KARPAGAM
INSTITUTE OF TECHNOLOGY
Inspiring Innovation

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2020-2021

ELECTROX

A Technical Magazine

ECE

Department of Electronics and Communication Engineering

Karpagam Institute of Technology
L&T Bypass Road,
Coimbatore,
Tamil Nadu 641105

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About the department

The Department of Electronics and Communication Engineering was started in the year 2008 offers a UG Programme (B.E.) in Electronics and Communication Engineering. The Department has a team of highly talented, experienced and qualified faculty members. There has been a consistent development in all spheres including infrastructure, staff and the strength of the students.The Department believes in serious academic pursuit and encourages radical and creative thinking which paves the way for creativity and innovative ideas. The qualities inculcated into the engineering students make them not only good engineers but also good human beings. The excellent placement record of the ECE department has been consistently a good percentage for the past several years. It is an ample testimony to emphasize that the ECE department and the college strives hard in providing practical engineering skills to meet the industrial needs through excellence in engineering education.

From HoD's Desk

It gives me an immense pleasure that our ECE department isreleasing an "e-magazine" named ELECTROX asa pioneer of the department activities for the even semesterof the academic year 2020-21. Our ECE department intends at keeping studentsabreast of the recent technological trends and due consideration is paid toimprove their skills in communication, fine arts, etc. I hope this e-magazine provides an opportunity to the students and staff members to lend free expression to their pioneering and ingenious thoughts.This electronic magazine plays an active role in gaininghottest developments in the field of engineering and also presents the attainments of the department. I congratulate the team of Faculty co-ordinators and students of ELECTROX for their luminous and novel efforts. I wish them all the very best for all theirfuture accomplishments.

Vision of the Institute

To impart quality technical education emphasizing innovations and research with social and ethical values.

Mission of the Institute

1. Establishing state-of–the-art infrastructure, effective procedures for recruitment of competent faculty and innovative teaching practices.
2. Creating a conducive environment for nurturing innovative ideas and encouraging research skills.
3. Inculcating social and ethical values through co-curricular and extra-curricular activities.

Vision of the Department

To produce technically competent and socially responsible Electronics and Communication Engineers to meet industry needs.

Mission of the Department

1. Establishing state-of–the-art facilities in the field of Electronics and Communication Engineering and enriching the knowledge of faculty through continuous improvement process.
2. Adopting innovative teaching learning practices and facilitating industry institute partnership for professional development.
3. Inculcating ethical and social values through extension activities.

Program Educational Objective (PEOs)

PEO1:Graduates will excel in their chosen technical profession in Electronics and Communication Engineering or interdisciplinary areas.

PEO2:Graduates will demonstrate conceptual, practical and analytical knowledge in the field of Electronics and Communication Engineering.

PEO3:Graduates will engage in life-long learning and team work with ethical values in their Professional career.

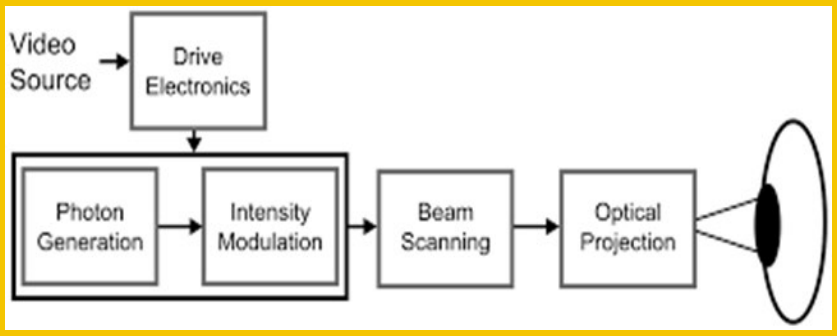
Program Specific Outcomes (PSOs)

1. Analyze, Design, Simulate and Integrate Electronic Circuits and Systems for given specifications.
2. Apply the technical knowledge to solve issues in the areas like signal processing, Communication, VLSI design and Embedded Systems.

Technology Updates

Interactive Interface Management Using Virtual Retinal Display

K. Madhumitha, IV ECE



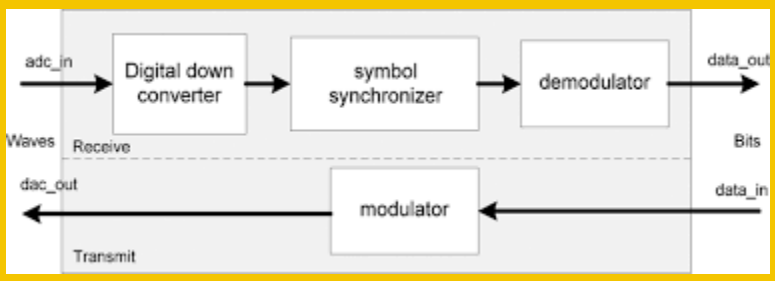
This is based on a prototype of an ambulatory device for differently abled population with smart interaction through pervasive computing. The existing mobile device has been using either Cathode Ray Tube (CRT), Liquid Crystal displays (LCD) or Light Emitting Diode (LED) which is the only means of window to connect to the universe. An alternative solution proposed is that to connect with the universe using a (VRD) Virtual Retinal Display, a personal display technique called the Retinal scanning imaging system.

