DRONTECHCONNECT

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SIT EDITION

DRONTECHCONNECT

EDITORIAL MESSAGE

Dr. Megha Goel

Dear Readers,

Welcome to the latest edition of DronTechConnect!

Our Computer Science and Information Technology (CSIT) Department stands as an exemplary hub of innovation and learning. With cutting-edge curricula and state-of-the-art facilities, we offer an unparalleled academic experience. Our esteemed faculty comprises industry experts and dedicated researchers, fostering an environment that encourages critical thinking, creativity, and problem-solving skills. Through robust industry connections and internships, students gain practical exposure and hands-on experience in diverse technological domains. Our CSIT department prides itself on producing graduates equipped with the expertise and adaptability to thrive in the ever-evolving tech landscape, making a significant impact in the world of technology.

Throughout these pages, you'll discover insightful articles, thought-provoking research, and inspiring stories from our students. From groundbreaking projects to perspectives on emerging technologies, this magazine showcases the diverse talents and accomplishments that make the department truly exceptional.

We hope this edition sparks your curiosity, ignites your passion for technology, and provides a glimpse into the exciting advancements happening within department. Thank you to all the contributors for sharing your expertise and experiences. We invite you to explore, learn, and be inspired by the incredible work showcased in this edition of our CSIT department magazine.

Happy Reading!

Warm Regards
Dr. Megha Goel
Editor-in-Chief, DronTechConnect

EDITORIAL BOARD

Dr. Megha Goel

Editor in Chief

It gives me immense pleasure to present our college magazine, a culmination of creativity, innovation, and academic excellence. Within these pages, you'll witness the remarkable dedication and hard work of our Computer Science and Information Technology (CSIT) department. In this issue, I encourage you to explore the diverse perspectives and accomplishments featured here.

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DRONTECHCONNECT

C SIT EDITION

VISION

Preparing technologists with in-depth insights into information technology, and embedding ethics via focused technical training.

MISSION

Empower technologists to excel in information technology through rigorous training and hands-on experience.

Foster a culture of integrity and responsibility by instilling ethical principles in every aspect of technical education.

Encourage technologists with new ideas and good leadership in the tech world, training to possess strong values.

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

- Demonstrate technical competence with analytical and critical thinking to understand and meet the requirements of Industry, academia and research.

- Exhibit leadership, team skills and entrepreneurship skills to provide solutions to real world problems.

- Work in multi-disciplinary industries with social and environmental responsibility, work ethics and adaptability to address engineering and social problems.

PSOS (PROGRAM SPECIFIC OUTCOME)

- Have proficiency in programming skills to design, develop and apply appropriate techniques, for solving engineering problems.

- Have knowledge to build, automate and manage business solutions using advanced technologies.

- Have pleasure towards research in applied computer technologies.

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. 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.

PO3. 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.

Po4. 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.

Po5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

Po6. 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.

Po7. 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.

Po8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities & norms of the engineering practice.

Po9. Individual & team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Po10. 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 & receive clear instructions.

Po11. 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.

PO12. 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.

Understanding TCP/IP: The Backbone of Internet Communication

Divya Sharma
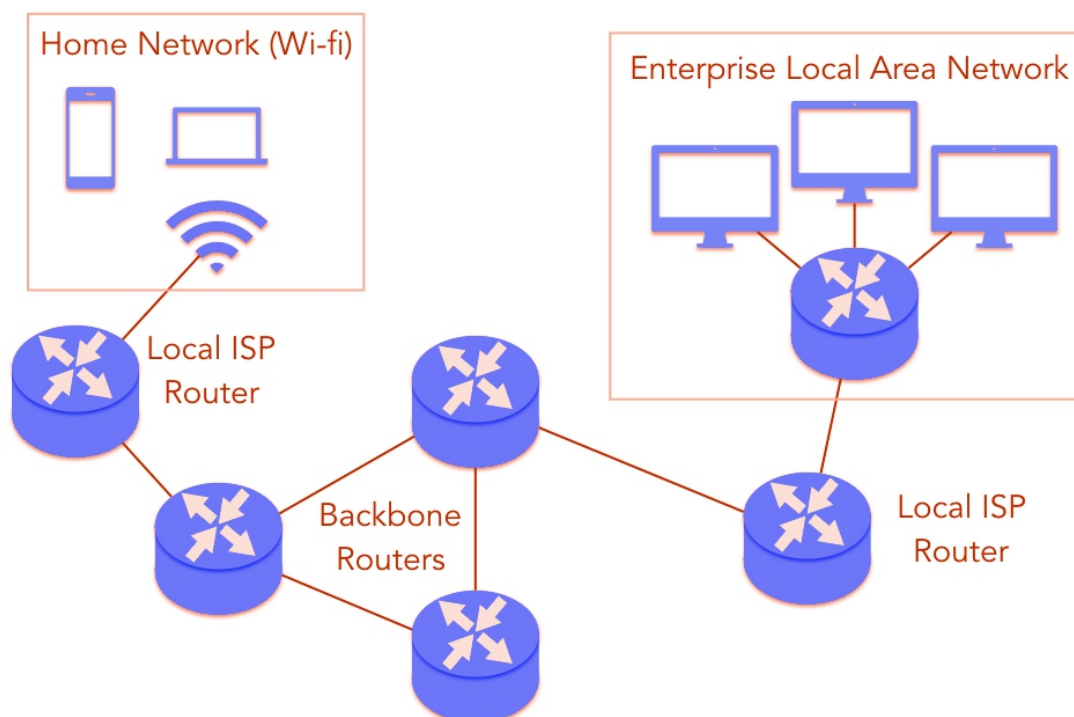
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STUDENTS ARTICLES

The Transmission Control Protocol/Internet Protocol (TCP/IP) is the foundational suite of protocols that enables communication across the vast landscape of the internet. Developed in the 1970s by Vinton Cerf and Bob Kahn, TCP/IP serves as the fundamental framework for data exchange between devices, ensuring seamless connectivity worldwide.

