

**EASWARI ENGINEERING
COLLEGE
DEPARTMENT OF COMPUTER SCIENCE AND
ENGINEERING
CONNECTRIX**



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VISION OF THE DEPARTMENT

To impart quality education in the field of computer science and engineering and to provide graduates with technical skills enabling them to contribute to the society by solving real world problems and to become a centre of excellence for advanced computing.

MISSION OF THE DEPARTMENT

- M1. To provide strong foundation in computer science and engineering and in problem solving techniques to become successful professionals in the field of computing and prepare them for higher education.
- M2. To provide students with latest skills in the field of computer science and engineering and to realize the importance of life-long learning.
- M3. To produce graduates with the ability to participate in interdisciplinary collaborations and apply recent computing tools and technologies in new domains and industry.
- M4. To produce graduates capable of ethically and responsibly approaching and committing themselves to the social impact of computing.
- M5. To prepare students to communicate effectively and exhibit leadership qualities to work on diverse project teams.
- M6. To provide research environment for students and faculty to undertake interdisciplinary research in emerging areas.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- PEO 1 Graduates will possess the ability to think logically and have capacity to understand technical problems and to design optimal solutions for a successful career in industry, academia and research.
- PEO 2 Graduates will have foundation in mathematical, scientific and computer science and engineering fundamentals necessary to formulate, analyze and solve engineering problems.
- PEO 3 Graduates will have the potential to apply their expertise and current technologies across multiple disciplines to solve real world challenges and research issues.
- PEO 4 Graduates will have the ability to work as a team and will be able to promote the design and implementation of products and services with an understanding of its impact on economical, environmental, ethical, and societal considerations through their strong interpersonal skills, leadership quality and entrepreneurial skills.
- PEO 5 Graduates will possess an urge to learn continuously and to be responsive to the demands of the progressive industrial world by carrying out researches in frontier areas of computer science and engineering.

Message from the HOD's Desk



Welcome and best wishes to all the departments who receive this newsletter. It gives me great opportunity to present the third issue of “CONNECTRIX” for the academic year 2018-2019. My hearty wishes to the staff members of our department who are doing a great job in bringing out the best in each and every student. I wish all my final year students good success in their placements and projects. Regarding the performance in Continuous Assessment Test II, I look forward for better improvement. I believe that all the students will cooperate for the taskforce classes. Finally, I wish all my students good luck for their upcoming semester results. I would like to thank all my colleagues for their tireless efforts to help the department progress at a very steady pace. We as a team strive hard to take the department to height of success, glory and to achieve our vision.

“You attract what you are, not what you want. If you want great, then be great”

***Dr.K.M.Anandkumar
Professor & Head,***

Dept. of CSE.

DEPARTMENT EVENTS:

The Department of Computer Science and Engineering in association with Association of Computer Engineers (ACE) has organized a One day National Level Technical Symposium KRATOS 2019 in TRP Auditorium on 13.2.2019. Mr. Shyam Sundar Nagarajan, Founder CEO, GoFloaters, Chennai, is the Chief Guest.





WORKSHOPS:

- The Department of Computer Science and Engineering has conducted workshop on the title “Android Application Development” on 13.02.2019.
- The Department of Computer Science and Engineering has conducted workshop on the title “Machine Learning” on 13.02.2019.

STUDENTS ACHIEVEMENTS:

Mr. Rahul Dhandapani, II year B section, Department of Computer Science and Engineering have been selected as delegate of **Asia World Model United Nations II in Bangkok, Thailand**, held from 30th of January to 2 nd of February 2019.



ARTICLE

The future of education in a world of pervasive computing

Computers have become so pervasive in today's world that preparing students to work and assume leadership roles in this shifting landscape requires giving them a better understanding of how computers work, how to use them, and how they affect every aspect of society. That's the reasoning behind the creation of the new MIT Stephen A. Schwarzman College of Computing, and it was the theme of many of the presentations and panel discussions in this week's [three-day celebration](#) of the new college.



“We’re in the midst of a global transformation that’s catalyzed by the rapid acceleration of digital technologies, including unprecedented access to computation and data,” said Farnam Jahanian, president of Carnegie Mellon University, in a keynote address on Wednesday. “The scale and scope and pace of these advances are truly unprecedented in human history.”

