering	75,000	75,000
4	SSAN-2014-03-005	Ishu Dharmendra Garg	Dual	Computer Science Engineering	75,000	75,000
5	SSAN-2014-04-006	Dheeraj M Pai	Dual	Electrical Engineering	75,000	75,000
6	SSAN-2015-02-008	Siddarth Devulapalli	B.Tech.	Chemical Engineering	37,500	37,500
7	SSAN-2015-03-009	Neel Devanand Patil	Dual	Mechanical Engineering	75,000	75,000
				Total	487,500	487,500



I am convinced with ssan trust about payment.I am very happy about my selection for ssan trust. I strongly agree that ssan trust will help people those depend on it. I am satisfied about my payment from ssan trust.- Vaddi Sai Satwik



The SSAN educational loan is an inspiring act by Mr. Swaminathan. By initiating this loan scholarship scheme, he has extended a helping hand towards students in need. This also shows the sense of social responsibility. Also this will inspire the students who are getting benefitted by this loan scholarship. I take this opportunity to thank Mr. Swaminathan. I am sure that the students will respect the spirit behind starting this scheme and will act responsibly as expected by the donor. - Samruddhi Sanjay Jewlikar

Firstly, I thank Mr. Swaminathan and SSAN Ananya trust from the bottom of my heart for selecting me for this scholarship. It is impossible to be not inspired by Mr. Swaminathan's story of how he founded the trust and the truly noble mission statement of the same. It will surely kindle a spirit for serving the society in all the beneficiaries of the trust, just like it has in me. - V P Ferril Samal



"At times our own light goes out and is rekindled by a spark from another person. Each of us has cause to think with deep gratitude of those who have lighted the flame within us. - Albert Schweitzer"

With this I thank SSAN educational trust and MR. Swaminathan for believing in me and selecting me for the SSAN scholarship loans. I appreciate the step taken by SSAN trust and MR Swaminathan for helping students in need. I am sure that this would help all of us to grow into a socially responsible person -Ishu Dharmendra Garg



Firstly I thank Mr. Swaminathan and SSAN Ananya trust from my bottom of my heart for selecting me for SSAN Ananya scholarship. This loan scheme has helped many students who are in need. I am sure that the scheme benefits the students in future also. The vision of serving the society of the SSAN Ananya trust is an inspiration for all the students in IIT Madras. I strongly believe that beneficiaries will respect the motive behind initiating this scheme and contribute willingly back to the society. - Dheeraj M. Pai

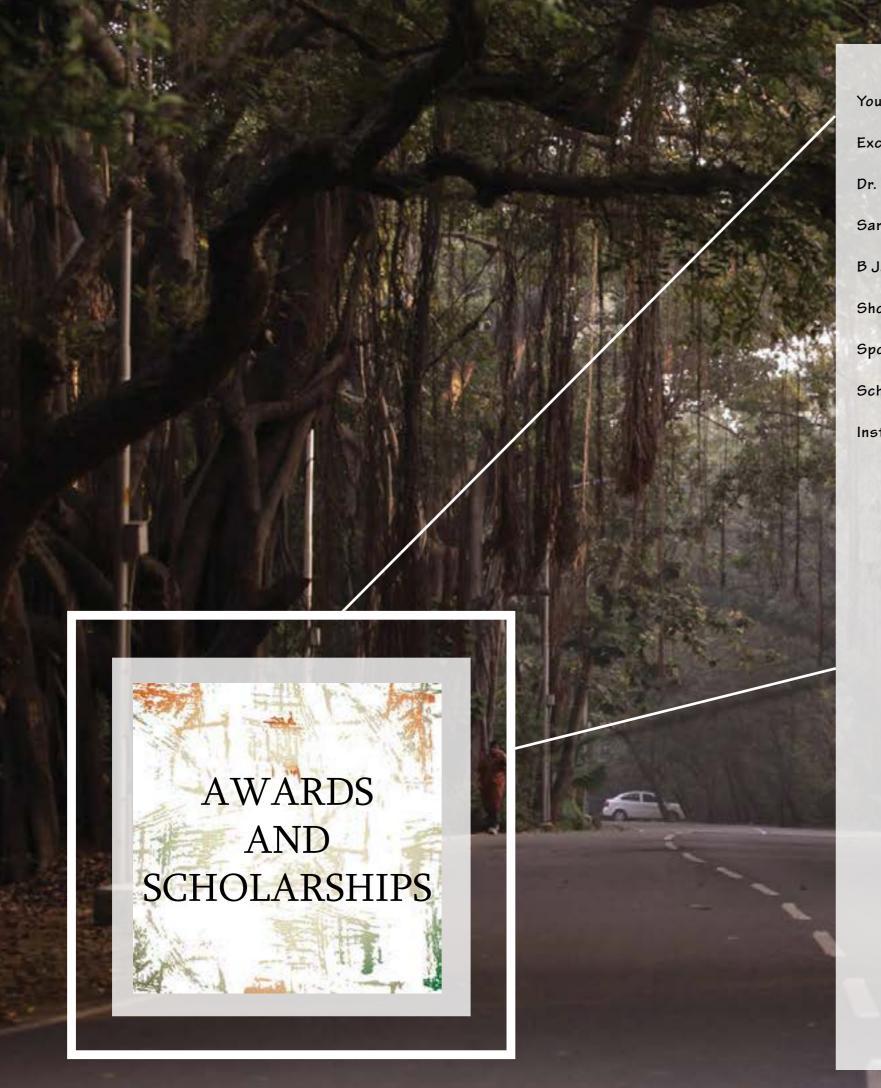


"My heartly Thanks to Mr. Swaminathan and SSAN Ananya trust for selecting me for this wonderful scholarship which has made me a responsible person and give a great relief to my parents financially. I am sure that the beneficiaries will always be thankful to Mr. Swaminathan and he will also be an example of highly compassionate and successful person to all of us and we all will surely try to follow his footsteps as responsible citizens. I truly can't thank you enough sir." - Neel Devanand Patil



"I am thankful to Mr. Swaminathan and the SSAN Ananya trust for granting this loan to me. This has been and will be a great favour to me. This trust will be a great inspiration for students and will cultivate the idea of social service in them. The SSAN Ananya trust provides great opportunity for students with huge aspirations and limited financial opportunities by assisting them financially. I'm grateful to this trust for having their faith in me and giving this opportunity." - Siddharth Devulapalli





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## YOUNG FACULTY RECOGNITION AWARDS

The Young Faculty Recognition Award was instituted by alumnus Dr. P. Balasubramanian [1971/BT/AE & 1973/MT/IM] in order to promote excellence in teaching and high-quality research. These awards were presented to outstanding young faculty members on Teachers Day to acknowledge and felicitate their achievements in their respective academic and pedagogic fields.

#### Mathangi Krishnamurthy

Department of Humanities and Social Sciences



Mathangi Krishnamurthy is a socio-cultural anthropologist by training and has completed her doctoral work from The University of Texas at Austin. She is currently Assistant Professor at the Department of Humanities and Social Sciences at The Indian Institute of Technology Madras. Krishnamurthy's research has focused on the nightly lives of transnational customer service workers in Pune, India and is encapsulated in a soon to be published book manuscript entitled "1-800-Worlds". She has published on questions of English language usage, anthropology of work, and anthropology of gender. Her new projects follow questions of medical practice and identity in relation to the genetic diagnosis of a set of rare conditions of gender ambivalence. Her areas of interest include the anthropology of work, globalization, and affective labor. Krishnamurthy has experience in undergraduate and graduate teaching, social science and ethnographic research, and communication consultancy spanning eight years.



