Computer Science Engineering: Key skills you need to learn

Problem-based learning coupled with peer-to-peer brainstorming helps in collaborative teamwork, which is one of the key requisites in the software industry, writes Apoorva Mishra.

Computer Science engineering in the 21st century has emerged as one of the fastest evolving fields. Most of the industry buzzwords like machine learning, deep learning, data science, artificial intelligence, internet of things, big data, cloud computing, robotics, block chain, etc. find their roots in Computer Science engineering.

According to a recent report by the National Association of Software and Services Companies (NASSCOM), India’s IT sector may grow by 9% in the fiscal year 2019-20. According to another report titled ‘Technology Jobs & the Future of Work’ by McKinsey, digital technologies could contribute $550 billion to $1 trillion of economic impact per year in India by the year 2025. There is an immense opportunity for the upcoming Computer Science engineering graduates in terms of high paying jobs in industry and research, and in being an entrepreneur. But there are certain challenges too. For being a successful entrepreneur in this field, apart from having good technical skills, one needs to have an innovative mindset to deal with real-time problems.

It is through problem-based learning (PBL), a teaching pedagogy in which the students are exposed to real world problems, students are given a chance to explore the different possible solutions to the problem in an innovative way. This process not only improves creativity and problem-solving skills of the students but also gives them a clear understanding of the concept. Students also get an exposure to deal with certain constraints involved in real-time problems.

The problem-based learning technique provides most of the control of the learning process to the learner, as opposed to the traditional approach where a teacher conveys knowledge to the students and then tells them how to solve problems.

Peer-to-peer brainstorming is another student-centric innovative teaching pedagogy that focuses on enabling students to propose creative solutions to a problem by interacting among themselves and sharing their ideas with each other. Problem-based learning coupled with peer-to-peer brainstorming provides a good opportunity for the students to work collaboratively in a team, which is one of the essential qualities for working in the software industry.

In the past two decades, with the penetration of the internet in India, information has become easily accessible to everyone at an affordable cost. Consequently, the traditional notion of a teacher as only a ‘knowledge provider’ has drastically changed. Hence, a faculty also needs to adopt new teaching strategies which not only focuses on providing knowledge to the students but also involves telling the utility of that in real-life applications and in fulfilling the needs of the society. It is essential for the institutes offering degrees in Computer Science engineering to embrace the latest technologies and keep evolving their syllabus in synchronization with the rapidly-evolving industrial demands.
The Computer Science Engineering department at BenneA University (BU) offers a wide range of electives (more than 50) spanning across all the recent sub-fields of Computer Science to enable the student to select a subject of his/her choice. The department facilitates creative thinking, technology enabled interactive learning, besides focussing on soft skills and nurturing entrepreneurial mindset among students through the Centre for Innovation and Entrepreneurship. The department's 'Honours’ course offers meritorious students the opportunity to study specialised advanced topics related to Computer Science engineering and earn extra credits. For the purpose of interdisciplinary projects and research, BU students can choose subjects from different streams through ‘open electives’ and ‘minors’.

E-learning platforms slowly changing Indian education landscape

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E-learning platforms are changing the Indian education landscape by addressing the demand-supply gap of both students as well as corporate employees by dispensing personalised learning outcomes, experts say.

Online learning has widened the scope of education and transcended it beyond classroom boundaries. With high internet penetration in the last two years, it has taken over the traditional methods not just in the urban landscape but also in rural areas.

The education system is evolving at a very fast pace, online education platform upGrad co-founder and MD Mayank Kumar said.

"With industries directly connecting with e-learning institutions like ours, content has never been so up-to-date. All this put together makes e-learning platforms complete, and students and working professionals future-ready, in a matter of months," he said.

Kumar noted that e-learning penetration in corporaions is increasing, regardless of the company's size. Since class-based training is more expensive, proportionately, for small and medium-sized firms, these firms are increasingly recognizing e-learning as a convenient and cost-effective mode.

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"In the current scenario, professionals will be required to re-skill themselves every 3-4 years to remain relevant in their evolving job roles," said Zairus Master, CEO, Shine Learning.com, which gives access to certification courses from top global educational service providers.

At this scale, e-learning platforms are the only way forward. Professionals will need to equip themselves with relevant skills before their current skills become obsolete. Moreover, the government is adopting a series of measures to bring a technological revolution to accentuate e-learning which will ultimately lead to a major shift in the Indian education sector, experts added.

"E-learning platforms are bringing a measurable difference in students' engagement and performance. It is reducing gaps in the delivery of education and giving a new dimension to the education space," Pearson India Managing Director Vikas Singh said.
In January, the US authorities busted a "pay to stay" visa racket and arrested 129 Indian students for enrolling at a fake university allegedly to remain in the US.

Students from India are advised to "exercise their due diligence" before seeking admission into American universities, the Indian Embassy here has said, months after over 100 Indians landed in trouble for enrolling at a fake educational institution set up by US authorities to expose immigration fraud.

In the unusual advisory, Indian students are advised to take into account several factors, in particular three questions.

"Does the university function from a campus or merely maintains a website and has administrative premises only? If not, such universities are not to be regarded as a bonafide educational institution and admission into such universities should be avoided.

"Does the university have a faculty and regular instructors/educators? If not, admissions to such universities should be avoided. It may be noted that such universities typically employ only administrative staff and their websites have no information in respect of faculty," the advisory said.

"Does the university have a proper curriculum, hold regular classes and actively implement academic or educational activity? If not, admissions to such universities may be avoided.

"Students admitted to such universities, even if in possession of regular student visa, may be tried for violation of visa norms and subjected to detention and subsequent deportation from the US," it said.

In January, the US authorities busted a "pay to stay" visa racket and arrested 129 Indian students for enrolling at a fake university allegedly to remain in the US.

The university in Detroit's Farmington Hills was part of an undercover operation by the Department of Homeland Security designed to expose immigration fraud, according to federal prosecutors who announced charges in the case.

The advisory comes in the wake of hundreds of Indian students becoming a victim of either fake universities or those established by federal agencies to trap recruiters engaged in immigration fraud.

"In order to ensure that Indian students do not fall into such 'traps', it is advised that due diligence be exercised while seeking admission in US Universities," said the Indian Embassy spokesperson Shambhu Hakki in an advisory issued for Indian students.

"The fact that a university is duly accredited by relevant US authorities such as its inclusion in the Student and Exchange Visitor Programme (SEVIS), is not an assurance in itself about the bonafides of a university," the advisory said.

In recent years, instances of "fake" universities set up by the US law enforcement agencies have come to light, the advisory said.

According to the US law enforcement, these universities are run by undercover law enforcement agents of the US, who pose as owners and employees of the university. The sole objective of such operations is to identify recruiters and entities engaged in immigration fraud in the US, it said.

The most recent examples of such universities are the University of Northern New Jersey set up in 2013 and of Farmington University established in 2015 by the Homeland Security Investigations (HSI) in the Department of Homeland Security of the United States.

In both cases, a number of Indian students enrolled into these universities, paid the requisite tuition fee and were granted F1 visa as well as Curricular Practical Training (CPT) permission.

These Indian students, many of whom claimed later that they were caught unawares, were subsequently detained by the US law enforcement agencies and subjected to deportation proceedings, the advisory said.

"They were accused of having violated the US immigration laws and of knowingly remaining enrolled in a 'fake' university for the sole purpose of continuing their stay in the United States without the intention of pursuing any academic activity," it said.

This advisory is not exhaustive and intended only to provide general guidance to the students in taking the right decision while seeking admission in US universities, the Indian Embassy added.
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