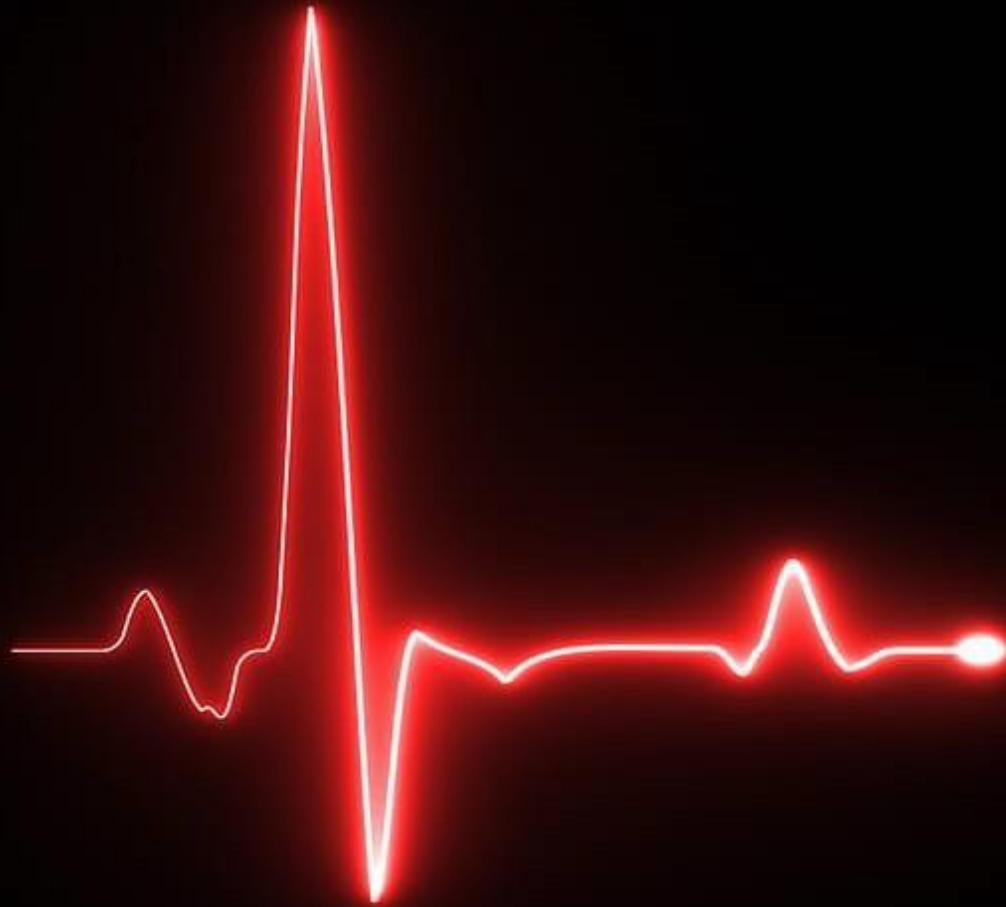**CHRIST**
(DEEMED TO BE UNIVERSITY)
BANGALORE · INDIA

THE PULSE

NEWSLETTER
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Vision

To emerge as a centre of academic excellence in the field of Electronics & Communication Engineering to address the dynamic needs of the industry upholding moral values.

Mission

- Impart in-depth knowledge in Electronics & Communication Engineering to achieve academic excellence.
- Develop an environment of research to meet the demands of evolving technology.
- Inculcate ethical values to promote team work and leadership qualities befitting societal requirements.
- Provide adaptability skills for sustaining in the dynamic environment.