#### Dr. Rupesh Nasre

Department of Computer Science & Engineering

Rupesh is an Assistant Professor in the CSE department at IIT Madras. He completed PhD from IISc Bangalore and Post-Doctoral Fellowship from the University of Texas at Austin. Rupesh is a winner at Yahoo! HackU, has received NVIDIA Special Prize, and holds five US patents. His biggest strength is his students. Rupesh's research focus is in Compilers and Parallelization



#### Dr. Manush Jaiswal

Department of Physics

Dr. Manu Jaiswal graduated from St. Stephen's College, Delhi in 2001 with a degree in Physics (Hons.). He then joined the Integrated PhD program in Physics at Indian Institute of Science, Bangalore. After completing PhD in 2008, he worked as a post-doctoral fellow at the Max Planck Institute for Polymer Research, Mainz and subsequently at the National University of Singapore. He joined as an Assistant Professor in the Department of Physics, IIT Madras in December 2011. He is a recipient of Prof. Anil Kumar Memorial award for best PhD thesis in Physics from IISc. Bangalore and Dr. G.C. Jain Memorial award from Materials Research Society of India for best PhD thesis in Material Science.

His current research interests include the physics and applications of graphene and 2D systems. At IIT Madras, as a principal investigator, he has worked on problems such as the snap-through instability of atomically-thin graphene membranes, graphene membranes as an anti-corrosion barrier for metal surfaces, two-dimensional confined water sandwiched between graphene layers, and also the thermal expansion property of single-layer graphene. Prior to joining IIT Madras, he has worked extensively on mesoscopic physics of graphene, low temperature magnetotransport in carbon nanotubes as well as on applications such as graphene-based biosensors and graphene-based photoconductors. He has published 34 papers in reputed journals, including 4 co-authored publications in Nature series journals. He received the Young Faculty Recognition Award 2016 from IIT Madras for excellence in teaching and research.

### Dr. B Kalyan Kumar

Department of Electrical Engineering



Dr. B. Kalyan Kumar received his Bachelors of Technology from J.N.T.U. Hyderabad, India, in the year 2001. He received Masters of Technology and Ph.D. degrees from the IIT Kanpur, India, in 2003 and 2007, respectively. He is at present an Associate Professor in the department of Electrical Engineering, IIT Madras. His areas of interest include power system dynamics, Flexible AC Transmission Systems (FACTS), restructured power systems, power quality and wind generation systems.

#### Dr. Arun Menon

Department of Civil Engineering



Arun Menon is an Assistant Professor of Structural Engineering. His expertise is in structural behaviour of historical masonry monuments, including diagnostic techniques, numerical modelling, and retrofit and strengthening design.

In 2008, he co-authored a chapter on "Retrofit of Historical and Heritage Structures" in the Handbook on Seismic Retrofit of Buildings, a joint publication of CPWD-IIT Madras-IBC, with Prof. M.S. Mathews, his M.Tech. thesis supervisor at IIT Madras. In 2013, he played a central role in attaining Ministry of Human Resource Development (MHRD), GoI funding to establish the National Centre for Safety of Heritage Structures (NCSHS) at IIT Madras with state-of-the-art experimental and analytical facilities. He is currently Coordinator of NCSHS and Convener of its National Advisory Board. NCSHS is now developing a state-of-the-art 3.0m x 3.0m 10T payload biaxial shake table facility at IIT Madras. NCSHS has been assessing and providing structural retrofit solutions for historical monuments across the country, including the Kedarnath Temple, Rashtrapati Bhavan, Jagannath Temple (Puri) and IIM Ahmedabad buildings.

Arun Menon has served as a specialist to UNESCO for earthquake damaged structures in the Cebu and Bohol Islands of the Philippines (2014), to the Dept. of Culture, Royal Government of Bhutan for the Wangdue Phodrong Dzong (2015) and to the National Historical Commission of the Philippines (2016). He is actively involved in the Bureau of Indian Standards (BIS) as a Member, particularly for codes on structural masonry and seismic retrofit.



## Vignesh Muthuvijayan

Department of Biotechnology

Dr. Vignesh Muthuvijayan is an Assistant Professor in the Department of Biotechnology, IIT Madras. He earned his Bachelor's degree in Chemical Engineering from ACTech, Anna University. He went on to pursue his Master's degree in Chemical and Biochemical Engineering at University of Maryland, Baltimore County and his PhD in Chemical Engineering at Oklahoma State University. He also worked as a post-doc at Johns Hopkins University. His research interests are in the area of biomaterials and their applications. He works on improving biocompatibility of implants, developing controlled drug delivery systems and designing novel scaffolds for tissue engineering and wound healing applications.

# KESHAV-RANGNATH EXCELLENCE IN RESEARCH AWARD

Keshav-Rangnath Excellence in Research award was instituted by alumnus Dr. Prakash Keshaviah [1967/BT/ME & 2015 Distinguished Alumnus] in order to recognize the excellence in journal publications. These awards were presented jointly to scholar and a faculty member on Alumni Day

#### Aruna Kumar Chelluboyina(BT11D009)

Guide Name : Dr. Rayala SureshKumar, Biotechnology Dept.



#### Vishnu R. Unni (AE13D006)

Guide Name: Dr. R. I. Sujith, Aerospace Engineering Dept.



#### EXCELLENCE IN TEACHING AWARD



Srimathi Marti Annapurna Gurunath Award for Excellence in teaching was instituted in 2011 by Prof. Marti Subrahmanyam [1967/BT/ME] & 2004 Distinguished Alumnus.

Prof. Chandra Sekhar from Computer Science and Engineering department received the award for this year, who is also an alumnus of IIT Madras.

Citation of Prof. Chandra Sekhar

Prof. Chandra Sekhar received the B.Tech. degree in Electronics and Communication Engineering in 1984. He then received the M.Tech and Doctoral degrees from IIT Madras in 1986 and 1997 respectively. He has been a faculty member in the Department of Computer Science and Engineering from 1989. He was a JSPS post-doctoral fellow at Center for Integrated Acoustic Information Research, Nagoya University, Japan between 2000 and 2002.

Prof. Chandra Sekhar's technical areas of expertise include Speech Technology, Artificial neural networks, Kernel and large margin methods, Deep learning, and Content-based information retrieval. He is an active researcher, which is demonstrated through research guidance of a large number of scholars. He has guided 15 MS scholars and 13 PhD scholars, and currently 7 PhD scholars and 5 MS scholars are working under his guidance. He has been involved in a large number of sponsored research projects funded by DRDO, DIT, DST, and DERL. He was one of the early faculty members at IIT Madras to show that machine learning techniques based on support vector machines can be successfully used in image processing, speech processing and related domains. This has opened up vistas for other faculty in IIT Madras to further investigate the use of such techniques.

Prof. Chandra Sekhar has handled a wide range of UG and PG courses, both core and electives. These include Pattern recognition, Kernel methods for pattern analysis, Artificial neural networks, Computer Architecture, Speech Technology and Digital Logic Design. Prof. Chandra Sekhar enjoys teaching large classes. He is a very passionate teacher. He spends considerable time with students outside the classroom. In some of his courses, students across departments, across programmes (BTech., DD, MTech, MS and PhD scholars) register. Thus,

these courses have large numbers of registered students. His course feedback statistics compiled over the years are clear evidence of the high regard and esteem that his students have for him. His highly positive attitude towards the subject matter and towards students is very instrumental in motivating students.

