



# **MALLA REDDY ENGINEERING COLLEGE FOR WOMEN**

**Autonomous Institution – UGC, Govt. of India**

**Accredited by NBA & NAAC with 'A' Grade**

NIRF Indian Ranking, Accepted by MHRD, Govt. of India | Band – Excellent, National Ranking by ARIIA  
Maisammaguda, Dhulapally, Secunderabad – 500 010, Telangana

## **A.Y : 2019-20 VOL.2**

**Under**

**Student Chapter IEEE, CSI & ISTE & Technical Association CYNOSURS**

# **INFOSPARK**

**HALF YEARLY TECHNICAL MAGAZINE**

**DEPARTMENT OF  
COMPUTER SCIENCE AND ENGINEERING**

**CSE**

**[www.mallareddyecw.com](http://www.mallareddyecw.com)**

## DEPARTMENT VISION

- Visualizing a great future for the intelligentsia by imparting state-of-the-art Technologies in the field of Engineering and Technology for the bright future and prosperity of the students.
- To offer world class training to the promising Engineers.

### Vision



## DEPARTMENT MISSION

- To nurture high level of Decency, Dignity and Discipline in women to attain high intellectual abilities.
- To produce employable students at National and International levels by effective training programmes.
- To create pleasant academic environment for generating high level learning attitudes.

### Mission



## ABOUT THE DEPARTMENT

The Dept. of CSE with an intake of 240 in B.Tech Programme also offers M.Tech programmes in COMPUTER SCIENCE AND ENGINEERING & COMPUTER SCIENCE. The programmes ensure that the student effectively meets the highest benchmarks of competence required by the industry.

The Dept has state of the art laboratories with latest softwares like Windows 2008, Visual Studio 2012, Eclipse, WinRunner, QTP, J2EE, .NET, Fedora & Weka Tool. The Dept established IEEE & ISTE student chapters and Dept. Technical Association-CYNOSURES under which it organizes National level Technical Symposium - FUTURE SASTRA and State level Technical Symposium MEDHA every academic year and Student Development Programmes like Workshop on Web Designing, Android & its Application, ADOBE PhotoShop, Ethical Hacking and HTML5.

The Department also organizes Pre-placement training programmes on C-Skills, Java Skills and Project Based training programmes on C, C++, JAVA and Web Technologies and also organizes Intra College Student Conferences on Network Security and Data Base Management Systems and Recent Advancements in Computer Science and also organizes regular student seminar sessions of two hours per week for I - IV B.Tech student to enhance their all round performance.

To provide value added certification courses to students, The Dept. established Micro Soft Innovation Center which offers Micro Soft Certification, CISCO Networking Academy which offers CISCO Certification and in association with ORACLE Corporation, India, It offers Java Certification. The Dept. also offers Business English Certification (BEC) with the help of Center for Development of Communication Skills.

## PO'S

<b>PO1</b>	<b>Engineering knowledge</b>	An ability to apply knowledge of mathematics (including probability & statistics and Mathematical Foundation of Computer science and Engineering.
<b>PO2</b>	<b>Problem analysis</b>	An ability to design and conduct experiments, as well as to analyze and interpret data including hardware and software components.
<b>PO3</b>	<b>Design / development of solutions</b>	An ability to design a complex computing system or process to meet desired specifications and needs.
<b>PO4</b>	<b>Conduct investigations of complex problems</b>	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering actives with an understanding of the limitations.
<b>PO5</b>	<b>Modern tool usage</b>	An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
<b>PO6</b>	<b>The engineer and society</b>	An ability to understanding of professional, health, safety, legal,cultural and social responsibilities.
<b>PO7</b>	<b>Environment and sustainability</b>	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and demonstrate the knowledge need for sustainable development.
<b>PO8</b>	<b>Ethics</b>	Apply ethical principles, responsibility and norms of the engineering practice
<b>PO9</b>	<b>Individual and team work</b>	An ability to function on multi-disciplinary teams.
<b>PO10</b>	<b>Communication</b>	An ability to communicate and present effectively
<b>PO11</b>	<b>Project management and finance</b>	An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multi-disciplinary environments
<b>PO12</b>	<b>Life-long learning</b>	A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning

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## PSO'S

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**The graduates of the department will attain:**

**PSO1:** The ability to analyze, design, code and test application specific or complex engineering problems in Cryptography and Network Security, Design and Analysis of Algorithm, Computer Networks, Data Mining, Cloud Computing, Mobile Computing, Cloud Computing, Internet of Things (IoT), Data Science, Artificial Intelligence, Machine Learning, Cyber Security, Block chain Technology, and Big Data by applying the knowledge of basic sciences, engineering mathematics and engineering fundamentals.

**PSO2:** The ability to adapt for rapid changes in tools and technology with an understanding of societal and ecological issues, relevant to professional engineering practice through life-long learning.

**PSO3:** Excellent adaptability to function in multi-disciplinary work environment, good interpersonal skills as a leader in a team, in appreciation of professional ethics and societal responsibilities.

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## PEO'S

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### PEO1

**PROFESSIONAL ENHANCEMENT:** Provide the students with strong fundamental and advanced knowledge in Mathematics, Science and Engineering with respect to Computer Science and Engineering discipline with an emphasis to solve Engineering problems.

### PEO2

**CORE COMPETENCE:** Prepare the students through well - designed curriculum to excel in various programmes in Computer Science and Engineering, to meet the needs of the industry and for higher education pursuit.

### PEO3

**TECHNICAL ACCOMPLISHMENTS:** Train the students with intensive and extensive engineering knowledge and skill to analyze, design and create novel products and solutions in the field of Computer Science and Engineering.

### PEO4

**PROFESSIONALISM:** To inculcate in students professional attitude, multidisciplinary approach, ethics, team work, communication, ability to relate computer engineering issues with societal needs and contribute towards nation building.

### PEO5

**LEARNING ENVIRONMENT:** To provide students with an academic environment that inculcates the spirit of excellence, creativity, innovation, leadership, lifelong learning, ethical codes and guidelines to become a successful professional in Computer Science and Engineering.

## MESSAGES

### Founder Chairman's Message



#### Ch. Malla Reddy

Founder Chairman, MRGI

Hon'ble Minister, Govt. of  
Telangana State

MRECW has made tremendous progress in all areas and now crossing several milestones within a very short span of time and now I feel very happy to know that the students and faculty of the CSE Department of MRECW are bringing out the volume-2 of the Technical magazine INFOSPARK in A.Y 2019-20. As I understand this magazine is intended to bring out the inherent literary talents in the students and the teachers and also to inculcate leadership skills among them. I am confident that this issue will send a positive signal to the staff, students and the persons who are interested in the educational and literary activities.

### Principal's Message

I congratulate the department of CSE, MRECW for bringing out the Second issue of the prestigious half yearly department technical Magazine INFOSPARK under A.Y: 2019-20, I am sure that the magazine will provide a platform to the students and faculty members to expand their technical knowledge and sharpen their hidden literary talent and will also strengthen the all round development of the students. I am hopeful that this small piece of literary work shall not only develop the taste for reading among students but also develop a sense of belonging to the institution as well. My congratulations to the editorial board who took the responsibility for the arduous task most effectively. I extend best wishes for the success of this endeavor.



#### Dr. Y. Madhavee Latha

Principal

### HOD'S MESSAGE

INFOSPARK-2020, Our Department magazine show cases the various achievements and talents of students. The primary objective of the department has been to impart quality technical education to the students. We providing the students with most conducive academic environment and making them towards serving the society with advanced technologies. Our department provides training sessions, workshops, hands-on, webinars, Industrial visits, Internships and Personality development classes. I am privileged to offer my best wishes. I congratulate students who have contributed their articles in huge volume.