The display technique draws a raster display onto the retina of the eye. The user visualizes what appears to be a conventional display floating in the space in front of them. When combined with the gaze detectors and voice recognition modules, it can function as an alternative to real time mobile phones i.e. the visual elements in the display could be controlled by means of eye movement and voice commands. It would also act as an additional advantage for the differently abled with disabilities in their limbs. So these could be used as an alternative to the existing mobile controlled over voice and eye-movement for those with the above mentioned disabilities.

Under Water Acoustic Sensor Networks In Under Water Wireless Communication

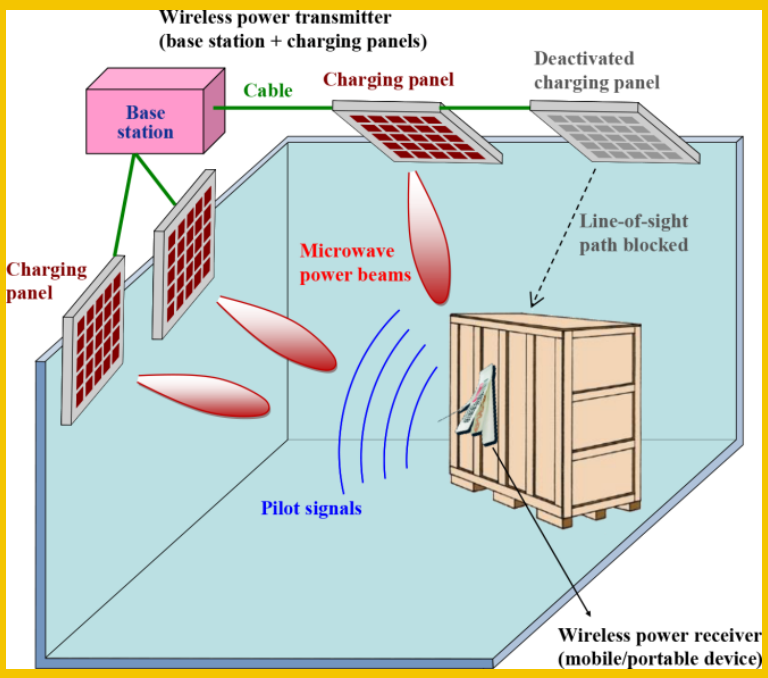
S. Pradeepa, IV ECE

There has been a growing interest in monitoring underwater mediums for scientific exploration, commercial exploitation, and attack protection as it contributes for human wellbeing. Industries are increasingly interested in technologies like wireless sensor networks. Under water sensor network consists of a variable number of sensors and vehicles that are deployed to perform collaborative monitoring tasks over a given area. Efficient information exchange via wireless communication using physical waves as the carrier among nodes in an underwater sensor network.



Microwave Power Transmission Technologies - S. Sukirtha, IV ECE

A solar power satellite (SPS) is a renewable energy system. Solar Power Satellites (SPS) converts solar energy in to micro waves and sends that microwaves in to a beam to a receiving antenna on the Earth for conversion to ordinary Electricity.

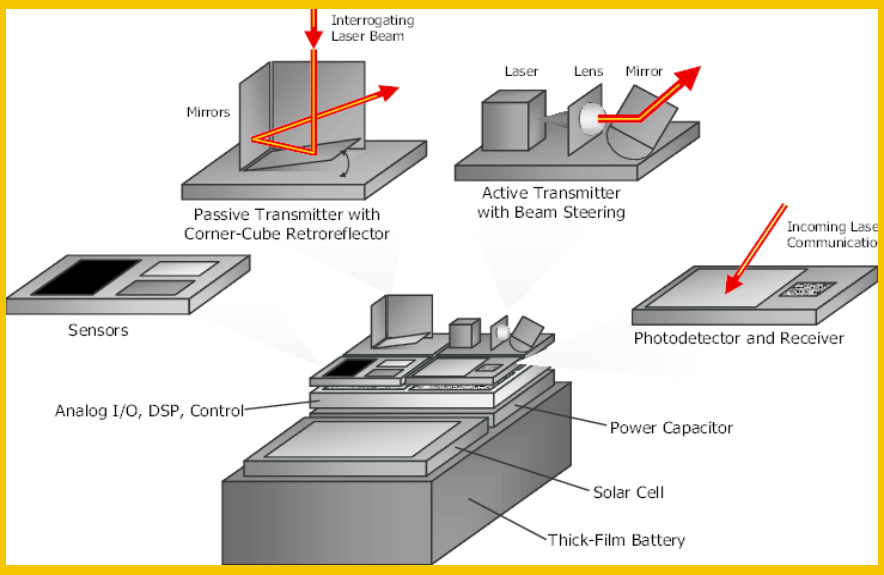


The SPS concept, first proposed in 1968 in the United States, has recently started attracting increased public attention as a promising energy system that can be used to resolve global environmental and energy problems. SPS is a clean, large-scale, stable electric power source.

