DGITechChronicle

# DGI TECH CHRONICLE

## CSIT EDITION

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# EDITORIAL BOARD

Dr. Aadarsh Malviya

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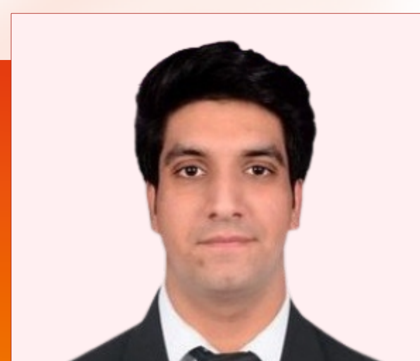
In this issue, we delve into a captivating array of topics and developments, all tailored to the inquisitive minds of the future engineers. As an engineering college community, we stand at the forefront of technological breakthroughs, and it is our mission to empower you with the knowledge and insights to not only keep pace but to lead in this ever-accelerating race of innovation.



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CSIT EDITION

# Department Vision and Mission

# Department PEO, PSO and PO's

# My Pen and Me: Students Articles

# VISION

Promoting technologists by imparting profound knowledge in information technology, all while instilling ethics through specialized technical education.

# MISSION

Delivering comprehensive knowledge in information technology, preparing technologists to excel in a rapidly evolving digital landscape.

Building a culture of honesty and responsibility in tech, promoting smart and ethical leadership.

Empowering individuals with specialized technical skills and ethical values to drive positive change and innovation in the tech industry.

# Program Educational Objectives (PEO)

To enable graduates to think logically, pursue lifelong learning and will have the capacity to understand technical issues related to computing systems and to design optimal solutions.

To enable graduates to develop hardware and software systems by understanding the importance of social, business and environmental needs in the human context.

To enable graduates to gain employment in organizations and establish themselves as professionals by applying their technical skills to solve real world problems and meet the diversified needs of industry, academia and research.

# Program Specific Outcome (PSO)

To adapt to emerging technologies and develop innovative solutions for existing and newer problems.

To create and apply appropriate techniques IT tools to complex engineering activities with an understanding of the limitations.

To manage complex IT projects with consideration of the human, financial, ethical and environmental factors.

# Program Outcome (PO)

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern tool usage: Create, select, and apply appropriate techniques, resources,& modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

# Smart Cards

STUDENTS ARTICLES

Smart cards are physical cards with embedded integrated circuits (ICs) that provide computational capabilities and data storage. These cards come in two main types: contact and contactless. Contact smart cards have metal contacts for direct communication with a card reader, while contactless smart cards use RFID or NFC technology for wireless communication.

The components of a smart card typically include a microprocessor or microcontroller, memory for data and applications, an operating system for managing functions, and a communication interface for interaction with external devices.

Smart cards find applications in various domains, including:

1. **Payment Cards:** Used for secure and convenient financial transactions. EMV technology is a common example.
2. **Access Control:** Employed for secure access to buildings, computer systems, and networks.
3. **Identification and Authentication:** Used in national ID cards, healthcare cards, and employee ID cards to verify individuals' identities securely.
4. **Transportation Systems:** Contactless smart cards enable fare payments in public transportation systems.
5. **Healthcare Cards:** Store medical records securely, allowing healthcare professionals access to patient information.
6. **SIM Cards:** Used in mobile phones for subscriber identification and network access.
7. **Electronic Passports:** Enhance security features in passports by securely storing personal data.

Smart cards incorporate security features like encryption, PIN protection, and tamper resistance to safeguard stored data. Despite the potential for enhanced security, challenges include production costs, standardization issues, and privacy concerns related to the storage of personal information.

**Gaurav Tiwari**
Roll No : 12594

# IT in Space

STUDENTS ARTICLES

If space has always been an enigma for mankind, then the moon has always served as the first post for any attempt at understanding or exploring deeper space.

All ventures into outer space, ranging from exploratory fly-bys to managed flights, have first been tried out of the moon. Like in most other areas, space research is also moving into larger-scale simulations using powerful computers . in fact given the high cost , and often the impracticability of conducting live experiments, space research had moved into computer-based simulation long before most other streams.

Everything from flight paths of future rockets to the theories on origin of the universe and its evolution are today computer simulated. Consider the case of the magnetic file around a planet. Like with everything else in space research . let take the moon as our example the moon's magnetic field is very feeble when compared to that of the earth. Also unlike on the earth, it varies widely from point to point. This much is known from the measurements taken by spacecraft that flew by or landed on the moon.

THE INTERNET ON MARS

The internet is slated to go over and above this world, the first target being mars, to be followed by Jupiter and its moon, Europe.

This idea of talking the internet to the space comes from the need for a low cast and high reliability inter planetary network. It is not that there was no communication earlier. when Countries started sending probes into the space each used a unique set of protocols to communicate with the earth. This was done using the deep space network(DSN) developed by NASA. Since these probes communicated with same ground stations, the need for common protocol increased with time. Taking the internet to space is the offshoot of this need for standardization. The inter planetary network(IPN),a part of jet Propulsion Laboratory(JPL),is managing this program.