#### Dr. C.V.P.R. PRASAD Professor and HOD



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## FACULTY ARTICLES

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### **BIG DATA: A QUALITY FRAMEWORK**

Big Data is an essential research area for governments, institutions, and private agencies to support their analytics decisions. Big Data refers to all about data, how it is collected, processed, and analyzed to generate value-added data-driven insights and decisions. Degradation in Data Quality may result in unpredictable consequences. In this case, confidence and worthiness in the data and its source are lost. In the Big Data context, data characteristics, such as volume, multi-heterogeneous data sources, and fast data generation, increase the risk of quality degradation and require efficient mechanisms to check data worthiness. However, ensuring Big Data Quality (BDQ) is a very costly and time-consuming process, since excessive computing resources are required. Maintaining Quality through the Big Data lifecycle requires quality profiling and verification before its processing decision. A BDQ Management Framework for enhancing the pre-processing activities while strengthening data control is proposed. The proposed framework uses a new concept called Big Data Quality Profile. This concept captures quality outline, requirements, attributes, dimensions, scores, and rules. Using Big Data profiling and sampling components of the framework, a faster and efficient data quality estimation is initiated before and after an intermediate pre-processing phase. The exploratory profiling component of the framework plays an initial role in quality profiling; it uses a set of predefined quality metrics to evaluate important data quality dimensions. It generates quality rules by applying various pre-processing activities and their related functions. These rules mainly aim at the Data Quality Profile and result in quality scores for the selected quality attributes. The framework implementation and data flow management across various quality management processes have been discussed, further some ongoing work on framework evaluation and deployment to support quality evaluation decisions conclude the paper.



**Mr. S.VENKATARAMANA**  
Associate Professor

## INTERNET OF THINGS ON HEALTHCARE

In recent years, the healthcare industry has shown rapid growth and has been a major contributor to revenue and employment. A few years ago, the diagnosis of diseases and abnormality in the human body was only being possible after having a physical analysis in the hospital. Most of the patients had to stay in the hospital throughout their treatment period. This resulted in an increased healthcare cost and also strained the healthcare facility at rural and remote locations. The technological advancement that has been achieved through these years has now allowed the diagnosis of various diseases and health monitoring using miniaturized devices like smartwatches. Moreover, technology has transformed a hospital-centric healthcare system into a patient-centric system. For example, several clinical analyses (such as measuring blood pressure, blood glucose level, pO<sub>2</sub> level, and so on) can be performed at home without the help of a healthcare professional. Further, the clinical data can be communicated to healthcare centers from remote areas with the help of advanced telecommunication services. The use of such communication services in conjunction with the rapidly growing technologies (e.g., machine learning, big data analysis, Internet of things (IoT), wireless sensing, mobile computing, and cloud computing) has improved the accessibility of the healthcare facilities.



**Ms. VUNNAMNARMADA**  
Assistant Professor



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## STUDENT ARTICLES

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### IOT BASED SMART TRAFFIC MANAGEMENT SYSTEM

All metropolitan cities face traffic congestion problems especially in the downtown area. Normal cities can be transformed into “smart cities” by exploiting the information and communication technologies (ICT). The Internet of Thing (IOT) can play an important role in realization of smart cities. This article proposes an IOT based traffic management solutions for smart cities and to coordinate with ambulance driver to find the signal status and choose the path where traffic flow can be dynamically controlled and traffic violations are been identified by onsite traffic officers through centrally monitored or controlled through Internet. However the scheme proposed is general and can be used in any Metropolitan city without the loss of generality. If any ambulance will come on a signal then it will shows the green path for that ambulance and rest of paths are red. IOT based traffic management. Easy to find the path for emergency condition in ambulance. The Traffic violators are captured and send to Police. Track vehicles with the help of sensors. Count the number of vehicles passing through the signals. Observe and identify vehicles in real-time. iot based smart traffic signal monitoring (TMS) system consisting of several components such as cameras, RFID readers, wireless sensors, etc. Are installed at the signals to observe the movement of vehicles. The powerful data analytics tools link GIS-enabled digital roadmap with traffic signals and traffic control rooms for real-time traffic monitoring. This system can be used to inform people about different places traffic condition data transfer between the microcontroller and computer can also be done through telephone network, data call activated SIM. This technique allows the operator to gather the recorded data from a far end to his home computer without going there. Traffic lights can be increased to N number and traffic light control can be done for whole city by sitting on a single place.