Unbounding the Nanotechnology - G. Kishore, III ECE

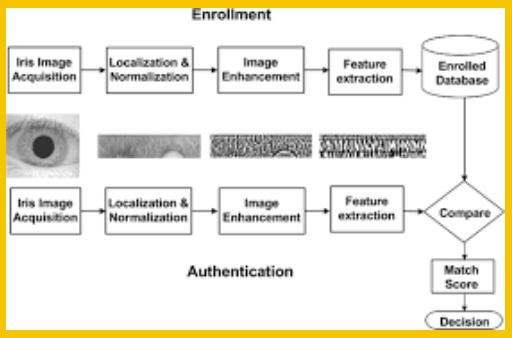
This Nanotechnology Center was being built in the spring of 1990, as Eric Drexler was midway through a hectic eight-day trip, giving talks on nanotechnology to researchers and seeing dozens of university and consortium research laboratories. A Japanese research society had sponsored the trip, and the Ministry of International Trade and Industry MITI) had organized a symposium around the visit a symposium on molecular machines and nanotechnology. Japanese research was forging ahead, aiming to develop "new modes of science and technology in harmony with nature and human society, a new technology for the twenty-first century.

Smart Dust Core Architecture - G. Sudharasan, III ECE



In the present day scenario of Embedded applications in Wireless Technologies Smart Dust Mote sensors is exploring the limits of autonomous sensing and communication by packing an entire system into a cubic millimeter at a relatively low cost. These volumetric constraints correspond to energy constraints on the system. Therefore, the mote "intelligence" must operate on the absolute minimum energy while providing necessary features. The mote can be partitioned into four subsystems: Sensors and analog signal conditioning, Power system Transceiver front end and the core.

IRIS using Biometrics - P. Gopinath, III ECE



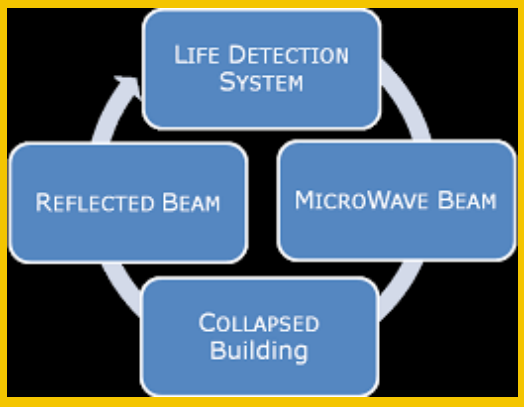
Biometrics is a technology that automatically authenticates, identify, or verify an individual based on physiological or behavioral characteristics. This is accomplished by using computer technology in a non-invasive way to match patterns of live individuals in real time against enrolled records. The commonly used Biometric techniques include recognition of faces, hands, fingers, signatures, voices, fingerprints and irises for a person's identification and authentication. This paper discusses in detail the Iris Recognition as a Biometric Technique.

Green Lasers - G. Balaji, III ECE

Solid state lasers can produce light in red and blue parts of the visible spectrum, generating laser light in all colours except green. But recent research work suggests that this 'green gap' could be plugged. New techniques for growing laser diodes could soon make brilliant full spectrum display a reality. Plugging the green gap in the red green- blue triad needed for full-colour laser projection and display would help speed the introduction of laser projectors for televisions and movie theatres, which will display much richer colours than other systems, and tiny handheld projectors as in cell phones.

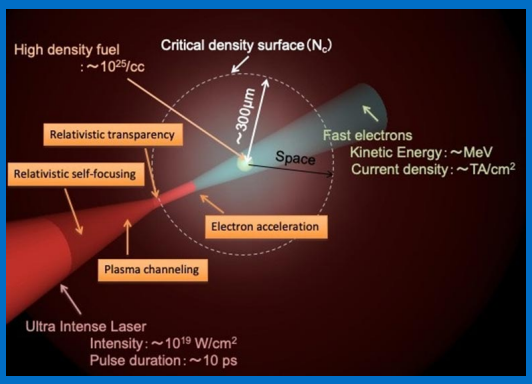
Life Detection System Based on L and S Band Microwaves

G. Jayasri, III ECE



The "Life detection system: Based on L and S bands Microwaves" is a new revolutionary embedded system to detect human beings buried under earthquake rubble or debris. "Thousands of persons killed as a cause of earthquake". The above words aren't the headlines of the newspaper but daily news everyone come across whenever we go through a newspaper or watching over a TV news. With the meteoric embedded systems along with microprocessor preventing deaths and providing safe guided measures.