“The impact of these technologies is ubiquitous,” he said, “with a wide range of applications from health care to transportation, finance, energy, manufacturing, and far beyond. ... The pace of innovation is accelerating dramatically.”

These changes require a profound rethinking of the role of education in this rapidly changing environment, Jahanian said. “Imagine a day when by integrating emerging technologies, such as AI-enabled learning techniques and inverted classrooms, we can achieve personalized, outcome-based education,” he said.

MIT Provost Martin Schmidt, in a discussion with reporters, said that in creating the MIT Schwarzman College of Computing, “one of the things that’s really critical to us is that not only should this advance computation, but it should really link to all the disciplines across the campus.” The college will “strengthen those disciplines in their use of these new tools,” he said, “but also when we learn things about how we apply those tools to the disciplines, that knowledge flows back ... and informs the next generation” of computing research.

Schmidt added that in planning the new college, a key question was how MIT will deliver on its promise of making sure that the college “has in its DNA” an awareness of the societal impact of current and future advances in computing. This appreciation “should inform our educational agenda, what our undergraduates and graduates learn in the classroom, and it should inform our research agenda,” he said. “It should shape how the research is performed, and the kind of content we produce that informs policies and informs governments on how they should respond to the deployment of these technologies.”

The new college was founded partly in response to the fact that “there really was a transformation occurring across the campus,” with computation increasingly forming a key part of the work in almost all disciplines, Schmidt said. While about 40 percent of MIT students major in computer science, there was a clear need for an even greater integration of computation and data science early and deeply into every aspect of education.

Melissa Nobles, dean of MIT's School of Humanities, Arts and Social Sciences, who also participated in the discussion, told reporters that students in that school were very excited to take part in this increased integration of their disciplines with computation. She cited examples of classes where mixed groups of computer science students and those majoring in arts, economics, or literature worked on problems that combined their different kinds of expertise. In one class, for example, the students studied in exhaustive detail the way writers of 19th century novels used male and female pronouns and how that related to the genders of the author and the main characters. The project required both computer expertise to analyze thousands of texts, and a knowledge of the literature in order to provide context for their findings.

Also during the discussion, Maria Klawe, president of Harvey Mudd College in California and another keynote speaker, pointed out that a deep understanding of computers and their impact is increasingly needed in a rapidly changing world where it is estimated that many of the jobs people perform today “are just going to disappear” within the next few decades. That makes interdisciplinary education more important than ever, she said.

Regarding the creation of the new college, she said, “I see this as an incredibly important step for MIT, and I think it's going to influence other institutions to do similar things.”

The goals of the college reach far beyond just helping people in other disciplines to use computers more effectively, Nobles and others emphasized. It's also important, they said, to make sure that the skills and knowledge from other fields flow back into computer science, influencing the ethical, political, and social implications of the work in that field — not just as an afterthought but as a fundamental part of thinking and planning.

For example, while it is tempting to make use of massive sets of data collected by social media, the use of such datasets can raise serious concerns about privacy and informed consent. Such issues may be relatively new territory for computer scientists, but they are longstanding issues that have been dealt with extensively by social scientists and philosophers whose expertise can help inform the data collection and analysis procedures.

The speakers at Wednesday's symposium, representing many different fields and institutions, shared a sense of excitement about the potential for the MIT Schwarzman College of Computing to bring about significant innovations. “MIT continues to be a world-class institution that offers a

distinctive education and research, of course,” Jahanian said in his keynote, “and this latest development will certainly increase its impact in this changing world.”

David L. Chandler | MIT News Office

February 28, 2019

Reading the heartbeat of the road

The Carbin app, from a Concrete Sustainability Hub researcher, promises users an unprecedented understanding of pavement quality.

Smartphones can set your thermostat, control your lights, and even monitor your heart rate. But thanks to [MIT Concrete Sustainability Hub](#) research assistant Jake Roxon, they will also soon be able to measure pavement quality and reduce vehicle emissions.