H. TARUNA SREE  
18RH1A0572



## HEALTH PREDICTION SYSTEM

Nowadays, people face various diseases due to environmental condition and their living habits. The wide adaptation of computer-based technology in the health care industry resulted in the accumulation of electronic data. The healthcare industry produces large amounts of health-care data daily that can be used to extract information for predicting disease that can happen to a patient in future while using the treatment history and health data. This hidden information in the healthcare data will be later used for affective decision making for patient's health. Also, this area need improvement by using the informative data in healthcare. Due to the substantial amounts of data, medical doctors are facing challenges to analyze symptoms accurately and identify diseases at an early stage. With the help of disease data, data mining finds hidden pattern information in a huge amount of medical data. For disease prediction, we can use supervised machine learning (ML) algorithms. The most prominently discussed supervised Machine Learning algorithms are Decision Trees (DT) and Random Forest (RF) used. Also, the expected outcome and scope of this prediction is that if disease can be predicted than early treatment can be given to the patients which can reduce the risk of life and save life of patients and cost to get treatment of diseases can be reduced up to some extent by early recognition. Health prediction system is to provide a web application for patients to login and they can know the condition of their oral and eyes health & hygiene.

H. TEJASHVINI  
18RH1A0573



## DRONES IN AGRICULTURE

As you know, the technology of drones in agriculture is rising day-by-day for modifying farming. There are high-technology drones that will help to increase the efficiency and effectiveness of farming. The drone in the agricultural field can monitor the crops, manage the plants, and supports crop-spraying. These drones can help to boost up the efficiency and effectiveness of farmers as well as drone pilots. In this way, these drones can help get more output and results by working more accurately.



Below, I will discuss the excellent and incredible drones uses in the agricultural sector. The agricultural drone techniques are complex and can withstand motions and reduce noise production. These products are thin also. Now, let me tell you about the usage of drones in field production! Crops and agricultural businesses can increase crop production by saving time and making better strategic decisions by incorporating drone innovation. These decisions will help you achieve long-term sustainability. For saving weight and improving versatility, mostly drones had crafted with carbon fiber and structural components. Military drones can travel at high rotational speeds, especially with the high carbon composite content. Agricultural drones had equipped with a variety of types and cutting-edge innovations. Thus, infrared sensors and GPS are examples of residential, industrial, and military UAVs. Remote communication systems are used to monitor drones, upload new directives and specific guidelines. Also, it had frequently used to keep an eye on the various streaming content from UAV cameras. The drone and the navigation system are the two components of the drone network. All of the detectors and motion controllers are in the Aircraft muzzle. There is no need for storage to support individuals as the bulk of the environment is filled with the drone information system. Yes, it is! Today's farmers face several difficult aspects that affect the performance of their operations. It involves everything from water availability to global warming, climate, soil fertility, and the presence of seeds and pests. As a response, farmers are switching to high-tech drones to solve these issues.

J Sranvathi  
18RH1A0580



## Edge Computing

Edge computing is a distributed computing paradigm that brings computation and data storage closer to the sources of data. This is expected to improve response times and save bandwidth. A common misconception is that edge and IoT are synonymous. Edge computing is a topology- and location-sensitive form of distributed computing, while IoT is a use case instantiation of edge computing. The term refers to architecture rather than a specific technology in edge computing.

The main aim of edge computing is to move the computation away from data centers towards the edge of the network, exploiting smart objects, mobile phones or network gateways to perform tasks and provide services on behalf of the cloud. By moving computation to the edge, it is possible to provide content cache, service delivery, persistent data storage, and IoT management resulting in better response times and transfer rates.