Nuclear Fuels using Lasers



S. Harish, III ECE

Laser enrichment processes have been the focus of interest for some time. They are a possible third-generation technology promising lower energy inputs, lower capital costs and lower tails assays, hence significant economic advantages. One of these processes is almost ready for commercial use. Laser processes are in two categories: atomic and molecular.

Thunderbolt - An incredibly fast input/output technology

P. Bhuvaneswari, III ECE

Thunderbolt began at Intel Labs with a simple concept; create an incredibly fast input/output technology that just about anything can plug into. After close technical collaboration between Intel and Apple, Thunderbolt emerged from the lab to make its appearance in Mac computers. Intel co-invented USB and PCI Express, which have become widely adopted technologies for data transfer. Apple invented FireWire and was instrumental in popularizing USB. Their collective experience has made Thunderbolt the most powerful, most flexible I/O technology ever in a personal computer.

Sensors Optimized For 3D Digitization

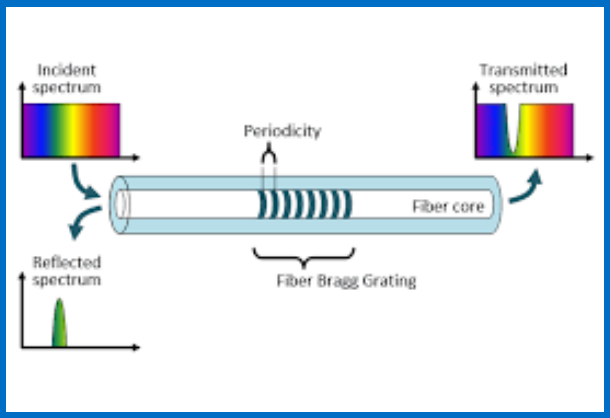
J.K.Amritha, II ECE

Digital 3D imaging can benefit from advances in VLSI technology in order to accelerate its deployment in many fields like visual communication and industrial automation. High-resolution 3D images can be acquired using laser-based vision systems. With this approach, the 3D information becomes relatively insensitive to background illumination and surface texture. Complete images of visible surfaces that are rather featureless to the human eye or a video camera can be generated. Intelligent digitizers will be capable of measuring accurately and simultaneously colour and 3D.

High Altitude Aeronautical Platforms (HAAPS)

S. Kiran, II ECE

High Altitude Aeronautical Platform Stations (HAAPS) is the name of a technology for providing wireless narrowband and broadband telecommunication services as well as broadcasting services with either airships or aircraft's. The HAAPS are operating at altitudes between 3 to 22 km. A HAAPS shall be able to cover a service area of up to 1000 km diameter, depending on the minimum elevation angle accepted from the user's location. The platforms may be airplanes or airships (essentially balloons) and may be manned or un-manned with autonomous operation coupled with remote control from the ground. HAAPS mean a solar-powered and unmanned airplane or airship, capable of long endurance on-station possibly several years.



Fiber Bragg Gratings (FBG)

P.Muthamizh, II ECE

Fiber-optic communication is a method of transmitting information from one place to another by sending pulses of light through an optical fiber. The light forms an electromagnetic carrier wave that is modulated to carry information. The main benefits of fiber are its exceptionally low loss, allowing long Distances between amplifiers or repeaters; and its inherently high data carrying Capacity, such that thousands of electrical links would be required to replace a Single high bandwidth fiber cable. Another benefit of fibers is that even when run alongside each other for long distances, fiber cables experience effectively no crosstalk, in contrast to some types of electrical transmission lines.

Energy Transmission System for Artificial Heart

A.S.Athulya, II ECE

The artificial heart now in use, like the natural heart it is designed to replace, is a four chambered device for pumping blood. Such electrical circulatory assist devices such as total artificial heart or ventricular assist devices generally use a brushless dc motor as their pump. They require 12–35 Watt to operate and can be powered by a portable battery pack and a dc–dc converter.

