

Tech Bits

CSI Newsletter

Volume 4
Issue 2
10th August 2020

In This Issue

CSI Timeline 2019-2020

The Department of Computer Science and Engineering under Computer society of India Division one and Computer Society of India Student Branch had organized 'Technical Talk ' on "Amazon web services(AWS)" dated 30th October 2019. Webinar on "Unlock your Data with Data Science" through online on 20th July 2020 and Zonal level quiz Competition through online on 07th August 2020. Election for Executive members was conducted.



Student articles on recent trends in Technology



Find articles on VR, IBM-Quantum Computing, An automated health care system submitted by our beloved CSI - SB members.

Virtual Reality - Page 5

IBM-Quantum Computing - Page 6

An automated health care system - Page 7

How Edge Computing Will change the - Page 8
IT Industry

Mrs. Sudha Murthy



Sudha murthy(born 19 august 1950) is an Indian engineering teacher and Kannada and English author as well as a social worker. She is also chairperson of the Infosys Foundation. She is the wife of co-founder of Infosys, **N. R. Narayana Murthy**. Sudha murthy began her professional career in computer science and engineering. She is the chairperson of the Infosys Foundation and a member of the public health Foundation and a member of the public health care initiatives of the Gates Foundation. She has founded several orphanages, participated in rural development efforts, supported the movement to provide all government schools with computer and library facilities, and established "**Murthy Classical Library of India**" at Harvard University. Murthy initiated a bold move to introduce computer and library facilities in all schools in Karnataka and taught computer science. She got "Best Teacher Award" in 1995 from Rotary Club at Bengaluru. Sudha murthy is best known for her social work and her contribution to literature in Kannada and English.

Message from The HOD

“I am very happy to know that our CSI- Student branch with more than 300 student members is bringing its 4th edition of the CSI news letter-“Tech Bites” and also on behalf of 8th Anniversary of CSI.

Besides giving opportunities for various activities under CSI student branch, the CSI newsletter “Tech Bites” would provides the platform for the student community to bring out and enhance their writing skills and develop positive attitude in their life. I would like to congratulate and wish the very best to the students, Editorial team, CSI student counsellor and faculty members of the department in all their endeavours.”



Dr. Puttegowda D
Head of the Department
Computer Science and Engineering
ATME College of Engineering

Message From Executive Comittee



Mr. Vishnu Tej K
Chairman

“I am honoured to be taking over as the chairman of the Computer Society of India student branch ATMECE, Mysuru, for the year 2019-2020. The strength of our student branch is its members. I wish all members to take active part in the activities of our student branch.”



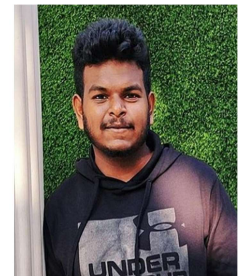
Mr. Anil Kumar Gadedra Goudar G
Vice-Chairman

I'm deeply honoured for being elected as the vice-chairman of Computer Society of India-Student branch ATME College of Engineering. I will make sure that the responsibilities shouldered upon me will be dealt with immense dedication and zeal.”



Ms. Kusum I K
Secretary

“The CSI-SB ATMECE is emerging as one of the most active SB chapter in the region. I feel proud to be serving as a part of the executive committee. Through your support, we can together achieve great heights. I would also like to acknowledge your participation in our activities.”



Mr. Paul Crispin
Treasurer

“I feel immensely proud to be elected as the Treasurer of the esteemed Computer Society of India - Student Branch of our college. I would dedicate myself for the betterment of our SB and also grow personally. Being the treasurer I will perform my duties faithfully and with dedication.”

CSI Timeline 2019-20

Election for Executive Members

The Computer Science and Engineering Department under Computer Society of India Division-1 and Computer Society of India Student Branch had conducted Election for new academic year for the vice-chairman, Treasurer and secretary posts for CSI-SB.



Few students stood for election and done their campaigning actively. And through the voting process secretary, Treasurer and Vice chairman was elected for CSI-SB.

Technical Talk 2019

The Computer Science and Engineering Department under Computer Society of India Division-1 and Computer Society of India Student Branch had organized a 'Technical Talk' on "Amazon Web Services" on October 30th of 2019. where many of the students from final, pre-final and second year actively participated and gained knowledge about the AWS.