MESSAGE FROM FACULTY

V2X Communication

 Unless you are an incurable vintage automobile ardent, you will have observed that automobiles are becoming connected, both to each other and to the external world. When it come to the state-of-the-art infotainment, connected vehicles add a lot of comfort. But they also have the capability to make the mobility secure and efficient. With automobile operating system running everything from infotainment to autonomous driving, automobiles are becoming more smart and less subservient. The copious sensors and onboard connectivity in the automobiles, provides better safety, greener and efficient journey. V2X refers to "Vehicle to Everything", is a superordinate term in automobile communication. There are several classification of V2X, including Vehicle to Pedestrian (V2P), Vehicle to Network (V2N), Vehicle to Infrastructure (V2I) and Vehicle to Vehicle (V2V) communication. In this multifaceted environment, the automobiles will talk to other automobiles, update the traffic information and parking areas and data centers via cellular networks. The original V2X standard is stationed on a Wi-Fi offshoot IEEE 802.11p (Wireless Access for Vehicular Environments Program) working on a 5.9GHz frequency band. It goes beyond line-of-sight limited sensors like radar, LIDAR and cameras. Speed limit warning, collision warning and electronic parking are features of V2V and V2I communication. A short range, low latency and high reliability feature works fine with high-speed automobiles in extreme weather conditions. An alternative of IEEE 802.11p is Cellular V2X. Automated driving and intelligent mobility are the key advantage of Cellular V2X. Vehicle to Network i.e. Device to Network connections used traditional cellular connectivity to enable cloud services to be part of end to end solution. Limited channels, limited data rates, cost to provide comprehensive LTE / 5G network, external influences, limited data propagation due to areas are the main disadvantages of Cellular V2X. The timeline and capabilities of Cellular V2X is shown in the below figure [Bazzi, Alessandro, et al].
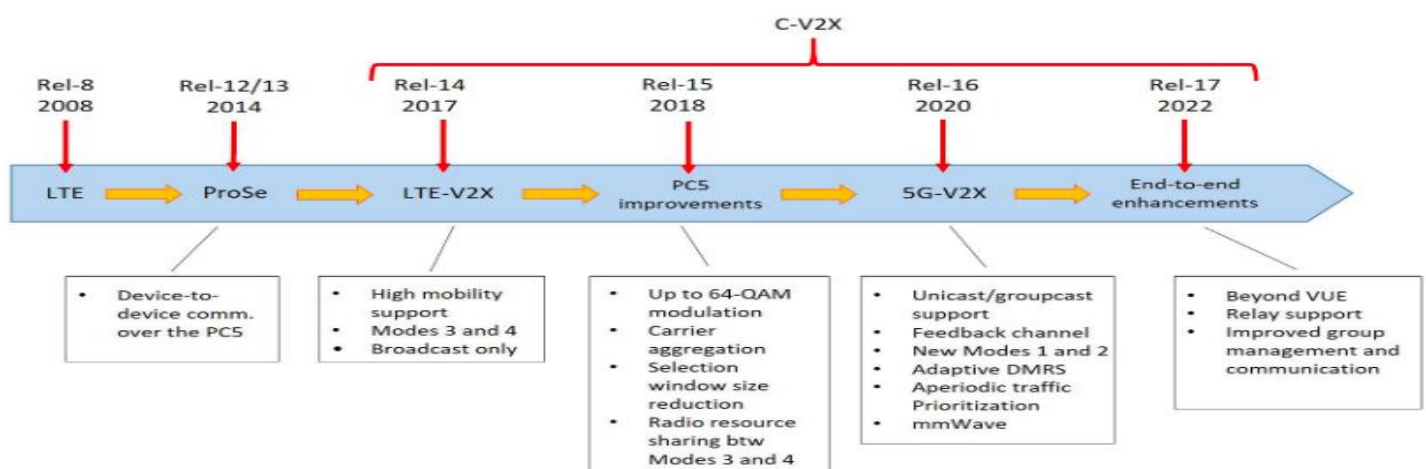

Dr. Aneesh V (ECE Dept.)

