MANAKULA VINAYAGAR INSTITUTE OF TECHNOLOGY

NBA NATIONAL BOARD OF ACCREDITATION

ELECTRONICA

2020-2021

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VOLUME –7

ABOUT THE DEPARTMENT

Electronics and Communication Engineering is gaining increasing importance in all works of life. The advancements and technological innovations in electronics are felt in area as diverse as commercial communications, medicine, defense and day today common man activities. The department places strong emphasis on fundamentals, so that the student is introduced to complex subjects in an interesting and easy manner. The Department imparts technical knowledge in the areas of Semiconductor devices, Design of Electronic circuits, Communication engineering and its applications. To meet the nation's interest in developing the manufacturing electronics industries, the department offers training in various domains to develop an employable engineer.

The Department of Electronics and Communication Engineering which was started in the year 2008 offers a UG Programme (B.Tech) in Electronics and Communication Engineering. The B.Tech Electronics and Communication Engineering Programme has been accredited by. AICTE and is affiliated to Pondicherry university. The department has a team of committed faculty members who are not only well qualified but are also backed by rich industrial / research / teaching experience. The development of competency of our students are of utmost importance and various activities are done to enrich the students.

VISION

The department aspires to produce dexterous professionals, competent Researchers and entrepreneurial leaders for the benevolence of the society.

MISSION

Department of Electronics and Communication Engineering is committed.
Higher Order Thinking: To invoke higher order thinking among the students by means of comprehensive teaching and learning process.

Competency: To provide training on cutting-edge technologies to improve the competency of the students.

Continuous learning: To promote innovation through providing state of-art facilities and active industry institute interaction.

Entrepreneurship: To facilitate the students to improve their leadership and entrepreneurship skills with ethical values.

PROGRAMME EDUCATIONAL OBJECTIVES

PEO1: Employability: Our Graduates shall be suitably employed in allied industries/services with professional competency and knowledge of modern tools.

PEO2: Higher Education: Our Graduates shall be capable to pursue higher studies/research in the field of engineering and management.

PEO3: Entrepreneurship: Our Graduates shall be prepared for a successful career by meeting ever increasing demands required by Electronics and communication profession and enable them to become an entrepreneur.

PEO4: Ethical: Our Graduates cultivate professional and ethical attitudes with effective communication skills, team work and multidisciplinary approach related to engineering issues.

PROGRAM OUTCOMES

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 and norms of the engineering practice.

PO9: Individual and 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 and 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.

PROGRAM SPECIFIC OUTCOMES

PSO1: Products Development: Use modern tools to design subsystems for simple applications in Embedded Systems and VLSI.

PSO2: Design Thinking: Apply engineering concepts to find solutions in the fields of Communications, Signal/Image Processing.

STUDENT ARTICLES-I

Li-Fi (Light Fidelity)

The term Li-Fi was first coined by the University of Edinburgh, however, this technology was first introduced by Herald Has, a German professor, and physicist. He introduced and demonstrated it at a TED talk in July 2011. He believed light bulbs could act as wireless routers for Data transmission. His demonstration showed how changes in the amplitude of a light bulb at high speeds can be used for energy transmission. He demonstrated the use of LED for the transmission of a high definition video and then showed the same video to the audience. He also formed a company later on by the name of pure LiFi. Since then the use of this wireless technology has increased, now being deployed in more than 20 countries.

Information may be obtained within vicinity of visible light by means of electronic gadgets with photo-diode. This means that light bulbs can bring not only light but wireless connection at same time anywhere where LED's are used. Generally speaking, Wi-Fi plays an efficient role in wireless data coverage within buildings, while using Li-Fi we will provide excellent density data coverage in particular location without any radio interference issues. Li-Fi provides better latency, performance, accessibility and security than Wi-Fi, and under laboratory conditions has even reached extreme speeds greater than 1 Gbps.

Working of Li-Fi :

Light Fidelity technology is wireless communication device focused mainly on use of visible light between violet (800 THz) and red (four hundred THz). Li-Fi is based solely on propagation of information in defined and uniform fashion via amplitude modulation of light supply.

There is LED transmitter (light emitting) on one end and photo detector (light sensor) on other. Li-Fi operates very simple and fast. The data input to LED transmitter is encoded into light by varying the flickering rate at which binary code (1s and 0s) is generated by LEDs flicker ‘on’ and ‘off’. LED transmitter’s on / off operation which seems to be invisible to human eye as speed of LEDs is less than microsecond. By switching ON LED is logical ‘1’ it makes data transfer according to incoming binary codes, switching OFF is logical ‘0’. Data can be encoded in light by varying rate at which LEDs flicker on and off to different combinations of 1s and 0s.