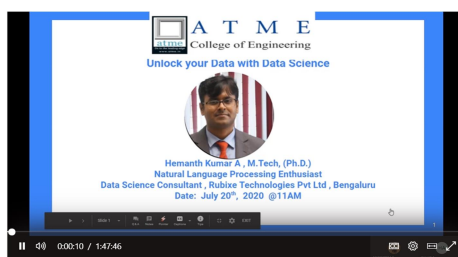
The Event was inaugurated by Dr. Manjunath S S, Head of the Department, and Professor, Dr. Puttegowda D, Mrs. Sneha NP, Assistant professor and CSI-SBC were present on Dias.

Mr.K.S.Manjunath, Founder and CEO of iQuest Technologies, resource person introduced us briefly about the AWS.

Technical Talk was very interactive and student also interacted to the resource person effectively. Finally the Technical Talk about AWS was successfully completed about 3 hours of brief interaction session.

Webinar Session 2020

The Computer Science and Engineering Department under Computer Society of India Division-1 and Computer Society of India Student Branch had organized Webinar on "Unlock Your Data with Data Science" on 20th July 2020 from 11:00 A.M to 1:00 P.M. This was a tremendous effective virtual live Webinar in the lock down-period.



Hemanth Kumar A, Data Science Consultant, Rubixe Technologies Pvt Ltd, Bengaluru was the resource person for the live webinar through You Tube live. From the various colleges about more than 200 students were participated in this session. The participants got an idea of few brief things of the Data Science.

Dr. Anil kumar C J, Associate Professor, CSE, ATMECE, Mrs. Sneha N P, Assistant Professor CSE, CSI-SBC, ATMECE, Mrs. Vibha U, Assistant Professor, CSE, ATMECE, were the co-ordinators for this Webinar. They have played a major role and have contributed in the grand success of this webinar. In this current pandemic they made reach this to all students through online.

The students those who participated in the webinar after submitting the feedback form through Google form were provided with the Certificates. These certificates are sent to the respective registered students through Gmail.

Zonal Level Quiz 2020

Department of Computer Science and Engineering under CSI Student Branch had organized a Zonal level Quiz Competition on 07th August 2020 through online. Various college Students were registered and participated in this quiz through online.

This quiz was contained with the present technological related questions and the technical related questions which were likely to refreshing the technical memory for the students in this lock down period.

All the participants were provided with the participation certificate through Gmail after the successful completion of the online Quiz.

Gallery



Election Campaigning



Election Result



Mrs.Sneha NP, CSI-SBC, Addressing the Gathering



AWS Tech Talk



Students Actively participating in Tech Talk

Top Indian IT Companies

1. HCL Technologies Ltd



HCL Technologies Ltd was founded by Shiv Nadar (1976). Headquartered in Noida, India.

2. Infosys Ltd



Infosys Ltd was founded by N.R. Narayana Murthy (1981). Headquartered in Bangalore, Karnataka.

3. Larsen & Toubro Infotech Ltd



The company was established in the year 1997. Headquartered in Mumbai, Maharashtra.

5. Mphasis Ltd



Mphasis Ltd was founded by Jerry Rao, Jeroen Tas (2000).

Headquartered in Bangalore, India.

6. Oracle Financial Services Software Ltd



Oracle Financial Services Software Ltd was founded in the year 1990. It is a subsidiary of Oracle Corporation. Headquartered in Mumbai, India.

8. Tata Consultancy Services Ltd (TCS)



Tata Consultancy Services Ltd founded in the year 1968. It is an Indian MNC company which is a subsidiary of Tata Group. Headquartered in Mumbai, Maharashtra, India.

7. Quess Corp Ltd



Quess Corp Ltd was founded in the year 2007. Headquartered in Bengaluru, India. It is serving North America, Asia Pacific, Middle East.

9. Tech Mahindra Ltd



Tech Mahindra Ltd was founded in the year 1986. Headquartered in Pune, India.

Virtual Reality (VR)

Source: Wikipedia

Virtual reality (VR) is a simulated experience that can be similar to or completely different from the real world. Virtual reality means blocking yourself off from the real world and substituting a computer-generated alternative.