In the classroom, one of the hallmarks of Prof. Chandra Sekhar's teaching is his immense patience in explaining difficult mathematical concepts to the students and elegantly showcasing the practical applications of these concepts to real-world problems in domains such as image processing, speech processing and pattern recognition. In each class, he patiently summarizes the key issues taught in the previous class in the beginning, and does the same at the end of each class. He also comes up with illustrative examples that help students understand the concepts easily.

Apart from his consistent academic performance, he has also demonstrated his multi-tasking ability through his services as a Warden, Vice-Chairman GATE, JAM, Chairman GATE, JAM and Chairman of M.Tech. Admissions Committee. He has performed an admirable job in each of these assignments that demonstrate his dedication towards all his Institute level responsibilities. He is also very systematic, punctual and methodical in the way he handles all his responsibilities.

Prof. Chandra Sekhar is an excellent role-model as a teacher, professor, research supervisor, and administrator. The Institute is proud to confer upon him the "Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching" for his demonstrated proficiency and innovativeness in teaching.

Prof. Chandra Sekhar receiving the award from Mr. Kris Gopalakrishnan, Co-founder, Infosys and Chairman, Axilor Ventures on 57th Institute Day – Apr 25, 2016

# DR.YBG VARMA AWARD FOR TEACHING EXCELLENCE

#### SARASVIDYA SCHOLARSHIP

## Donor Name: Dr. YBG Varma Family

Award Objective The faculty follow an academic process by which students are motivated to learn; have a

positive influence on how they think, act, and feel; guides students successfully through exploration of the creative, critical thinking, and problem solving processes; encourages

students to think and empowers them to find their own creativity.

Scope of Award Faculty of Department of Chemical Engineering IIT Madras, teaching undergraduate and

graduate programs - full semester course including electives.

The Award 1. A Silver medal with gold Plating

2. Cash award - `30,000.00

3. Certificate



The award given to Prof. R Ravi, Department of Chemical Engineering on AlumNite (July 23rd)

## Donor Name: 1990 batch Saraswathi Hostel alumni

#### Endowment created for Rs. 21 LakhsUSD 1 Million

#### About the Scholarship

Rs.1,50,000/- for top two students of 2nd, 3rd year and 4th year student in B.Tech/ Dual Degree

#### Criteria for selection:

1. For the year 2016-17: (2 new students)

Top two students from B.Tech /Dual Degree with highest CGPA at the end of 2nd Semester (2015 Batch)

2. For the year 2017-18: (2 new students + 2 renewal)

Top two students from 2016 batch from B.Tech/Dual Degree with highest CGPA at the end of 2nd semester and renewal of 2015 batch subject to CGPA not below 7 and GPA not below 6.

3. For the year 2018-19: (2 new students + 4 renewal)

Top two students from 2017 batch from B.Tech/Dual Degree with highest CGPA at the end of 2nd semester and renewal of 2015 & 2016 batch subject to CGPA not below 7 and GPA not below 6.

- 4. From 2018-19, every year two fresh students will be selected and 4 students will get renewal. Annual commitment will be Rs. 9 Lakhs per annum.
- 5. Student should not be receiving any other scholarship/fee waiver/grant except merit based scholarship like NTSC
- 6. Parental Income should be below 12 lakhs.

	SI.No.	Roll No.	Name CGPA at the end of 2nd	Semester	Amount of Scholarship
4	1	EE15B122	PRADYUMNA V CHARI	9.97	Rs.1,50,000/-
	2	EE15B123	NAMIDA MOHAMMED	9.97	Rs.1,50,000/-

### B JAYANT BALIGA SCHOLARSHIP

## Donor Name: Dr. B Jayant Baliga [1969/BT/EE]

Endowment created: Rs. 15.7 Lakhs

About the Scholarship

Reimbursement of Tuition fee (for one semester) for one student of 3rd year and 4th year in B.Tech Electrical Engineering Dept.

Criteria for selection:

- 1. One B.Tech. student of Electrical Engineering Dept. with highest CGPA at the end of 2nd year and 3rd year respectively will be identified by Academic Section.
- 2. The scholarship amount will be disbursed to student by Dean (IAR).
- 3. The details of the student along with testimonial will be communicated to the donor through Office of Alumni Affairs.

S.No	Roll No.	Name	CGPA	Amount of Scholarship	Feedback of Recipient
	EE13B127	Rama Subramanian	9.70 (B.Tech) (at the end of 6th Semester)	₹ 45,000/-	A scholarship like this gives a positive feeling and encouragement to the awardee/ recipient. Scholarships encourage students to excel in academics. Scholarships instituted also show the philanthropic nature of the donor and their generosity in general and such donations in the field of education show their desire to encourage students and in a broader sense, the development of the country. Also, the act of giving something back to your alma mater (in the form of donations/awards etc.) is a highly appreciable one. I express my gratitude to the donors of this award for encouraging me and I will strive to achieve more in future.
2	EE14B101	Rajat S Rao	9.92 (Dual Degree) (at the end of 4th Semester)	₹ 45,000/-	Thank You very much for awarding me this scholarship. I accept it humbly and will continue to do my best.

# SHOMA AND PRASAD SETTY— STUDENT DISTRESS FUND

## Donor Name: Shri. Prasad Setty [1992/BT/CH]

Endowment created: Rs. 59 Lakhs

#### About the Scholarship

A "Student Distress Fund" under the auspices of IIT Madras may be sponsored by alumni. The fund will cover large, unexpected expenses incurred by the student due to causes such as personal or medical emergencies. The decision on a particular student will be taken by a Committee comprising of Dean of Academic Courses and Dean of International & Alumni Relations. The student's case must be referred to the Committee via the Student's Faculty Advisor, and Head of the Department. The purpose of this Endowment is to use the annual interest accruals to fund the above said reasons.

## 2016 Beneficiaries

S. No	Name of the Beneficiary	Roll No	Email Id	Amount Given (in ₹)
1	Shamshad Ahmad	AE11B031	shamshadahmad72@gmail.com	55,463
2	Mohammad Salim Khan	CE12B094	salimiitm@gmail.com	20,000
3	Kakumanu Himaja	CS9B014	himaja.cs@gmail.com	8,900
4	Kartik Roy	MA14C022	ma14c022@smail.iitm.ac.in	24,800
5	Raj Kumar.M	EP09B017	raj225tnsc@gmail.com	15,000
6	Y V R Sashi Sekhar	CE13B062	yvrsashisekhar@gmail.com	20,000
7	Ashish Choudhary	ME14B010	me14b010@smail.iitm.ac.in	25,000
8	Ankit Patel	NA14B003	ankitpatel080295@gmail.com	24,850

#### Shamshad Ahmad AE11B031



Mr. Shamshad Ahmad received the cheque of Rs. 24,850 on Mar 2016

Mr. Shamshad Ahmad received another cheque of Rs. 30,613 on Oct 2016

I would like to thank all of the generous people who have donated to me student distress fund for education. This was a BIG help for my 2016 spring semester. I will continue to pursue my studies because of you. I am humble and forever grateful. There is still time to donate.