TCP/IP consists of two main protocols: Transmission Control Protocol (TCP) and Internet Protocol (IP). IP handles the addressing and routing of data packets, assigning unique numerical addresses to devices and directing data to its destination. TCP, on the other hand, manages the reliable and orderly transmission of these data packets, ensuring that information reaches its intended recipient intact and in the correct order.

The four layers of the TCP/IP model - Link, Internet, Transport, and Application - provide a structured approach to networking. The Link layer deals with physical network connections, the Internet layer handles addressing and routing, the Transport layer manages end-to-end communication, and the Application layer supports specific network applications.

TCP/IP's robustness lies in its ability to adapt to diverse network architectures, allowing for interconnectivity between different devices and platforms. This universality has made it the standard protocol for internet communication, fostering interoperability and enabling the growth of the World Wide Web.

In conclusion, TCP/IP is the backbone of internet communication, facilitating the seamless exchange of data across the global network. Its reliability, adaptability, and structured architecture have played a crucial role in the evolution and expansion of the digital age, making it an indispensable protocol suite in the realm of networking.

Home Network (Wi-fi)

Enterprise Local Area Network

Local ISP Router

Backbone Routers

Local ISP Router

Divya Sharma

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The Fascinating World of Voice Morphing: Transforming Soundscapes

Ankit Prajapati

(22643; CSIT)

STUDENTS ARTICLES

Voice morphing, a captivating technological innovation, empowers users to alter or manipulate their vocal characteristics, offering a myriad of applications ranging from entertainment to security. This cutting-edge technology utilizes advanced algorithms to modify the pitch, tone, and timbre of a person's voice, creating a transformed audio output.

In the realm of entertainment, voice morphing has become a popular tool for content creators, enabling them to craft unique characters and narratives. From animated films to video games, the ability to morph voices adds depth and creativity to storytelling. Additionally, in the music industry, artists can experiment with different vocal styles and create innovative soundscapes.

Beyond entertainment, voice morphing has found applications in security and privacy. Authentication systems are increasingly incorporating voice morphing detection to enhance security measures. By analyzing speech patterns and detecting anomalies, these systems can identify potential fraud or unauthorized access attempts, making voice morphing a valuable asset in safeguarding sensitive information.

However, as with any technology, there are ethical considerations surrounding voice morphing, particularly in the context of deepfake technology. Misuse of voice morphing capabilities can lead to the creation of deceptive content, raising concerns about misinformation and privacy infringement.

In conclusion, voice morphing stands at the intersection of creativity, technology, and security. Its ability to transform voices opens up new possibilities in entertainment and enhances security measures in various fields. As this technology continues to evolve, it is crucial to balance its innovative potential with ethical considerations to ensure responsible and beneficial use in our interconnected digital landscape.

VOICE MORPHING
Need of Voice Morphing

VOICE MORPHING

- Text to speech (TTS)
- Public speech systems
- Special effects
- To diminish ethical barriers

Ankit Prajapati

(22643; CSIT)

Mobile Computing Unleashed: Transforming Lives through Connectivity

Jatin Khatana

(22658; CSIT)

Mobile computing has emerged as a revolutionary force, reshaping the way we interact with technology and the world around us. With the proliferation of smartphones, tablets, and wearable devices, the concept of computing has transcended the boundaries of traditional desktops, empowering individuals with on-the-go access to information and services.

One of the primary applications of mobile computing is in communication. Smartphones have become indispensable tools for staying connected with friends, family, and colleagues. Mobile communication apps, social media platforms, and instant messaging services have transformed the way we share information, fostering real-time connectivity across the globe.

Mobile computing has also revolutionized the business landscape. Mobile applications allow businesses to streamline operations, enhance customer engagement, and provide personalized services. From mobile banking to e-commerce apps, the business ecosystem has adapted to the mobile-first paradigm, creating new opportunities and efficiencies.

Applications of Mobile Computing

Exploring Innovative Applications

Social Media Applications

Business Tools

Educational Applications

Gaming Applications

Shopping Applications

Mobile Security

In the field of healthcare, mobile computing has facilitated significant advancements. Mobile health (mHealth) applications enable individuals to monitor their health, access medical information, and even consult with healthcare professionals remotely. Wearable devices equipped with health sensors provide continuous health monitoring, empowering users to take a proactive approach to their well-being.

Education has also undergone a transformation with the integration of mobile computing. Mobile learning apps and platforms provide access to educational resources anytime, anywhere. This has democratized education, breaking down barriers to learning and offering flexibility to students of all ages and backgrounds.

The realm of entertainment has not been left untouched by the wave of mobile computing. Streaming services, mobile games, and multimedia applications have become prevalent, offering users a diverse range of entertainment options at their fingertips.

As mobile computing continues to evolve, emerging technologies like 5G, augmented reality (AR), and the Internet of Things (IoT) promise to push the boundaries further. The seamless integration of mobile devices into various aspects of our lives underscores the transformative power of mobile computing, enhancing convenience, efficiency, and connectivity on a global scale.

Jatin Khatana

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