Advantages of Li-Fi Technology:

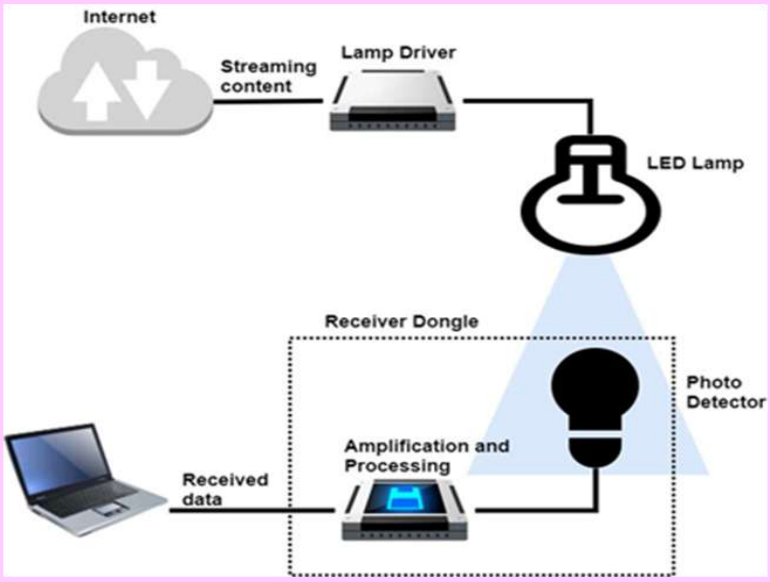
High speed: Li-Fi technology is much faster as compared to Wi-Fi technology. It has the capability to transmit data up to 100 Mbps or 1 Gbps. This means you can download a high-definition video in seconds.

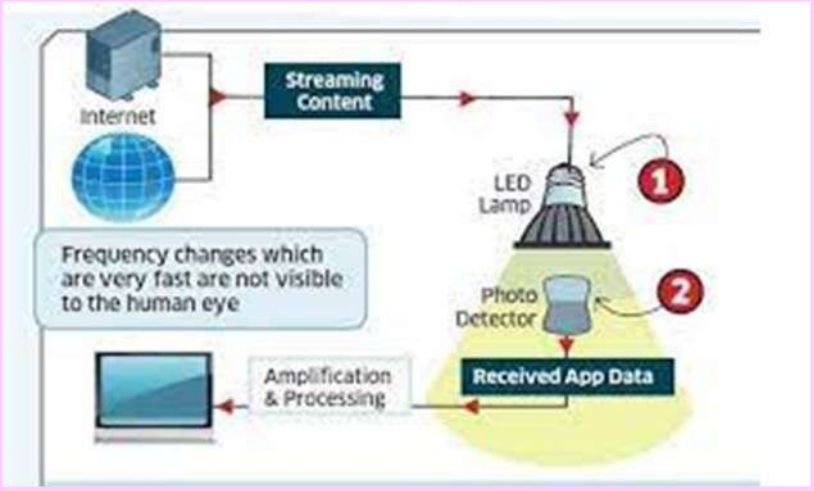
Higher capacity: Li-Fi can help in keeping up with the demand if wireless data networking. After all the increase in radio frequency spectrum occupancy has limited the capacity of data transmission. This is why Li-Fi could lead to new opportunities and a higher capacity of data transmission as compared to Wi-Fi. The visible spectrum used in the transmission of data is much greater than the radio waves spectrum, therefore, it has a greater capacity.

Better security: Radio waves are penetrable and can be intercepted by unwanted people. On the other hand, Li-Fi is much more secure as the signals are confined to the same room and cannot be intercepted easily.

More efficient: Since the Li-Fi systems use LED lights which are already installed in majors of our homes and commercial areas, therefore, is an efficient use of energy as compared to Wi-Fi.

Free from Interference: Wi-Fi networking faces problems of neighboring network interference or radio interference whereas Li-Fi is free from all types of interferences that could affect Wi-Fi system and are therefore more efficient for use.





By
Jai ganesh M II Year ECE B

STUDENT ARTICLES-II

Natural language processing (NLP)

Natural Language Processing (NLP) is a branch of artificial intelligence dealing with the interaction between humans and computers using a natural language. The ultimate aim of NLP is to read, understand, and decode human words in a valuable manner. Most of the NLP techniques depend on machine learning to obtain meaning from human languages.

NLP is an interdisciplinary field concerned with the interactions between computers and natural human languages (e.g. English) speech or text. NLP-powered software helps us in our daily lives in various ways, for example:
Personal assistants: Siri, Cortana, and Google Assistant.

NLP is mainly divided into two fields: Linguistics and Computer Science.
The Linguistics side focuses on understanding the structure of language, including the following sub-fields