#### Mohammad Salim Khan CE12B094



I got a good opportunity to study in IIT Madras, but I was disappointed by the financial problem to continue my study in IIT. in this moment you stood to support me to do complete my study and supporting me every semester to pay my educational and hostel fee. Like as every semester you given me the fee for this semester (jan-may-2016). That's I want to say you, You are so thank full for me. Thank you so much again.

Kakumanu Himaja CS9B014



#### Karthik Roy MA14C022



Thank You Prof K Ramamurthy Sir & Prof. R Nagarajan Sir for providing me the Scholarship Shoma and Prasad Setty Student Distress Fund instituted by Mr. Prasad Setty (1992/BT/CH). I am very much grateful to both of you for considering my situation. I already have collected the Cheque and I will pay all the fees. Once again thank you very much.

#### Raj Kumar EP09B017



I'm very indebted to you for providing me with financial help during my hard times towards my academic and hostel fee. I heartfully thank you for providing me help on behalf of "Shoma and Prasad Setty Student Distress Fund".

#### Y V R Sashi Sekhar CE13B062



I feel blessed to get this helping hand from the alumni of our Institute. This scholarship from the "Shoma and Prasad Setty Student Distress fund" stands as an example the culture that this campus has implanted in the minds of its students. I take this as an inspiration to look forward to contribute later to such initiatives and experience the joy of giving back.

Ashish Choudhary ME14B010



I don't know how to express my feeling in the way of writing. But really now I'm in the extreme kind of sense of obligation. I have read somewhere that the gratitude is the best attitude. Now, I got what does that line mean. Your generosity and your help means a lot me. I will be always grateful to you. I would have been suffered a lot without your kind help. Even you don't know me and still you are a very kind to me. So, thank you very much for giving me the distress fund for one semester and helping me to get out from my financial problem and thanks for being such good to me. I will never forget you and your kindness towards me and I will take the maximum benefits from your help in the way that one day I can help someone who is in the need like me. Once again, thank you very very much.

Ankit Patel NA14B003



I am Ankit Patel (na14b003), I want to say thank you very much for financial help. Thank you once again.

#### SPONSOR-A-STUDENT

Sponsor-A-Student project was conceived in 2012, where alumni donors could choose the kind of support they wanted to give to needy students:

- Tuition Fees For Rs. 102,000 (USD 1800 ) per year, the donor can pay the tuition fees for one student
- Tuition & Hostel Fees For Rs. 80,000 (till 2012 batch) ( USD 1600 ) and Rs.1,50,000 (from 2013 Batch onwards) (USD 2500) per year, the donor can take care of hostel fees as well
- Airfare Option 1 For Rs. 75,000 ( USD 1500 ) per year, the donor can cover the airfare of one student attending an International event, such as a conference, workshop, summit, competition or internship
- Airfare Option 2 For Rs. 1.5 lakhs ( USD 3000 ) per year, the donor can cover all travel expenses for one student attending an International event
- Semester Abroad Option 1 For Rs. 1 lakh ( USD 2000 ) per year, the donor can sponsor a "Semester Abroad" for one student at a nearby country (e.g., Taiwan, Singapore)
- Semester Abroad Option 2 For Rs. 2 lakhs (USD 4000) per year, the donor can sponsor a "Semester Abroad" for one student at a more remote country (e.g., USA, Europe)
- Departmental award for 10 years one-time payment of Rs. 1 lakh, the donor can sponsor a departmental award for 10 years to be given on "Alumni Day" (day after Convocation in July)
- Institute award for 10 years one-time payment of Rs. 2 lakhs, the donor can sponsor an Institute award for 10 years to be given on "Alumni Day" (day after Convocation in July)

The 2003 batch decided to direct their donations towards this project and sponsored the tuition and hostel fees for a student for two years (2012 and 2013).

Other individual donors have also contributed towards this program and so far 10 students have received Tuition and Hostel Fees through this.

#### Kamma Sriharsha EE15B033

Sponsored by Srikant Vatturi [2000/BT/ME]



I have received the money Rs. 1,02,000 sponsored through the award of adopt a student scholarship and I would like to Thank you Mr. Srikant Vatturi for this scholarship provided to me. It would help me a lot to pursue my education and I would entrust you that I would keep up my performance in the college at my studies.

### Maryala Nikhil CS13B017

Sponsored by 2003 Batch



I thank you heart fully for the confidence you have shown in me and providing me the scholarship for the third year continuously. I assure you that I will not let you down, and bag the scholarship for the fourth year also. I thank you very much for the support you have extended to me and would like to share my achievements with you:

- Became the placement Coordinator, and trying to become the Branch Counsiller.
- · Bagged internship at Microsoft and Goldman Sachs for the coming summer.
- Did an internship over the last summer in a start up.
- Overall CGPA of 8.43.

All this wouldn't have been possible without your support, and encouragement. I am sure that I am gonna support some student, after my college, just like you, because you are what I look up to, and what I want to become.

#### Nagireddy Harishreddy ME13B050

Sponsored by S. Ramakrishnan [1974/BT/ME]



Feeling extremely happy about it. Encouragement for me through scholarship is very needy and helpful. So i take this opportunity to thank my Donor and Alumni Network IIT madras, they are doing really great job and i hope they continue their good work.

#### M Sai Bharadwaj Reddy CH12B043

Sponsored by Dr. K.V.Reddy [1972/MSc/CY] & 2017 DA



I am very happy to receive Adopt a student Scholarship. This scholarship amount has helped me greatly in paying my fees and gave a confidence to work on my area of interest. This is a great opportunity for any student of my cadre and I would like to make best use of this opportunity and keep up your trust.

#### Rokad Rushi ME14B056

Sponsored by Lalit Chowdhary [1986/BT/EE]



Thank you for offering me this scholarship. I have received it on time and I would make the best use of this scholarship.

I am really grateful of you to offer me assistance to pursue my education goals.

#### Shubham Yogesh Agarwal ME13B125

Sponsored by Dr. Girish Kamath [1986/BT/EE]



I want to take this opportunity to thank you for the financial support I've got over the 2 years. It inspires me to work harder and follow my interests. I've been an active student in IIT Madras, involving myself in various activities to develop exponentially and make something out of these plethora of things that I do.

## Rony Gracious CE12B051

Sponsored by Dr. Girish Kamath [1986/BT/EE]



I am excited to be receiving adopt a student scholarship. You have inspired me to study more and achieve more and reciprocate. I am grateful for the financial support that you are providing.

I assure you that I will work hard to meet your expectations.

### Meka Gayathri CS12B043

Sponsored by 2003 batch



I am immensely thankful to you for giving me this opportunity once again as a part of the Sponsor-a-student scholarship. Being in my pre-final year, I'm in a phase right now, where I have started making plans for my future. Having done a summer internship and also doing one right now (part-time), I have a sense of feeling of being independent, and being responsible for myself. I also plan to go for a semester exchange, to broaden my horizons and learn as much as I can from staying in a foreign land. Therefore, at this point of time for me, every penny counts and makes a difference. I am incredibly grateful for receiving this scholarship once again, for the fourth year in a row. I sincerely hope, one day I would be in the same position as you, helping another student fulfilling their dreams.