The benefits of edge computing privacy and security, scalability, reliability, efficiency and speed. It is used in Autonomous vehicles, Remote monitoring of assets in the oil and gas industry, In-hospital patient monitoring, Virtualized radio networks and 5G, Cloud gaming, Content delivery.

K.Sushma  
18RH1A0582



## DEEP WEB

Deep web also called as hidden web or invisible web refers to parts of the Internet not fully accessible through standard search engine like Google, Yahoo and Bing. The deep web includes pages that were not indexed, fee-for-service sites, private databases and the dark web. It is different from the surface web, where contents can be accessed through search engines. Most experts estimate that the deep web is much bigger than the surface web.

Fee-for-service sites are one of the major sources of deep web content. Although fee-for-



service sites such as Netflix, Amazon Prime are visible on the web, most of their content is not. Customers must pay a fee, create a user id, and set up a password to get most of the material offered by these sites. Only those willing and able to pay the fees for these sites can get

access to their content. This restriction of information to paying customers goes against the egalitarian spirit of the early Internet. Private databases are also a crucial component of the deep web. Private databases can be as simple as a few photos shared between friends on Dropbox. They also include financial transactions made on major sites like PayPal. The crucial feature of private databases is that people want to share or preserve this information without sharing it with everyone. That makes it part of the deep web rather than the surface web.

The deep web gives users access to far more information than the surface web. This information may simply be pages that aren't important enough to be listed. Privacy, which is usually provided by encryption, is another benefit of the deep web. Encryption on the deep web allows fee for service sites to keep their content away from non paying Internet users while serving it to their customers. The encryption of databases is absolutely necessary for all forms of fintech to function properly.

G. RAMYA SREE

18RH1A0563



## SMART EYE TECHNOLOGY

Eye-tracking is the phenomena in which movements of the eye and its gaze are captured. This technology was founded in 1999 by a Swedish high-tech company located in Gothenburg. In Smart eye technology, there is a continuous evaluation of all social platforms which eradicates all the possible measures or ways of the unwanted viewer to poke at your screen. When we are at a public place and have to see some confidential documents, the smart eye helps you to keep its access only to your eye. With its biometric screen protection.

This can help when developing websites or displaying information. If we look at the negative side of it, the biggest disadvantage of eye-tracking technology is that not all eyes can be tracked e.g. Contact lenses, glasses, and pupil color can all impact the eye-tracking camera's ability to record eye movements. Another problem in this technology is that calibrating the instruments /equipment takes time which may cause the user to deviate from using the device.

K. Gayathri Sanjana  
18RH1A0587





## Biometric security

Technology is integrated into just about every aspect of modern life – and with the ever-increasing digitization of our world, it has become more difficult to safeguard confidential information. Keys and passwords are no longer sufficient data security measures. Passwords, in fact, pose a huge vulnerability in a company’s security system due to their shareability and ease of cracking.

With the abundance of and network security breaches and the rise of identity theft, it is clear that stronger authentication methods are necessary. One such method is biometric security systems. In this article, we’ll take a close look at what biometric security is and why it’s the future of identification and authentication. Biometric security is a security mechanism that identifies people by verifying their physical or behavioral characteristics. It is currently the strongest and most accurate physical security technique that is used for identity verification. Biometrics are mainly used in security systems of environments that are subject to theft or that have critical physical security requirements. Such systems store characteristics that remain constant over time – for instance, fingerprints, voice, retinal patterns, facial recognition, and hand patterns. These characteristics are stored as “templates” in the system. When somebody tries to access the system, the biometric security system scans them, evaluates the characteristics, and attempts to match them with stored records. Then, if a match is found, the person is given access to the facility or device.

M.Sathwika  
20RH1A05D3



## FOLKCOMPUTING

Folk Computing technology is designed to help build community in informal, face-to-face settings by giving users a playful way of revealing shared assumptions and interests. Drawing on the communicative process of folklore, Folk Computing devices facilitate the creation, circulation and tracking of new, digital forms of lore. These digital folklore objects serve as social probes: they circulate among people with whom they resonate, thereby revealing the boundaries of groups who share the underlying beliefs, knowledge and experiences that give the lore meaning.