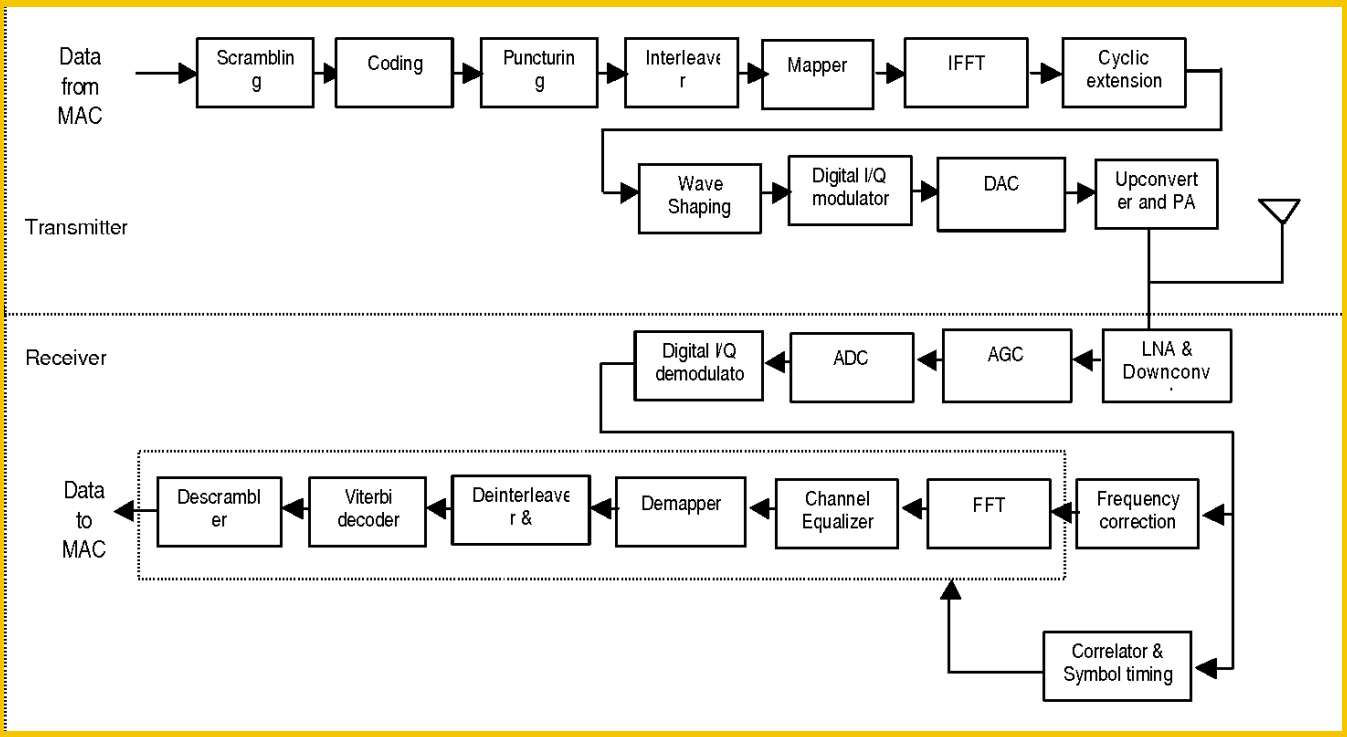
Skinput Technology

T. Santhosh, II ECE

Devices with significant computational power and capabilities can now be easily carried on our bodies. However, their small size typically leads to limited interaction space (e.g., diminutive screens, buttons, and jog wheels) and consequently diminishes their usability and functionality. Since one cannot simply make buttons and screens larger without losing the primary benefit of small size, one has to consider alternative approaches that enhance interactions with small mobile systems.