### Teratipally Srikar CS15B037

Sponsored by Client Network Service India Pvt Ltd



I am writing this to express my sincere gratitude to you for making this scholarship possible. I was thrilled to learn of my selection for this honor and I thank you for your generosity and support. I promise you I will work very hard and eventually give something back to others and possibly a scholarship to future students like myself.

#### SCHOLARSHIPS

## 64 Foundation Freeship Scholarship

The 64 Foundation Freeship Scholarship were instituted by 1971 batch alumnus to provide additional financial support, topping up merit scholarships, for deserving students.

To qualify for this waiver, the students should have been at IITM since July 2012 and fall within the boundary of 4.5 lakh annual parental income. B.Tech and dual degree students will receive the Foundation's support for a full 4 years, while M.Sc and MA students will receive it for 2 years. Till 2015 689 students has been benefitted through this Scholarship. In 2016, 100 students have benefitted.

## Kalidas Madhavpeddi Scholarship

Kalidas Madhavpeddi Scholarship will be given to the students who are best in the academic, demonstrated leadership & teamwork and social service on campus or campus. This scholarship was instituted by **Kalidas Madhavapeddi** [1978/BT/CE].

## Lakshmi Raman Memorial M. Sc Mathematics Scholarship, Chemistry Scholarship, Physics Scholarship

Lakshmi Raman Memorial Scholarships were instituted by **Mr. Gopalan Raman** for the girl student in three departments (Mathematics, Physics & Chemistry) in two different criteria. Below are the criteria for the different scholarship. Every year Amount of Rs. 28,200/- will be given as the scholarship for each student.

For the first year MSc girl student with the highest Rank in Joint Admission Test (JAM).

For first year MSc girl student with highest CGPA at the end of 2nd semester

S.No	Department	Name of the student	Description
1	Mathematics	Ms. Akanksha Garg -	Highest rank in JAM
2	Mathematics	Ms. Kruthika Kulkarni	Highest CGPA
3	Physics	Ms. Monika	Highest rank in JAM
4	Physics	Ms. Pooja Jethwani	Highest CGPA
5	Chemistry	Ms. Suganya Bagchi	Highest rank in JAM
6	Chemistry	Ms. Nisha	Highest CGPA

## Merit-Cum-Means Scholarship

Till 2015, the Tuition fee for a student was Rs.90,000/- per annum, the Merit-Cum Scholarship fully supported the total cost of tuition fee.

From 2016, tuition fee has been revised to Rs.2 lakhs per annum. The Govt. Merit-Cum Scholarship has been revised to 2/3rd of Rs.2 lakhs (ie 1.33 Lakhs). This leaves a sum of Rs. 66,667/- to be borne by the student. The endowment of Rs.10 lakhs is used to support the tuition fee for a student every year.

#### Eligibility Criteria for scholarship

- · Parental income should be less than 5 Lakhs per annum
- B.Tech/Dual Degree

Both Corporates and alumni have been sponsoring for this scholarship. In 2016, 30 students has been benefitted through this scholarship.

## Smt. Hattiangadi Manorama Bai Scholarship

#### Donor Name: Dr. Vikram Rao [1965/BT/MT]

Smt. Hattiangadi Manorama Bai scholarship is instituted in the year of 2014. Award is given to the most accomplished and most financially needy female student admitted to the B.Tech program. This scholarship includes tuition, room, board and a stipend.

S. No.	Roll No.	Name	Amount of Scholarship per Year
1	CE14B032	Nori Archana	Rs.1,40,000/-
2	CS16B012	Janani S	Rs.1,40,000/

## Sriram Srinivasan Memorial Scholarship

#### **Donor Name:** Srinivasan V [1977/BT/MT]

The Tuition fee and Financial assistance of Rs.1,000/- per month will be given as the scholarship for the student every year. This scholarship is renewed for every year as the students have secured CGPA of not less than 6.5. Below are the students.

S.No	Roll No.	Name
1	CS16B001	Amireddy Prashanth Reddy
2	CS13B002	Alameluvari Anirudh
3	EE14B024	Dodla Venkat Revanth
4	CS15B014	D Tejavardhan Reddy

# INSTITUTE DAY, CONVOCATION AND "ALUMNI DAY" PRIZES

52

alumni sponsored Institute
Prizes were distributed to the
students in 57th Institute Day
(Apr 25th)

18

alumni sponsored Convocation Prizes were distributed to the students in 53rd Convocation Day (July 22nd)

20

Alumni sponsored "Alumni Day" Prizes were distributed to the students in AlumNite (July 23rd)



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## HERITAGE CENTRE DAY

### REUNION DAY

- Heritage Centre Day held on Mar 3 @ IC & SR Building.
- It is the 10th Anniversary of IITM 'Heritage Centre".
- R. Natarajan, the first Registrar of the institute, addressed the audience.
- · Re-vamped Website launched.
- Two-week exhibition held from Mar 3 to 18 at the Heritage Centre along with NIOT.
- 1964, 1965 & 1966 alumni participated.
- Real turbine that was installed at Vizhinjam is displayed along with Posters at the exhibition.









- 500 alumni & their family attended the event
- 1971, 1981, 1991, 1996 & 2016 had reunion on Dec 26th
- Dean I&AR delivered welcome speech
- Ravi Venkataraman (IITMAA President) spoke about the various initiatives taken up by IITMAA.
- Subramanian (Development Office) spoke about the various sponsorship opportunities available for alumni and corporate.
- Prof. Ashok Jhunjhunwala, Prof. S Sampath Institute Chair Professor and Faculty-in-charge of IITM Incubation Cell & Research Park, informed the gathering as to how the entrepreneurial eco-system at IIT Madras.
- Panel discussions held with young entrepreneurs from Detect Technologies, Ather, Planys, Air Ok, Hyperverge, Uniphore, DocsApp, Crion, Airwood, and Shipsy
- Prof. S Sampath Institute Chair & Girija Muralidharan Institute Chair were officially launched.
- Prof. Bhaskar Ramamurthi (Director) spoke about the strength of students pursuing their post-graduation and doctoral studies at IITM, strategic vision 2020 & announced the 2017 DA
- Family program @ CLT





## IITM ALUMNI FACULTY MEET

## 57<sup>TH</sup> INSTITUTE DAY

- IITM Alumni Faculty Meet held on Mar 17th.
- 22 alumni faculty, Dean I&AR, Development Office Team participated.
- Dean mentioned ways to connect with alumni to enrich alumni database and sought IITM alumni faculty help.
- Subramanian spoke about the DO initiatives.
- Joseph Thomas gave overview of CSR.
- Mrs. Sujatha gave vote of thanks & also provided the statistics of Travel Grant.







- Chief Guest Mr. Kris Gopalakrishnan [1977/MSc/PH] & [1979/MT/CS],
- Co-founder of Infosys
- Institute Day was celebrated on April 25th, 10 out of 12 DA's received their awards.
- 52 alumni sponsored Institute Day Prizes were given to the students.
- Dr. C. Chandra Sekhar, CS Dept. received Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching instituted by Dr. Marti G Subrahmanyam [1967/BT/ME]







## CSR ORIENTATION MEETING

## ALUMNITE

- Meeting held on May 13th.
- CSR program presentation by Joseph Thomas.
- 15 new proposals received.
- Faculty overviewed the CSR projects currently engaged.