In collaboration with Harvard University student Shahd Nara, Roxon has applied his love of cars with his engineering expertise to create [Carbin](#), a crowdsourcing app that measures road quality and eventually will guide drivers on the most fuel-efficient route. The app utilizes [research](#) conducted by the MIT Concrete Sustainability Hub to cut a vehicle’s emissions by an estimated 5 to 10 percent.

The key to Carbin is a phone’s accelerometer. Ubiquitous in smartphones, the accelerometer measures orientation and local acceleration, allowing the device to accomplish tasks like changing the position of a screen or measuring footsteps. But most phones don’t fully utilize their accelerometers; smartphone accelerometers generally take measurements far below their practical potential of 100 hertz, a frequency of 100 times per second. By tapping into this reserve, Roxon can increase the sensitivity of a smartphone to detect the slightest defects in pavements, all from within a moving car’s cabin.

After recording these pavement defects with the accelerometer, Roxon can then quantify a road's roughness, meaning he has essentially created a heartbeat monitor for the road.

Roughness is expressed in IRI, or International Roughness Index, which is the metric for measuring road quality. In addition to ride quality, it also contributes to fuel consumption.

“If you are interested in a road's roughness, the app can display IRI; if you are interested in the fuel consumption the app can show you if, say, 20 to 25 percent of your fuel consumption comes from a poor-quality road — which is totally possible in a city,” Roxon says.

One issue arises, though, when measuring the roughness of the ride: How can one determine what readings are from the road, the car, or even the occupants? According to Roxon, only time can tell.



“For us to gather any information about the vehicle, we need at the very minimum three minutes of data,” he says. “If you think about how often the accelerometer takes measurements, that can give you up to 18,000 data points.”

With this robust dataset, Roxon and his team say they can cut out the “noise,” or the extraneous data from the car or its cargo.

The next step for Roxon and his team is to use the data to determine excess fuel consumption and pavement quality in real-time. Traditional methods that calculate pavement data en masse would completely swamp a phone's processing ability, so instead, Roxon determines fuel consumption on a step by step basis. By selecting data points, for example, every minute and comparing them to the prior minute, he can calculate the difference in pavement quality, and therefore a pavement's roughness.

Eventually, by leveraging crowdsourcing, he hopes to overlay this roughness data onto road maps and then use machine learning algorithms like those of Apple Maps or Google maps to route drivers on the path of least resistance. As one might expect, this feature could prove highly useful for fleet drivers who drive regularly.

“On average, a semi-truck in the U.S. consumes around 20,000 gallons of diesel per year and the average diesel price in 2018 was \$3.19. If you multiply one by the other, you are looking at \$63,600 per year per year in fuel costs,” says Roxon, “Now, with our app, we could safely identify 5 percent to 10 percent savings for these drivers. That becomes over \$6,000 dollars for just one truck.”

With some fleets in the U.S. totaling in the thousands, even tens of thousands, this could save companies large sums of money.

Truck drivers may also find Carbin useful for a different reason. It also has the potential to simply and accurately monitor tire pressure.

Here's how it works: When a tire's pressure is low, a car uses more energy to turn it; this can have a slight influence on the motion of the car. Carbin allows a smartphone's accelerometer to read this often-unnoticeable motion and determine which tire needs inflating and by how much.

Since improperly inflated tires increase expenses and, at worst, can lead to dangerous events like blowouts, this could prove valuable to truckers. This is particularly the case since many trucks lack tire pressure sensors — which are both expensive and often unreliable.

State and city agencies may also find a use for the app. While federal agencies have the funds to monitor the quality of their pavements using sophisticated technology, the method is expensive for state agencies and beyond the budget of most cities. With limited funding, states must survey their pavements in sections over several years which prevents accurate monitoring of the performance of the entire road network. Cities have even less resources, so they tend to rely on

reporting by citizens and visual examination by inspectors to determine road maintenance. The Carbin app would allow cities and states to gain a better understanding of their pavement quality at a far more reasonable price.

When its features roll out later this month Carbin will offer users a suite of options to save money, track excess emissions, and understand the carbon footprint of their infrastructure.

Andrew Logan | Concrete Sustainability Hub

February 28, 2019