VLSI Implementation of OFDM - J. Yasshikaa, II ECE

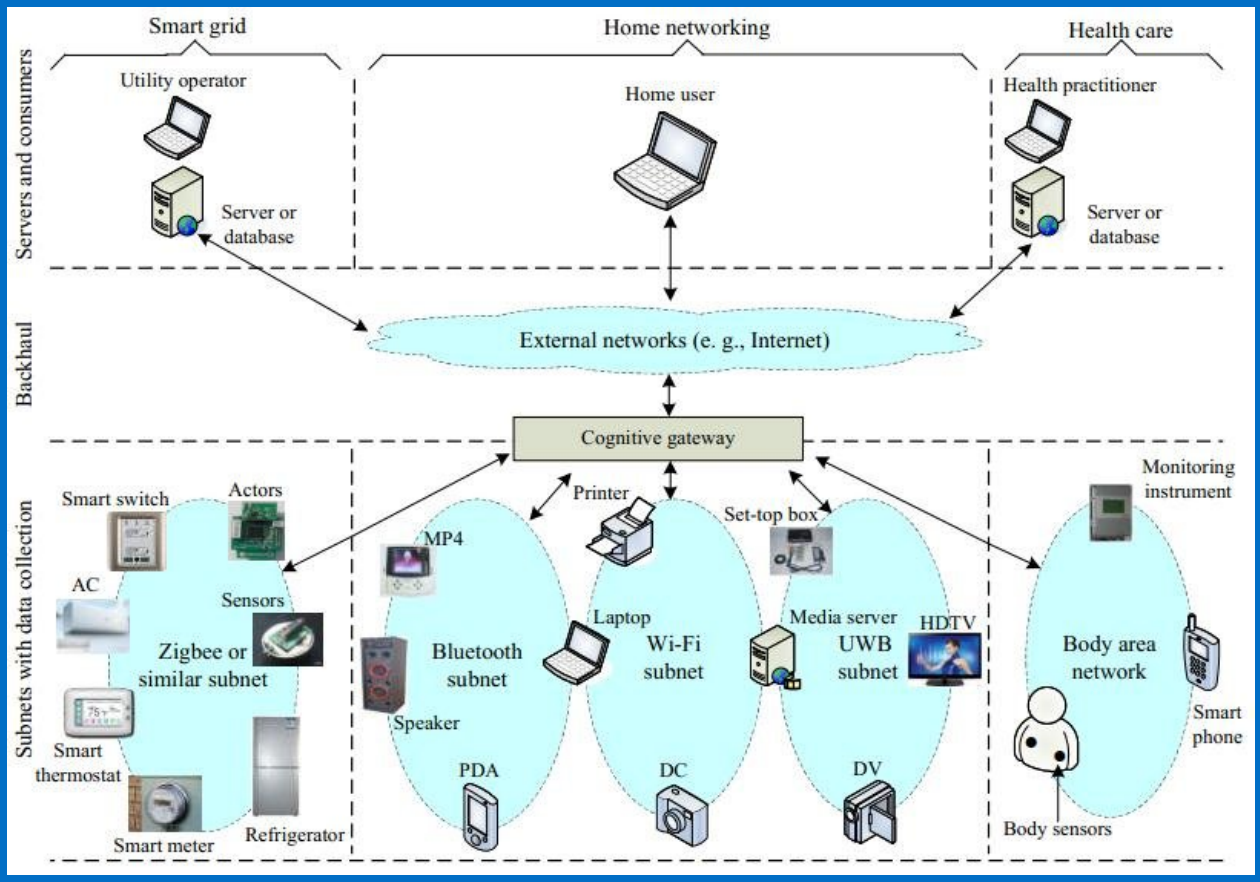
OFDM is a multi-carrier system where data bits are encoded to multiple sub-carriers and sent simultaneously in time. The result is an optimum usage of bandwidth. A set of orthogonal sub-carriers together forms an OFDM symbol. To avoid ISI due to multi-path, successive OFDM symbols are separated by guard band. This makes the OFDM system resistant to multi-path effects. Although OFDM in theory has been in existence for a long time, recent developments in DSP and VLSI technologies have made it a feasible option. However, the same considerations would be helpful in implementing any OFDM system in VLSI. OFDM is fast gaining popularity in broadband standards and high-speed wireless LAN.



Intelligent Machine to Machine Communication in a Smart Grid

S.Vibitha, II ECE

In the past few years, the cost of access to public wireless data networks has been dropping while the capabilities of these networks continue to increase. Machine-to-machine (M2M) communications is a new technology that leverages these networks to bring smart services to a much wider audience. Different from the traditional human to human (H2H) communications for which the current wireless networks are designed and optimized, M2M communications is seen as a form of data communications between entities that do not necessarily need any form of human intervention. It is different from current communication models in the sense that it involves new or different market scenarios, low cost and low effort, a potentially very large number of communicating terminals, and small and infrequent traffic transmission per terminal. The industry has already been working on providing M2M communications and smart services offerings across a wide variety of market segments, including healthcare, manufacturing, utilities, distribution, and consumer products.


Smart grid
Home networking
Health care
Servers and consumers
Utility operator
Server or database
Home user
Health practitioner
Server or database
Backhaul
External networks (e. g., Internet)
Cognitive gateway
Subnets with data collection
Smart switch
Actors
AC
Sensors
Zigbee or similar subnet
Smart thermostat
Smart meter
Refrigerator
Printer
MP4
Bluetooth subnet
Speaker
PDA
Laptop
Wi-Fi subnet
DC
Set-top box
Media server
UWB subnet
HDTV
DV
Monitoring instrument
Body area network
Smart phone
Body sensors

Electronics was something i could always fall back on when i needed food on the table.

The Human Brain must continue to frame the Problems for the Electronics Machine to Solve