- AlumNite was held on July 23 in CLT.
- 380 alumni with family attended the event, 109/380 are 2016 grauduants.
- 2005 & 2010 batch had reunion on same day 45 alumni along with family attended
- Dean I&AR delivered welcome speech.
- Short remarks given by Ravi Venkataraman (IITMAA President), Sagar Pushpala (IITMAANA President), Mr. Thiru Srinivasan (PAN IIT Alumni Industry Interaction Centre)
- Abhishek Sharma student representative & 2016 graduant given the ceremonial cheque of Rs.35 lakhs towards 2016 Batch Caution Deposit Waiver Scheme.
- V Balaraman Chair was officially launched, which was sponsored by 1981 batch alumnus.
- Conferred the "Distinguished Alumnus" Award to
- Jayant Baliga [1969/BT/EE] 1999 DA
- Dr. S. Christopher [1989/PhD/EE] 2016 DA
- Dr. Aravind Srinivasan [1989/BT/CS] 2016 DA
- Y B G Varma Award Launched.
- 12 Alumni sponsored prizes & awards were given.
- Cultural performances were given by IITM band & choreo team.





## IITMAANA DINNER RECEPTION

## IITMSAT STRUCTURE HANDED OVER AT INDO MIM

- IITM Alumni Faculty Meet held on Mar 17th.
- 22 alumni faculty, Dean I&AR, Development Office Team participated.
- Dean mentioned ways to connect with alumni to enrich alumni database and sought IITM alumni faculty help.
- Subramanian spoke about the DO initiatives.
- Joseph Thomas gave overview of CSR.
- Sujatha gave vote of thanks & also provided the statistics of Travel Grant.









IITM Satellite structure handed over at INDO MIM on July 27th







# DA FORUM & EVENING WITH DIRECTOR

## IITM RECEPTION AT HILTON

- Distinguished Alumni, Donors, IITM Faculty along with Director participated in the event held on Apr 24th.
- DAAs & Donors were recognized for their contribution to the development and growth of the Institute.









- As part of the outreach activity, a reception was hosted at Annual A.I.CH.E meet in San Francisco, Hilton on Nov 15th.
- Prof. S.Pushpavanam [1984/BT/CH], Dr. Ashok Krishna [1974/BT/CH 2012 DA] & Dr. Kamala Krishna [1983/BT/CH] were participated with other alumni.
- New developments in Chemical Engineering Dept. have been shared.









## IIT BOMBAY FUNCTION

## PAN IIT ALUMNI DEANS MEETING AT IIT ROORKEE

- Dr. Krishna Chivukula [1970/MT/AE] & 2015 DA of IITM also received Distinguished Alumnus Award 2016 in IIT Bombay on Mar 10<sup>th</sup>.
- Prof. R. Nagarajan and Prof. David Koilpillai attended the event.







- Alumni Deans meeting at IIT Rourkee
- Prof. Mahesh Panchagnula, Mr. Subramanian & Mr. Suresh attended the event on Mar 11 & 12.
- IIT Delhi , IIT Bombay, IIT Roorkee and IIT Guwahati also participated.
- M/s Jo Agnew from University of Western Australia presented their Development initiatives.
- All IITs shared their fund-raising experiences.







## PAN IIT LEADERSHIP CONFERENCE

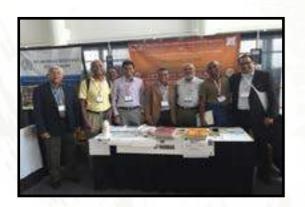
# CENTRE FOR ADVANCED AUTOMOTIVE RESEARCH

- Prof. Mahesh Panchagnula & Prof. Ashwin Mahalingam attended the PAN IIT Conference held on Aug 12-14 @ Rhode Island.
- The conference showcased talks by world leaders on Topic "Leading transformation for a better tomorrow: Technologies that lift the human spirit"
- 75 IITM alumni attended the lectures.
- Brief talks were given by Dr. Desh Deshpande (IITM '73), Raj Rajgopal (IITM '82), etc.
- IITMAANA Office bearers given a presentation on the new alumni organization website and its goals & objectives.
- Music concert by Prasanna (IITM '92)

- Letter of Intent (LoI) with Fraunhofer Institute IWU, Germany, to establish an Applied Centre for Advanced Automotive Research (CAAR) signed on Oct 19th.
- The CAAR is envisaged to be a centre of excellence focusing on providing research solutions to the automotive industries through focused R&D in association with the talent and capabilities at IIT Madras and the experience and delivery mechanisms developed at the Fraunhofer Institutes in Germany.
- Vehicle Light-Weighting Lecture by Dr.-Ing. Dirk Landgrebe (Head of Fraunhofer Institute for Machine Tools and Forming Technology IWU in Chemnitz held on Oct 19th.

















# IITM RECEPTION AT PORTLAND

# IITM & FIDELITY INTERACTION

- Prof. Mahesh Panchangula [1992/BT/ME], Prof. S Vengadesan [1992/MS/AM], Prof. S Pushpavanam [1984/BT/CH] along with 4 students met with the alumni Nov 20th at LAMAR Research Center.
- Prof. Mahesh Panchangula spoke about recent changes in IITM campus.
- Prof. S Vengadesan and Prof. S Pushpavanam spoke about the paradigm shift in the IITM towards research, inter disciplinary areas which have been started at the Ph.D scholars front and in the faculty recruitment front, state of the art research facilities in the Institute.
- 30 alumni from various vintages attended the meeting.
- Interaction session was also held with the alumni from Intel, Lemar & other companies in the area.

- IITM & Fidelity interaction meet was held on Nov 16th in IC & SR.
- Discussed various aspects of entrepreneurship ecosystem in India with a plan to invest in a big way.
- Prof. David Koilpillai gave highlights of IITM history.
- Prof. Ashwin Mahlingam gave a presentation about pre-incubation activities.
- Prof. Krishnan Balasubramanian gave highlights of Industrial Consultancy and sponsored Research.
- Ms. Priya Mohan spoke about RTBI & IIT Research Park.

















#### VISITS

## NAMING OF 3<sup>RD</sup> DISTINGUISHED CHAIR

- Kris Gopalakrishnan [1977/M.Sc/Phy & 1979/MT/CS], Co-Founder of Infosys named the third Distinguished Chair in Computational Brain Research after retired professor of the Department of Computer Science & Engineering CR Muthukrishnan on Apr 24th.
- Occupied by Prof. Anand Raghunathan from Purdue University.









### Rahul Mehta Visit to ITM

#### 1st Visit

- Shri. Rahul Mehta along with his sister visited IITM on Jan 5th & 6th
- The Mehta Family Foundation has previously sponsored the Bhupat & Jyoti Mehta School of Biosciences & also funding 2nd Bioscience building
- Met with Engineering Unit at site (Bioscience building II), CEO of Incubation Cell and faculty involved in CCBR, ILDS & IBSE
- Visited CFI, had meeting with I&AR staff and faculty involved in interdisciplinary research

#### 2nd Visit

- Mr. Rahul Mehta, Mr. Jay Mehta & Mr. Bernie Luksich visited IITM campus on 19th Oct.
- They visited the Biotech building II and labs in the Biotechnology department.
- Later they had a meeting with Prof. Ravindran regarding Data Center.







## Nokia Head's visit to ITM

Sandeep Girota – Vice President and Head of India, Nokia Networks along with Director,
 Dean (I& AR) and Development Office Team interacted with media on Feb 9th





## Martí G Subrahmanyam's visit to ITM

Marti G Subrahmanyam [1967/BT/ME & 2004 DA] had a discussion with our faculty who
have received "Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching"
funded by him.