Applications of virtual reality can include entertainment (i.e. video games) and educational purposes (i.e. medical or military training). Other, distinct types of VR style technology.

Currently standard virtual reality systems use either virtual reality headsets or multi-projected environments to generate realistic images, sounds and other sensations that simulate a user's physical presence in a virtual environment. A person using virtual reality equipment is able to look around the artificial world, move around in it, and interact with virtual features or items. The effect is commonly created by VR headsets consisting of a head-mounted display with a small screen in front of the eyes, but can also be created through specially designed rooms with multiple large screens. Virtual reality typically incorporates auditory and video feedback, but may also allow other types of sensory and force feedback through haptic technology.



Virtual Reality in Our Life:

Virtual reality is most commonly used in entertainment applications such as video games and 3D cinema. Consumer virtual reality headsets were first released by video game companies in the early-mid 1990s. Beginning in the 2010s, next-generation commercial tethered headsets were released by Oculus, HTC and Sony, setting off a new wave of application development.

3D cinema has been used for sporting events, fine art, music videos and short films. 3D cinema has been used for sporting events, fine art, music videos and short films.

In social sciences and psychology, virtual reality offers a cost-effective tool to study and replicate interactions in a controlled environment.

VR can simulate real workspaces for workplace occupational safety and health purposes, educational purposes, and training purposes. It can be used to provide learners with a virtual environment where they can develop their skills without the real-world consequences of failing. It has been used and studied in primary education, anatomy teaching, military, astronaut training, flight simulators, miner training, architectural design, driver training and bridge inspection. Immersive VR engineering systems enable engineers to see virtual prototypes prior to the availability of any physical prototypes.

Supplementing training with virtual training environments has been claimed to offer avenues of realism in military and healthcare training while minimizing cost. It also has been claimed to reduce military training costs by minimizing the amounts of ammunition expended during training periods.



Virtual reality in engineering field:

Virtual reality engineering includes the use of 3D modelling tools and visualization techniques as part of the design process. This technology enables engineers to view their project in 3D and gain a greater understanding of how it works. Plus they can spot any flaws or potential risks.

By

Nandakishor B M, 6th sem



This also allows the design team to observe their project within a safe environment and make changes as and where necessary. This saves both time and money.



What is important is the ability of virtual reality to depict fine grained details of an engineering product to maintain the illusion. This means high end graphics, video with a fast refresh rate and realistic sound and movement.

In the engineering field, VR has proved very useful for both engineering educators and the students. A previously expensive cost in the educational department now being much more accessible due to lowered overall costs, has proven to be a very useful tool in educating future engineers. The most significant element lies in the ability for the students to be able to interact with 3-D models that accurately respond based on real world possibilities.

This added tool of education provides many the immersion needed to grasp complex topics and be able to apply them. As noted, the future architects and engineers benefit greatly by being able to form understandings between spatial relationships and providing solutions based on real-world future applications.

IBM – Research on Quantum Computing

By

Anil Kumar Gadedda Goudar, 6th sem



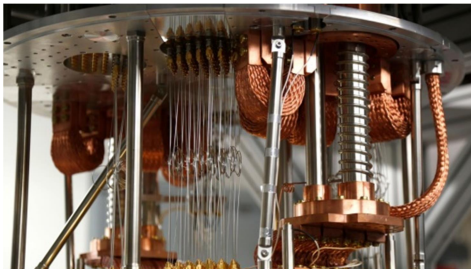
Source: IBM Research

IBM Quantum is an industry first initiative to build universal quantum computers for business, engineering and science. This effort includes advancing the entire quantum computing technology stack and exploring applications to make quantum broadly usable and accessible.

IBM's new 53-qubit quantum computer is the most powerful machine you can use. The machine will be available for researchers and companies to run applications via the cloud. Cloud power: IBM has been promoting quantum computing via the cloud since 2016.

IBM now has 18 quantum computers in its fleet of weird machines. That's actually a lot given how expensive, finicky and complex quantum computers are. The IBM

Q quantum computer looks nothing like a classical computer.



How does Quantum Computer Works?

In a quantum processor, superconducting qubits, or quantum bits, process the quantum information and send the the computation outcomes back through the system via microwave signals.

The whole contraption around the processor is meant to cool it as much as possible. Today, quantum computing is a researcher's playground. In five years, it will be mainstream.