David Sarnoff

PHOTOGRAPHY

M. L. KOPHIKA

IV Year ECE

ABIRAMI P C

III Year ECE

MITHUN KUMAR N

II Year ECE

VIBITHA S

II Year ECE

SHANMUGAPRIYA S

III Year ECE

MUTHAMIZH P

II Year ECE

SANJAI S

II Year ECE

ATHULYA A S

II Year ECE

Art Works

B. KOWSHIK

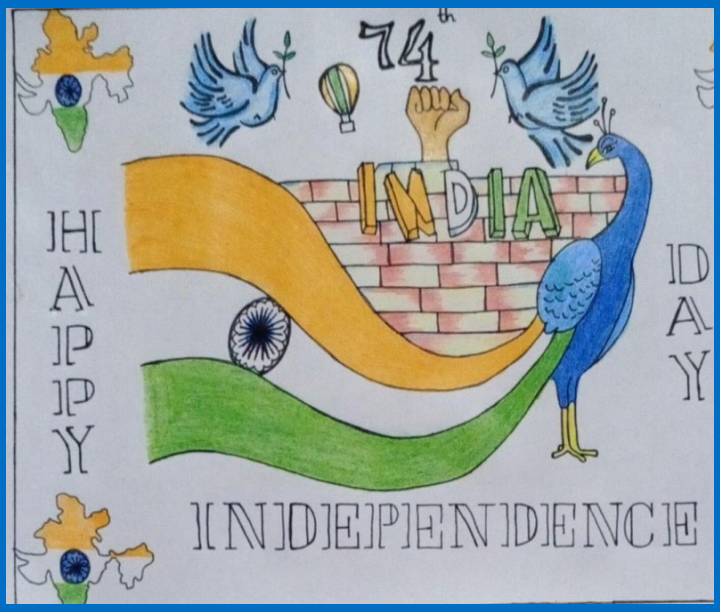
IV Year ECE

S. DINESH KUMAR

III Year ECE

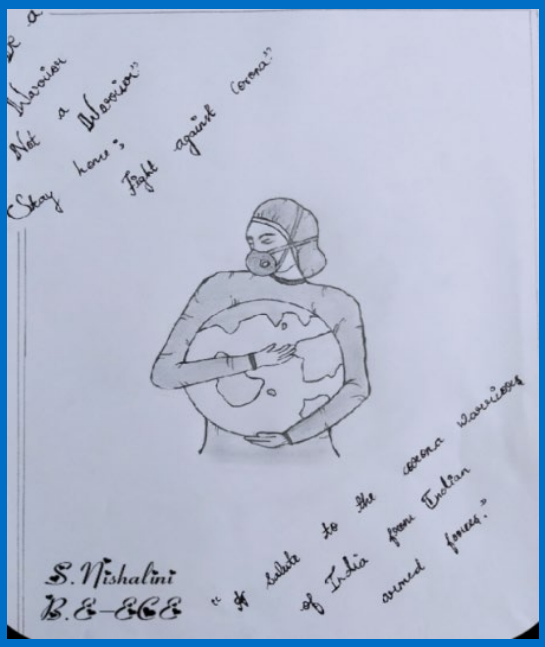
R. SUJITHA

II Year ECE



P. DAVID CONQUEROR

IV Year ECE



S. Nishalini

II Year ECE

Test Your Aptitude

1. Two persons, Ram & Lakshman, who are at a distance of 100 km from each other, move towards each other from two places P and Q at speeds of 20 kmph and 25 kmph respectively. Lakshman reaches P, returns immediately and meets Ram at R, who started on the return journey to P immediately after reaching Q? What is the distance between Q and R?

    a. 33 1/3 km
    b. 25 km
    c. 30km
    d. 27 1/3 km

Ans : Ram takes 100/20 = 5 hours to cover the distance from P to Q.
By that time Lakshman covers 5 *25 = **125 km**
Lakshman covers 25 km more than the distance PQ.
Now the distance between them = **75 km**
Time taken by them to meet = Distance/ Relative speed = 75/(20+25) = 75/45 = 5/3 hrs.
Distance between Q and R is nothing but the distance covered by Ram in 5/3 hours =
20 *5/3 = 100/3 km or **33 1/3 km.**

2. The price of a jewel, passing through three hands, rises on the whole by 65%. If the first and second sellers earned 20% and 25% profit respectively, find the percentage profit earned by the third seller.

    a. 10%
    b. 22%
    c. 18%
    d. 12%

Ans : Let the original price of the jewel be Rs. P and let the profit earned by the third seller be x%. Then, (100 +x)% of 125% of 120% of P = 165% of p
[(100+x)/100*125/100*120/100* P] = [165/100* P]
(100 + x) = (165*100*100)/ (125*120) = 110, **x = 10%.**

Students Participation

S. No.	Date	Name of the Students	Name of the events/ Contests	Name of the Institution	Achievements/ Prizes
1	31.01.2021	P.Muthamizh	Speech Competition	Government of Tamilnadu	Senthamizh Sirpi
2	27.03.2021	Yasshikaa J	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology, Salem.	Participation
3	27.03.2021	Sangeetha M	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology, Salem.	Participation
4	27.03.2021	Santhosh Nirmals	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
5	27.03.2021	Sathyanarayanan S	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
6	27.03.2021	Shanmuga Priya C	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
7	27.03.2021	Kaviya B	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
8	27.03.2021	Nithiya Sri R	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
9	27.03.2021	Mithun Kumar N	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
10	27.03.2021	Rithik Roshan P	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
11	27.03.2021	Yesudas S	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
12	27.03.2021	Abishek C	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
13	27.03.2021	Karthika S	Big Data and IoT Systems	Narasu's Sarathy Institute of Technology	Participation
14	11.03.2021 –	Yasshikaa J	Bio Hyphenzia 2021	PSGR Kri Shnammal College	Participation