But how will this be implemented? One can plan how the internet will work on the earth because of its fixed size and the fixed positions on which the data has to travel. Now, for the implementation on the planets will be connected through individual dedicated gateways. The individual networks can follow their own protocols, but these protocols will end at the gateway. By keeping the internet of all the planets separate, engineers will not have to make long service calls. Besides they will not have to send a database of 20-million dotcom names to mars periodically

These gateways will work on a bundle based protocol, which will reside over the transport layer to carry data from one gateway to another. This gateway may not be on the surface of a planetary body; it can be a spacecraft in orbit, too. At the moment a bundle protocol will be needed because the data will need to travel huge distances and sending small packets of data may not be feasible. Instead, this data will be collected and sent in a bundle, as a big burst of data, to the next gateway.

Gomsi Pathak
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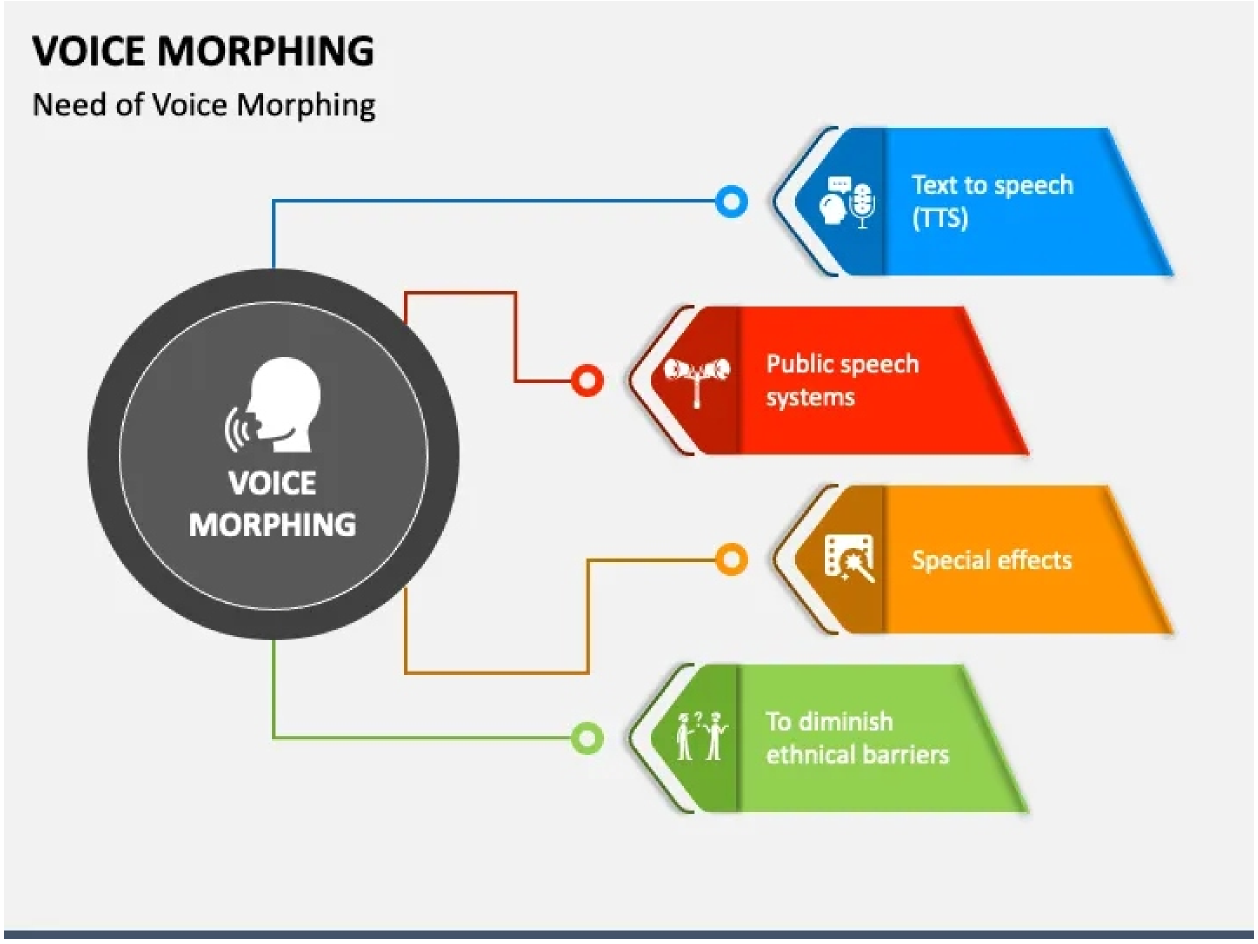
# Voice morphing

Voice morphing is a technique for modifying a source speaker's speech to sound as if it was spoken by a target speaker. This is done by transforming the acoustic waveform of the source speech into a representation that captures the spectral and temporal characteristics of the target speaker's voice. The transformed waveform is then synthesized to produce speech that sounds like it was spoken by the target speaker.

STUDENTS ARTICLES




Voice morphing is a technique that modifies the sound of a voice by combining speech synthesis and voice recognition techniques. It is a relatively new technology, but it has the potential to be used in a wide range of applications. For example, it could be used to create realistic speech for movies, TV shows, and video games. It could also be used to improve communication between people with different accents or languages. Additionally, it could be used to create synthetic voices for people who are unable to speak

The development of voice morphing technology is still in its early stages, but it is rapidly evolving. As the technology continues to improve, it is likely to be used in even more innovative and creative ways.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