Future Scope:

In five years, the effects of quantum computing will reach beyond the research lab. It will be used extensively by new categories of professionals and developers looking to this emerging method of computing to solve problems once considered unsolvable.

Quantum computers are rapidly emerging:

Quantum computers are incredibly powerful machines that take a new approach to processing information using the principles of quantum mechanics. The computers we use today are known as classical computers. They have enabled amazing things and become ubiquitous in our lives. There are, however, still problems they can't solve. These problems generally involved exponential scaling such as large-scale optimization or chemistry simulations. Quantum computers are being built to work with classical computers to potentially solve these problems.



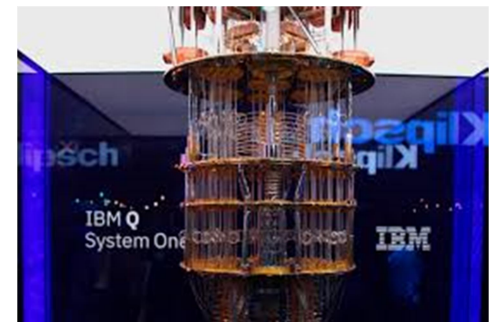
Quantum computers are rapidly emerging. Pursued for decades in research labs, prototype machines are today getting bigger and more capable. Yet the technology is not generally understood. The concepts and vocabulary are foreign to most and access to the machines has largely rested with the scientific community. Industries are just starting to explore the possibilities and universities are beginning to develop quantum computing curriculums. Pursued for decades in research labs, prototype machines are today getting bigger and more capable.

“Quantum Supremacy” IBM research:

Quantum computers are starting to approach the limit of classical simulation and it is important that we continue to benchmark progress and to ask how difficult they are to simulate. This is a fascinating scientific question.

Recent advances in quantum computing have resulted in two 53-qubit processors: one from our group in IBM and a device described by Google in a paper published in the journal Nature. In the paper, it is argued that their device reached “quantum supremacy” and that “a state-of-the-art supercomputer would require approximately 10,000 years to perform the equivalent task.” We argue that an ideal simulation of the same task can be performed on a classical system in 2.5 days and with far greater fidelity. This is in fact a conservative, worst-case estimate, and we expect that with additional refinements the classical cost of the simulation can be further reduced.

Because the original meaning of the term “quantum supremacy,” as proposed by John Preskill in 2012, was to describe the point where quantum computers can do things that classical computers can't, this threshold has not been met.

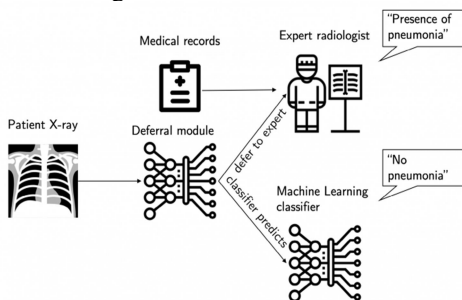


This particular notion of “quantum supremacy” is based on executing a random quantum circuit of a size infeasible for simulation with any available classical computer. Specifically, the paper shows a computational experiment over a 53-qubit quantum processor that implements an impressively large two-qubit gate quantum circuit of depth 20, with 430 two-qubit and 1,113 single-qubit gates, and with predicted total fidelity of 0.2%. Their classical simulation estimate of 10,000 years is based on the observation that the RAM memory requirement to store the full state vector in a Schrödinger-type simulation would be prohibitive, and thus one needs to resort to a Schrödinger-Feynman simulation that trades off space for time.

An automated health care system that understands when to step in:

Source: Internet

Machine learning system from MIT CSAIL can look at chest X-rays to diagnose pneumonia — and also knows when to defer to a radiologist.



In recent years, entire industries have popped up that rely on the delicate interplay between human workers and automated software. Companies like Facebook work to keep hateful and violent content off their platforms using a combination of automated filtering and human moderators. In the medical field, researchers at MIT and elsewhere have used machine learning to help radiologists better detect different forms of cancer.

What can be tricky about these hybrid approaches is understanding when to rely on the expertise of people versus programs. This isn't always merely a question of who does a task "better;" indeed, if a person has limited bandwidth, the system may have to be trained to minimize how often it asks for help.