Folk Computing uses technology to enhance the community building functions of folklore in three important ways: it supports the circulation of more interactive and media-rich lore, it reduces the social and cognitive costs of folklore creation and circulation, and it enables detailed visualizations of how pieces of lore circulate through a community. This thesis will explore the potential of Folk Computing through a design rationale for three new technologies, ranging from computationally augmented name tags used at conferences (the Thinking Tags and Meme Tags) to devices with which people can create, trade and track animations and simple games (the i-balls).



Kodam Sruthi  
18RH1A0599

## DIGITAL THERAPEUTICS

Patients who have chronic illnesses often require ongoing care from their physicians. This care can include patient education, symptom monitoring, medication adjustment, and behavior changes. Not only is this care costly, but it is also very time-consuming for both medical staff and patients. Digital therapeutics are prescribed by a doctor to a patient for their particular medical condition. These sophisticated software programs can be accessed as apps on a patient's smartphone or through a personal computer. They go through the same rigorous testing as all medications, including randomized clinical trials. Medical conditions that are well suited for digital therapeutics include diabetes type I and type II, cancer, anxiety, musculoskeletal pain, ADHD, asthma, migraines, insomnia, and substance abuse. As patients use the applications, information about their wellbeing is reported back to their physician. This allows doctors to be able to monitor patients without having to see them regularly, as well as spot problems much earlier than when a patient needs to wait for an appointment.

M.MADHU PRIYA  
18RH1A05E0



## PAVEGEN TECHNOLOGY

In short, it creates energy from footsteps using a unique tile based system. Pavegen is literally „The Next Step“ to make use of the power of many. Pavegen’s combination of physical interactivity and rich data is helping to bring smart cities to life.



The Pavegen technology is a multifunctional custom flooring system. Pavegen’s tiles are electromagnetic. As people step on the tiles, their weight causes electric-magnetic induction generators to vertically displace, which results in a rotatory motion that generates off-grid electricity. Additionally, each tile is equipped with a wireless API that transmits real-time movement data analytics, whilst directly producing power when and where it is needed. Pavegen is also able to connect to a range of mobile devices and building management systems.

Spoorthy Reddy  
18RH1A0575



## CLLOUD COMPUTING IS THE THIRD WAVE OF DIGITAL REVOLUTION

As a metaphor for the Internet, ‘the cloud’ is a familiar cliché, but when combined with ‘computing,’ the meaning gets bigger and fuzzier. Cloud computing encompasses any subscription-based or pay-per-use service that, in real time over the Internet, extends IT’s existing capabilities. In a cloud computing system, there’s a significant workload shift. Local computers no longer have to do all the heavy lifting when it comes to running applications. The network of computers that make up the cloud handles them instead. Hardware and software demands on the user’s side decrease. The only thing the user’s computer needs to be able to run is the cloud computing system’s interface software, which can be as simple as a Web browser, and the cloud’s network takes care of the rest. A fundamental concept behind cloud computing is that the location of the service, and many of the details such as the hardware or operating system on which it is running, are largely irrelevant to the user. It’s with this in mind that the metaphor of the cloud was borrowed from old telecoms network schematics, in which the public telephone network (and later the internet) was often represented as a cloud to denote that the just didn’t matter -- it was just a cloud of stuff. This is an over-simplification of course; for many customers location of their services and data remains a key issue.

M.Sri Laxmi  
18RH1A05E9



## EMBEDDED WEB TECHNOLOGY

Embedded Web Technology is the merging of Embedded Systems with the World Wide Web. Embedded Web Technology' decreases the cost of developing and maintaining the user interface by allowing the user to interface to the embedded system through a web browser running on a standard personal computer. An embedded system is a computer that has been built to solve only a few very specific problems and is not easily changed. The word embedded means it is built into the system. These Embedded systems may not have disk drives, keyboards, display devices and are typically restricted in terms of power, memory, GUIs and debugging interfaces. The central building blocks are microcontrollers, i.e. microprocessors integrated with memory units and specific peripherals for the observation and control of these embedded systems. On the other hand, Web technologies employ client-server models. The embedded Web system works on the same principle as that traditional Web request-response systems. Web pages from the embedded system (server) are transmitted to the Web browser (client).