## US & Canada Visit

- Director & Dean I&AR visited US & Canada from Jun 21 26
- Chapter Meeting held in New York, Boston, Bay Area & Canada
- Celebrated IITM's #1 ranking as an Engineering college in India
- Director & Dean provided the updates on Campus









## Visit to Heritage Centre, ITM

- The British International School Chennai Visit to Heritage Center on Mar 16
- Easwari Engineering College visit to Heritage Center on Mar 17





## 1966 Batch - Golden Reunion

- 1966 Golden Reunion batch held on Jan 26th @ IC & SR
- 60+ alumni are participated
- Remarks given by Prof. R. Nagarajan (Dean I & AR)
- Mr. Ravi Venkatraman (IITMAA President), Shri. Kumaran Sathasivam & Prof. Kolar (IITM Heritage Centre), Mr. Subramanian (CEO, DO), Abhishek Sharma (Student Secretary), Batch Representative, Prof. M S Sivakumar (Dean Students) & Prof. David Koilpillai (Dean, Planning) presented PPT.
- R. Natarajan (First Registar) and Prof. E G Ramachandran (Retried Faculty) also participated
- Pledged Rs.10 lakhs for Heritage Centre.

#### 2005 & 2010 Batch Reunion

• 2005 & 2010 batch had reunion on AlumNite (July 23rd ) - 45 alumni along with family attended





#### Dubai

- Held on Feb 12th @ Jood Palace Hotel, Dubai
- 37 alumni participated
- A core group of 9 have volunteered to meet regularly
- Met HNI's in Abu Dhabi





### Japan

- First ever IIT Madras Alumni Japan Chapter Meet held on Nov 19th in Tokyo.
- 12 alumni participated in the meet.
- Azif Ali [2012/DD/MT] agreed to champion the forthcoming chapter meeting in Japan and he started the Facebook Group with the list of attendees.
- Dr. Periyasamy Thanapandi (Director Amada) agreed to extend support for future Japan chapter meet





## Hong Kong

- Hong Kong Chapter Meet held on Nov 26th.
- 18 alumni & 2 non-alumni participated in the meet.





#### London

- IITM First-ever London Chapter alumni meet held on Sep 8th
- Dean I & AR and Sujatha Dube were attended
- 20 local alumni participated
- Sujatha had one-on-one meeting with 6 alumni





#### Delhi

- IITM Delhi chapter meet held on Feb 21st @ India International Centre Annexe Court, New Delhi.
- Mr Sanjeeev Bikhchandani, Founder and Executive Vice Chairman of Info Edge (India) Ltd and founder of Naukri.com Guest Speaker
- Interactive session with Director, Dean & Development Office Team
- 80+ alumni participated
- One-to-one meeting with HNI's held on Feb 19 & Feb 20





## Mumbai & Pune

- The Meet Up saw a participation by around 80 alumni from Mumbai and Pune Chapters. As a part of the event, a fireside chat between Mr. Ambi Parameswaran and Mr. D. Shivakumar was organised which was well received by the audience. This event has set the tone for future events of Mumbai and Pune Chapters.
- Date: 18th February 2017





#### STUDENT INITIATIVES

#### DAAN UTSAV

- SPARC Students' Pan-IIT Alumni Relations Cell conducted its first event in Bangalore in June with participation of students from IITM, IITB, IITD, IITKGP and IITG. Since then, it has successfully served as a knowledge sharing platform between students team from all these participating IITs and IITM has led the way in doing this.
- Date: 2nd July 2016

















One does not usually associate a lazy Sunday afternoon with the happening of path breaking events. But it was this very notion that was broken on 2nd October 2016, a Sunday with a twist. Just afternoon, while most of insti was just beginning their day, members of the Alumni Outreach team of the International and Alumni Relations Student Council and a group of volunteers were finalising preparations for what was the first ever Thanksgiving lunch ever on the IIT Madras campus.

Nationwide, October 2nd to October 9th is celebrated as Daan Utsav - The Joy of Giving festival. In this one week, thousands of individuals and organisations, be it corporates or NGOs, across the nation organise various charitable activities, such as donation drives, medical camps, initiatives to spread awareness, and so on.

In the backdrop of this pristine and auspicious week of giving, the I&AR Student Council along with the IIT Madras Alumni Association (IITMAA) decided to organise an event wherein all the support staff on campus, be it housekeeping staff, mess workers or security guards, were given sumptuous packed lunches, funded by the IITMAA. The event was aptly titled the "Thanksgiving lunch", a time where we students could give back to those who silently but tirelessly work to help us lead a comfortable life here at IITM.

Six hundred meals, each comprising of biryani, raita, curry and gulab jamun, were packed and distributed personally by the volunteers to all the support staff across the campus. Although it seemed like a logistical difficulty to distribute the meals, everything proceeded extremely smoothly. The hostel zone and messes were supplied meals from an outpost at the Himalaya Mess, whereas the security staff, departments and adjoining areas came under the outpost at the IC&SR building.

The event was a very special and moving affair, both for the volunteers as well as the staff served. One volunteer says, "Real satisfaction comes not just from serving a lot of people, but also from the smiles and satisfaction on the faces of those served", and this was exactly the case. Even though all the support staff were aware beforehand about the event, they were still pleasantly surprised on receiving the hot meals. In the words of one of them, "I have been working here for the past 10 years, but this is the first time anything of this sort has been done for us".

The event was extremely successful, and perfectly managed to encapsulate the founding principle of Daan Utsav - that there is more joy in giving than one can imagine. It was a great way to relieve all the hard working staff, even if it was just for one meal.

In the end, it is events like these that make all the difference, both to an individual's perspective of society, its problems and the solutions to these problems, as well as to the society itself. What we managed to achieve here was just a small, but heartfelt contribution to the spirit of DaanUtsav, something that we are very proud of and would like to emulate again, year after year.

# I&AR STUDENT COUNCIL FRESHMAN ORIENTATION

- An orientation was held for freshmen to brief them about interfacing that they will do with I&AR Office and Student Council. This introduced them to exchange programs, career development, LLS, affinity program and more. We witnessed a full house in CLT and are very sure that this will help us future in terms of team building as well as penetration of our initiatives amongst students.
- Date: 10wAugust 2016





#### DAKSHINACHITRA VISIT

#### "I LOVE INSTI" BOOKLET

What's better than Independence Day for an outing aimed at cultural introspection, historical education and an experience of our city's natural beauty? It is with this thought that a one-day tour to Dakshin Chitra and Mahabalipuram was organised by IITMAA and the I&AR Student Council. Full of zest and enthusiasm, the participating students and alumni prepared to leave from the IIT Madras main gate at 9:00 am in two nearly-filled buses. After some minor delays, the much awaited trip began, the first destination being Dakshin Chitra. The journey there took us along a beautiful, scenic drive on the ECR Coastal-Way.

At around 10:30 am, we reached Dakshin Chitra which literally means "the portrait of the south". It is an incredible museum-cum-art gallery which captures the lives of the people in Southern India from centuries ago till today. The tour was a history buff's delight, complete with accurate imitations of houses from those times, and site experiences such as pottery making.