To tackle this complex issue, researchers from MIT's Computer Science and Artificial Intelligence Lab (CSAIL) have developed a machine learning system that can either make a prediction about a task, or defer the decision to an expert. Most importantly, it can adapt when and how often it defers to its human collaborator, based on factors such as its teammate's availability and level of experience.

The team trained the system on multiple tasks, including looking at chest X-rays to diagnose specific conditions such as atelectasis (lung collapse) and cardiomegaly (an enlarged heart). In the case of cardiomegaly, they found that their human-AI hybrid model performed 8 per cent better than either could on their own (based on AU-ROC scores).



"In medical environments where doctors don't have many extra cycles, it's not the best use of their time to have them look at every single data point from a given patient's file," says PhD student Hussein Mozannar, lead author with David Sontag, the Von Helmholtz Associate Professor of Medical Engineering in the Department of Electrical Engineering and Computer Science, of a new paper about the system that was recently presented at the International Conference of Machine Learning. "In that sort of scenario, it's important for the system to be especially sensitive to their time and only ask for their help when absolutely necessary."

The system has two parts: a "classifier" that can predict a certain subset of tasks, and a "rejecter" that decides whether a given task should be handled by either its own classifier or the human expert.

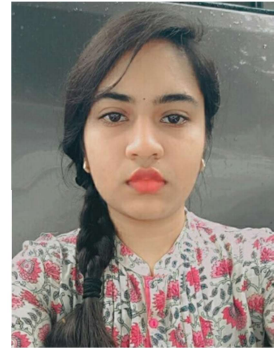
Through experiments on tasks in medical diagnosis and text/image classification, the team showed that their approach not only achieves better accuracy than baselines, but does so with a lower computational cost and with far fewer training data samples.

"Our algorithms allow you to optimize for whatever choice you want, whether that's the specific prediction accuracy or the cost of the expert's time and effort," says Sontag, who is also a member of MIT's Institute for Medical Engineering and Science. "Moreover, by interpreting the learned rejecter, the system provides insights into how experts make decisions, and in which settings AI may be more appropriate, or vice-versa."

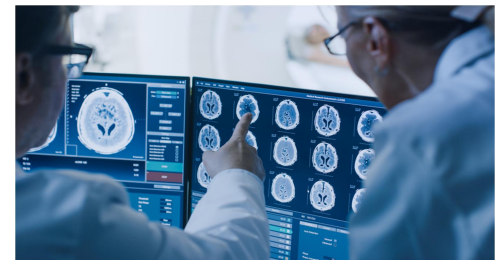
The system's particular ability to help detect offensive text and images could also have interesting implications for content moderation. Mozannar suggests that it could

By

Kusum I K, 6th sem



be used at companies like Facebook in the with a team of human moderators. Sontag clarified that the team has not yet tested the system with human experts, but instead developed a series of "synthetic experts" so that they could tweak parameters such as experience and availability. In order to work with a new expert it's never seen before, the system would need some minimal on boarding to get trained on the person's particular strengths and weaknesses.



In future work, the team plans to test their approach with real human experts, such as radiologists for X-ray diagnosis. They will also explore how to develop systems that can learn from biased expert data, as well as systems that can work with — and defer to — several experts at once. For example, Sontag imagines a hospital scenario where the system could collaborate with different radiologists who are more experienced with different patient populations.

"There are many obstacles that understandably prohibit full automation in clinical settings, including issues of trust and accountability," says Sontag. "We hope that our method will inspire machine learning practitioners to get more creative in integrating real-time human expertise into their algorithms."

Mozannar is affiliated with both CSAIL and the MIT Institute for Data, Systems and Society (IDSS). The team's work was supported, in part, by the National Science Foundation.

How Edge Computing Will change the IT Industry

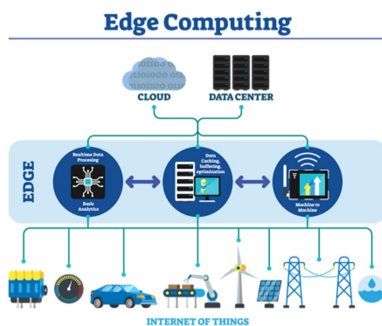
By

Apoorva R, 6th sem



Source: Innovation Enterprise

As enterprises IT expectations are rising, new technologies are backing their needs by offering the latest developments which are helping them fulfil their quests. There are multiple technologies in multiple fields which are being developed through R&D and is capable of solving modern issues related to IT. Gone are the days when we waited patiently for the web pages to load and respond to actions because internet in those days couldn't connect faster or analyse requests as they do now due to one or the other reason.