EVENTS

Highlights of the Month:

- Dr.M.C.Nataraja, Professor & Head, Department of Civil Engineering, M S Ramaiah Institute of Technology, Bangalore visited in-person as Observer during the NBA Expert Team online visit held during 12.11.2021 to 14.11.2021.

- Dr.Nikhil Ranjan Banerjea, Vice-Chancellor, Bengal Engineering and Science University, Shibpur visited virtually as Chairman of NBA Expert Team for evaluating B.Tech- Electronics and Communication Engineering Program online held during 12.11.2021 to 14.11.2021.

- Dr.Ramesh Garg, Dean, Student and Alumni Affairs, IIT Ropar and Former Professor, IIT Kharagpur visited virtually as Member of NBA Expert Team for evaluating B.Tech- Electronics and Communication Engineering Program online held during 12.11.2021 to 14.11.2021.

- School of Engineering and Technology conducted a tech event called CHRIST - TECH UTSAV on 26.11.2021 to 27.11.2021. The event was fully organized and conducted by our students.
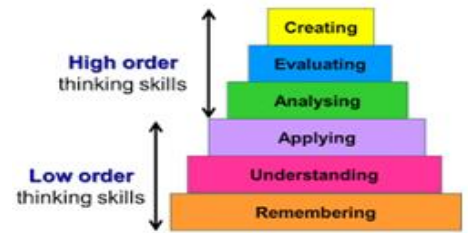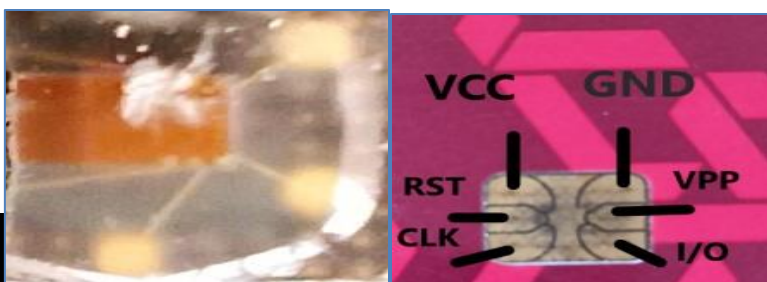
STUDENT CONNECT

Electronic Cards

Electronic cards or smart cards are used in a number of industries today. They are mainly categorized as contactless or as contact cards. We use credit and debit cards for financial transactions, we use Subscriber Identification Module (SIM) cards in our mobiles, we use the Aadhar, Permanent Account Number(PAN), Driving License cards as identity proofs, we use ID cards as access cards at Universities and at workplaces, we use health care cards at hospitals and dispensaries, we use cards in TV Set-up Boxes, we use membership cards at Clubs or companies such as Country Club Membership and Tanishq Customer Membership. Contactless cards function based on wireless communication methods such as Near Field Communication (NFC) or Radio Frequency Identification (RFID). These are the latest form of cards in use today. We may have observed that these cards are just tapped or held close to the Card Readers and the payment is made instantly! The heart of all these cards is either a microprocessor or a memory unit in the form of an embedded Integrated Circuit(IC). The pins of this IC are connected to the surface of the card through gold contacts as shown in Figure 1. The IC is well protected inside and the small metal area we see over the cards is actually connected to the embedded IC internally. We see some lines over this part, they are actually the pin connections as shown in Figure 2. Usually, we find six or eight lines which indicate that the internal IC has respective number of pins. This is where all the card functions take place. When the card is inserted into a Reader as in an Automatic Teller Machine (ATM), data may be written or read from the embedded memory (Electrically Erasable Programmable ROM – EEPROM) or the embedded processor is activated to perform an operation. The body of the card is just plastic. Earlier cards used magnetic strips, the black rectangular part on the back of a card. This would be swiped to read magnetically stored card content. Currently, the embedded IC- PIN or chip-PIN cards are commonly used as they are more secure.

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Kindly share your thoughts and research experiences via e-mail to our team, and be featured in next month's issue!