After a quick lunch, we got back on the road to our next destination, Mahabalipuram which we reached at around 2:45. With an hour and 45 minutes to explore we discovered the place to be a tourist delight replete with a light-house, beautiful rock formations, the Shore Temple, and the beach. Time literally flew, and before long, we had to head back. The trip came to an end at 7 pm back at the IIT Madras campus, where we all dispersed, satiated by a truly great excurtion experience.

Abhinav Jindal , Pradyumna ChariManagers, Outreach, I&AR Student Council, IIT Madras

• A booklet having a round-up of events from 2015-16 was created with an objective to provide updates to the visiting alumni and guests.









#### CONFAB SERIES

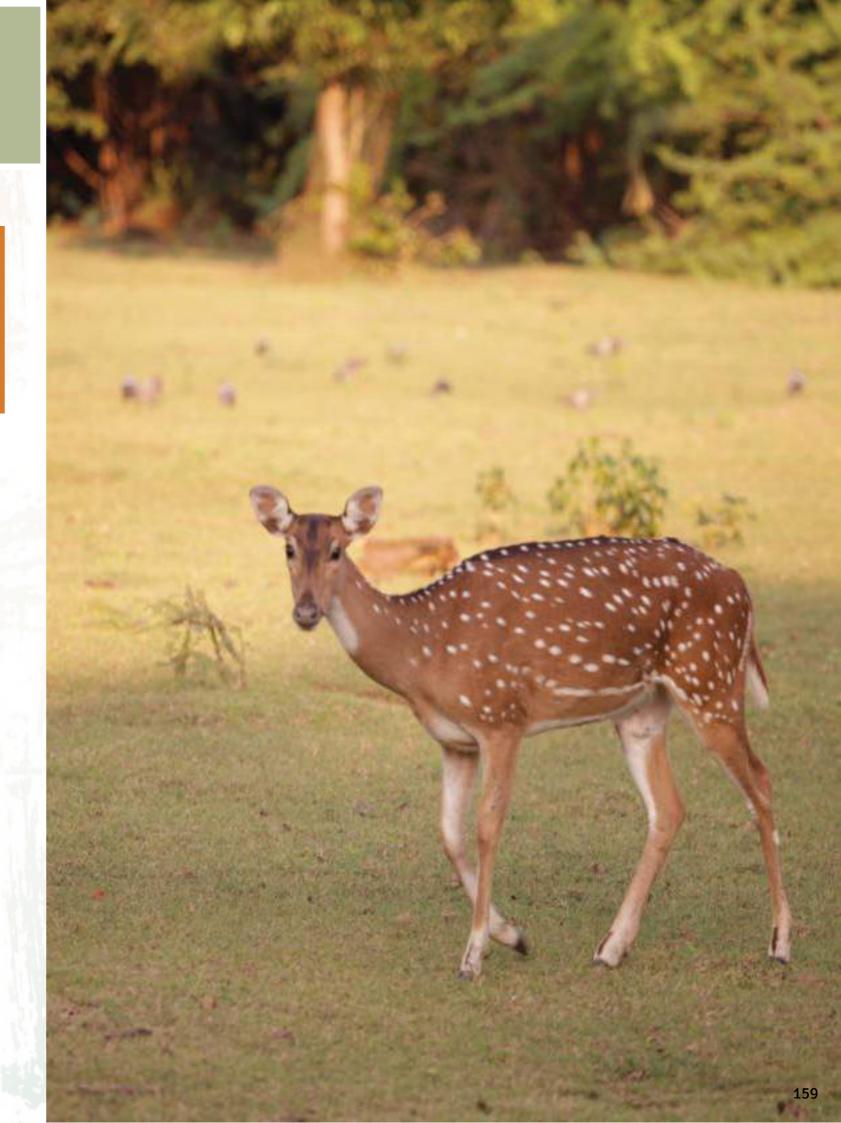
Confab Series was initiated to provide for closed-door personal interaction sessions of students with alumni, and in some cases non-alumni. This provides students with an opportunity to meet people from an industry or background that they wish to know more about and to get their doubts clarified.

(Throughout the year)



## Feedback and Takeaways

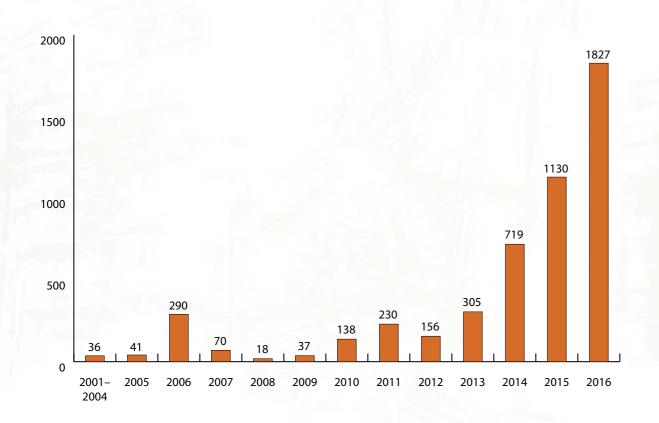
- "The discussion on what it takes to speak without the fear of feeling threatened. Hearing about the toughest professional decision he had to make. And also about comparisons Don't compare yourself with others, compare with where you are today and what your best self can be."
- "Entrepreneurship is no joke. Only the strong willed can do it. Further for it to be successful one should keep on trying and take a problem that tackles the day to day need and problems."
- "Entrepreneurship can't be done with a weak heart and involves dare and risk further the speaker gave some quite interesting examples and told us the way to enter the field"



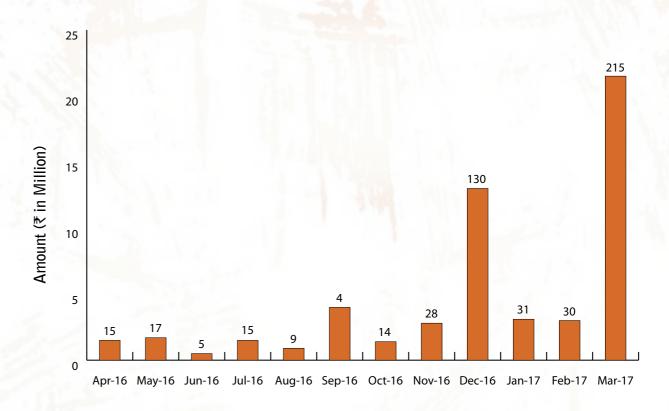


#### **FINANCIALS**

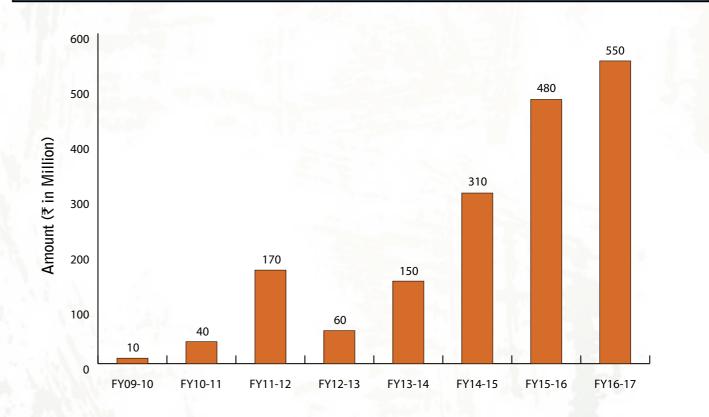
## Yearwise New Donors



# Monthwise Receipts



## Yearwise Receipts





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