Today we are firmly into the cloud computing era where we make use of personal services like Drop box, Gmail and more which are able to provide us data from anywhere at any time. Businesses make use of cloud services to store and retrieve their data. This gives the owners the freedom to access their data from any location because of the connected network of servers/data centers. By now we have learned that cloud computing has been very profitable for organizations in terms of CAPEX. The investment is low as compared to the traditional computing environment and the benefits are huge in a cloud environment too.

Research firm IDC estimates, “by 2019, 40% of IoT data will be stored, processed, analysed, and acted upon close to or at the edge of the network.”

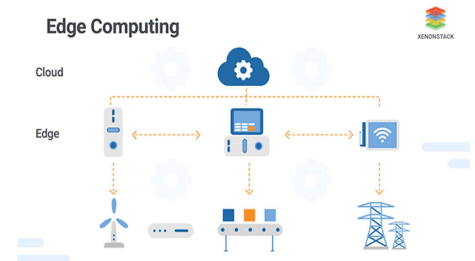
Edge Computing is one such emerging technology which is already playing an important role by enabling quick decision making by analysing the data at the edge of the network. Edge computing basically tries to provide low latency by processing closer to the source of data collection.

Internet of Things (IoT) devices are an important component of edge computing because analysis of data takes place within these connected devices which are far from a data center but are able to process data on the edge. This technology satisfies the local computing needs by processing data in micro-data centers like an office or a facility instead of sending them directly to the main data center. Micro-data centers are at the center of edge computing needs. One can say this is an on-premise technology which is diminished to match certain business models. It is important to make sure that IT infrastructure can operate on site, from within the largest spaces to small remote sites if we ever want to unleash the true benefits of edge computing. The challenging areas in remote locations can be connectivity and network connection but by bringing data locally on-site, latency can be eliminated.



The adoption of edge computing has been rapid since its introduction and its real-time benefits. There is a common misconception among people that edge computing is purely a technology for IoT embedded devices but that is definitely not true. Though edge computing is ideal for IoT, it offers great scope for departmental and traditional business applications. Wherever the data sources are, the edge computing layer will be operating close to it. There will be units which will be configured for particular functions which will be their primary job in a device. Each unit in the edge computing will have its own computer, storage and networking system. These devices will handle network switching, routing, load balancing and security. The entire network of these devices becomes a centralized point for data processing from multiple sources.

The data points will be analysed by event processing engines which will decide the path where the data will be streamed. The data may be processed on edge or can be sent to a data centre nearby based on pre-defined rules for further analysis. There are two types of data which are ‘hot data’ and ‘cold data’. Hot data will be analysed instantly to make quick decisions and in the case of cold data, the data will be stored and analysed later which supports analytics based on historical trends. One of the most important features revolving around the term edge computing is the speed and agility it offers is so great that in future the data which is stored will be acted upon the edge of network instead of transferring it to data centers for further analysis.



These days' organizations are adopting the best practices for their business so that they can stay ahead of their competition. As technology evolves it brings new opportunities for the world so that we can adapt to the changing ways and improve our current state. Even if edge computing is relatively a new term, it has opened up great scope for organizations to implement this technology and make use of faster and accurate data processing and transferring through a cluster of edge computing network. Decision making, lower costs, faster data processing, analytical trends are some of the many benefits edge computing offers. It is time for enterprises to take the next logical step towards up gradation of their business processes.

GALLERY



Editorial Board

Chief Editors

Mrs. Sneha N P
Asst. prof. CSE
ATMECE

Executive Editors

Mr. Anil kumar Gadedra Goudar
Sixth sem CSE
ATMECE

Ms. Kusum I K
Sixth Sem CSE
ATMECE

Student Coordinators

Mr. Ashish Prabhu M
Eighth sem CSE
ATMECE

Mr. Vishnu Tej K
Eighth sem CSE
ATMECE