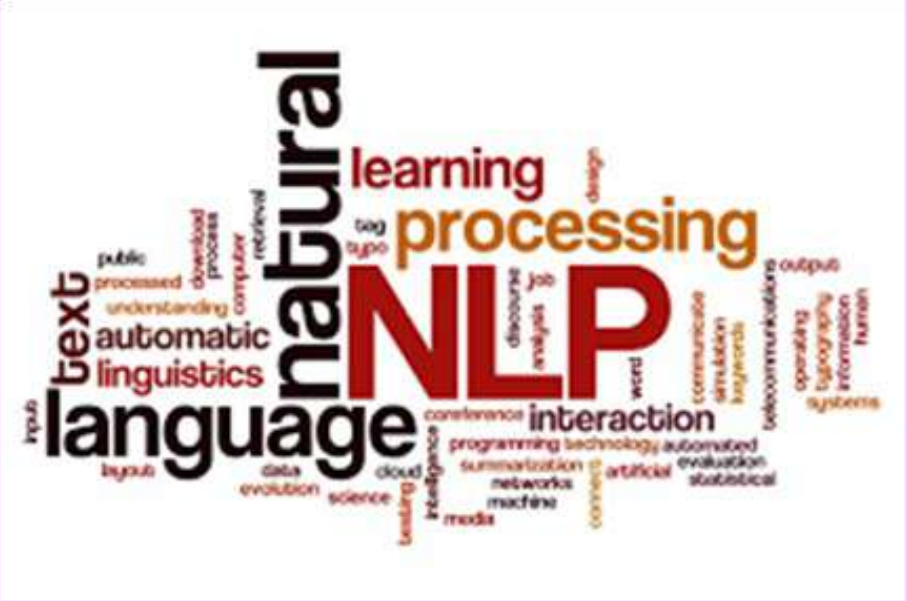
Phonetics: The study of the sounds of human language.
Phonology: The study of the sound systems in human languages.

Morphology: The study of the formation and internal structure of words.
Syntax: The study of the formation and internal structure of sentences.

Semantics: The study of the meaning of sentences.

Pragmatics: The study of the way sentences with their semantic meanings are used for particular communicative goals.

NLP has heavily benefited from recent advances in machine learning, especially from deep learning techniques. The field is divided into the three parts:
Speech Recognition—The translation of spoken language into text.
Natural Language Generation—The generation of natural language by a computer.



What is the future of NLP?

Today, NLP is striving to identify subtle distinction in the meaning of the language, whether due to spelling errors, lack of context, or difference in dialects.

As a part of the NLP experiment, Microsoft launched an Artificial Intelligence (AI) chatbot named Tay on Twitter in the year 2016. The thought behind it was that with more users conversing with this chatbot, the smarter it would get. The tech-giant learned a lot from this experience, and some months later, it released its second-gen English-language chatbot called Zo. It uses a merger of advanced approaches to acknowledge and initiate conversation. Other organizations are also experimenting with bots to remember details associated with an individual discussion.

Perhaps the future is full of challenges and threats for Natural Language Processing; regulations are advancing speedily like never before.

By
Haripriya II Year ECE B

STUDENT ARTICLES-III

THE DECENT WIRELESS COVERAGE OF THE MOON NEEDS.

More missions are aimed at the moon than at any other point in history. Both space agencies and private companies, since the Apollo period. NASA, for example, has ambitions to send a spacecraft to the moon. Both robots and humans, and is planning a modest orbital station in the coming decade with international colleagues. The Lunar Gateway would store supplies, host visiting astronauts, and allow communication between the moon and Earth to be facilitated.

It's difficult to put relay satellites in orbit around the moon. First, we'd prefer to adopt stable orbits, which would involve little or no moving on the part of satellites. Second, orbits should be chosen to provide a continuous or near-continuous physical line of sight to "hot zones" where humans or robots are expected to be active. Third, while increased visibility for lunar hot spots is important, we don't want to cut off access to other parts of the surface as a result.

In a more distant future, humans on the moon should be able to send and receive texts, make phone calls, and stream data at will. Similarly, robots and sensors should be wirelessly connected just like IoT devices are on Earth. Robots would be controlled remotely, and sensors would automatically upload their measured data. This vision of lunar connectivity may take generations of lunar-communication networks to emerge. 5G capability to maintain over an entire moon. More engaged in all fields of activities. Earth's moon is the target of more missions than at anytime since the Apollo era, by both space agencies and commercial entities. NASA, for example, has plans to visit the moon using both robots and humans, and is also considering—with international collaborators—a small orbiting outpost in the next decade. This facility, known as the Lunar Gateway, would store supplies, host visiting astronauts, and facilitate communication between the moon and Earth.

Article by,
Priyadharshini T
ShabanaParveen A
Janani B

III YEAR ECE

RIDDLES

1. 84% of people reading this will not find the the mistake in this A,B,C,D,E,F, G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z.
2. How can you throw a ball as hard as you can and have it come back to you, even if it doesn't bounce off anything? There is nothing attached to it, and no one else catches or throws it back to you.
3. What occurs once in every minute, twice in every moment, yet never in a thousand years?
4. What's full of holes but still holds water?
5. What flies without wings?
6. Where will you find roads without vehicles, forests without trees, and cities without houses?
7. What are two things you cannot eat for supper?
8. What word looks the same upside down and backward?
9. What five letter word becomes shorter when you add two letters to it?
10. A boy was rushed to the hospital emergency room. The ER doctor saw the boy and said, "I cannot operate on this boy. He is my son." But the doctor was not the boy's father. How could that be?

Answers:

1 – "The" is repeated. 2 – Throw the ball up in the air.
3 – The letter "M". 4 – A sponge. 5 – Time. 6 –A map.
7 – Breakfast and Lunch. 8 – SWIMS. 9 – The word short.
10 –The doctor was his mom.

Art

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SINDUJA 2nd-B

Editorial Board

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