M.Srija  
18RH1A05F0





## **AUTOMATIC NUMBER PLATE RECOGNITION (ANPR)**

This is a technology that uses optical character recognition on images to read vehicle registration plates to create vehicle location data. It can use existing closed-circuit television, road-rule enforcement cameras, or cameras specifically designed for the task. ANPR is used by police forces around the world for law enforcement purposes, including to check if a vehicle is registered or licensed. It is also used for electronic toll collection on pay-per-use roads and as a method of cataloguing the movements of traffic, for example by highways agencies. Automatic number-plate recognition can be used to store the images captured by the cameras as well as the text from the license plate, with some configurable to store a photograph of the driver. Systems commonly use infrared lighting to allow the camera to take the picture at any time of day or night. ANPR technology must take into account plate variations from place to place. Privacy issues have caused concerns about ANPR, such as government tracking citizens' movements, misidentification, high error rates, and increased government spending. Critics have described it as a form of mass surveillance. ANPR was invented in 1976 at the Police Scientific Development Branch in Britain.

M. Sreeja  
18RH1A05F1

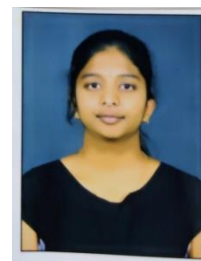


## ULTRATHIN MATERIALS IN QUANTUM COMPUTING

Ultrathin materials lead to big advancement in Quantum Computing. Superconducting qubits are the building blocks of a quantum computer. The use of ultrathin materials to reduce the size of superconducting qubits could facilitate personally sized quantum devices. Conventional qubit capacitors are like open-faced sandwiches, with no top plate and a vacuum sitting on top of the bottom plate to act as the insulating layer (the plates are bigger). The size of each qubit is going to increase if you put it all on one small device. When two adjacent qubits have their own electric field open to free space then there may be some unwanted conversation between them.

So, the researchers use ultrathin materials to create the superconducting qubits which are at least one hundred the size of traditional design and suffer less interference between neighboring qubits. The researchers showed that hexagonal boron nitride, a material composed only of a few monolayers of atoms, can be stacked to form the insulator of capacitors in a superconducting qubit. This doesn't reduce the performance of qubit rather makes the capacitors smaller than generally used in qubit. The structure of these small capacitors reduces the cross-talk, which occurs when a qubit inadvertently affects the surrounding qubits. With this we can use millions of qubits in a device.

18RH1A0597  
K.Sai Sri Mouna



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## IMPORTANT WEBSITES

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[www.ieee.org/india](http://www.ieee.org/india)

[www.engineering.careers360](http://www.engineering.careers360)

<https://www.coursera.org/in>

<https://www.udemy.com/>

[www.mathworks.in/products/matlab/](http://www.mathworks.in/products/matlab/)

<https://archive.org/details/texts>

<https://www.codecademy.com/>

<https://www.cse.org/>

<https://www.scribd.com/books>

<https://books.google.co.in/>

[MathGV.com/](http://MathGV.com/)

<http://www.engineeringchallenges.org/>

<https://www.lumosity.com/en/>

<http://elevateapp.com/>

<http://www.tryengineering.org/>

<http://www.engineergirl.org/>

<http://www.discoverengineering.org/>

<http://www.eng-tips.com/>

<http://efymag.com>

<http://efymagonline.com/>

[www.dspguide.com](http://www.dspguide.com)

<https://www.engineer4free.com/>

[www.howstuffworks.com](http://www.howstuffworks.com)

<http://nptel.iitm.ac.in>

<http://www.opencircuitdesign.com/>

<http://www.futuresinengineering.com/>

# INFOSPARK



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