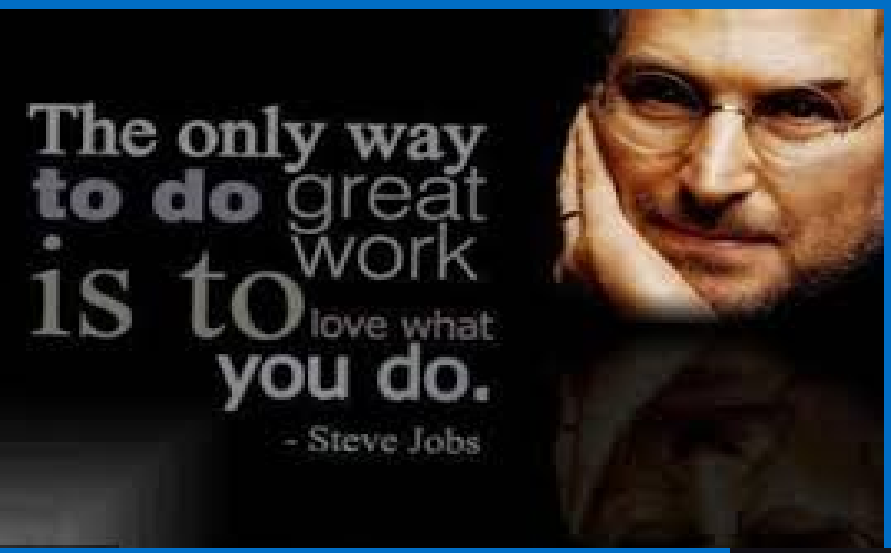
	12.03.2021		-Tech Intellect	For Women	
15	30.03.2021	Haripriya P	Azure Github -Code To Cloud Workshop	Micrsoft Azure	Participation
16	26.02.2021	Sundar Raj A	Code Innovation Series Hackathon	Github &Incubate Ind	Participation
17	26.02.2021	Kaviya B	Code Innovation Series Hackathon	Github &Incubate Ind	Participation
18	07.01.2021	Devatharshini S A	Introduction To Cybersecurity	Corporate Social Responsibility(CISCO)	Participation
19	07.01.2021	Mithun Kumar N	Introduction To Cybersecurity	Corporate Social Responsibility(CISCO)	Participation
20	07.01.2021	Vishnu Surya P	Introduction To Cybersecurity	Corporate Social Responsibility(CISCO)	Participation
21	07.01.2021	Kiran .S	Introduction To Cybersecurity	Corporate Social Responsibility(CISCO)	Participation
22	07.01.2021	Priya.B	Introduction To Cybersecurity	Corporate Social Responsibility(CISCO)	Participation
23	20.03.2021	Kaviya B	Deep Learning In Everyday Life	Falcon Edutech	Participation
24	06.01.2021	Kaviya B	Hello A2019 Bot:Getting Started With Building Bots"	Automation Anywhere	Participation
25	APRIL 2021	Mithun Kumar N	Ethical Hacking - Mobile Platform And Network Architecture	Great Learning	Participation
26	06.12.2020	Priya.B	National Level Online Quiz on "Statistics And Research Methodology	Periyar Maniammai Institute Of Science & Technology	Participation
27	07.11.2020	Subhasri R	PPG Cricathon Quiz Competition	PPG Institute of Technology	Participation

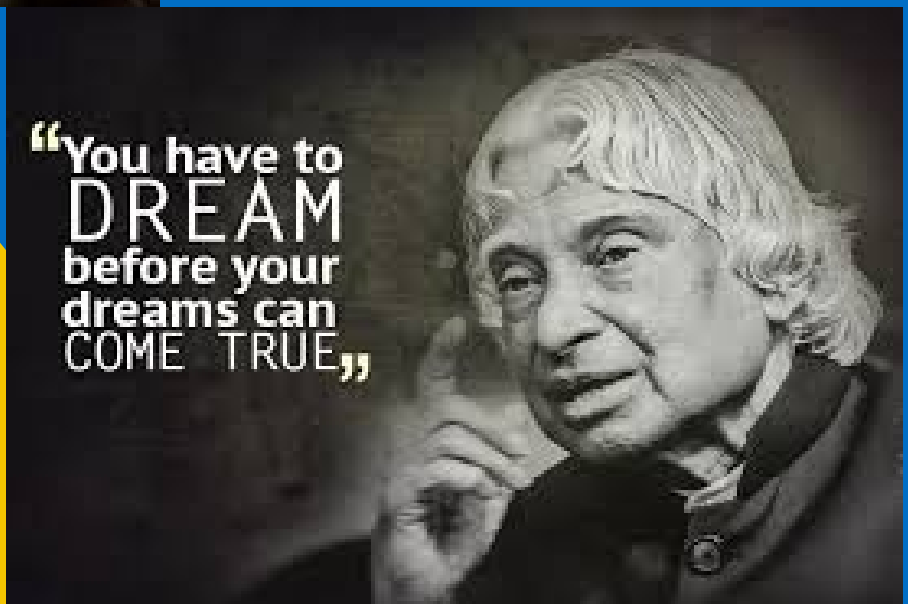
29	28.08.2020	Abishek C	Nuances Of Robotics	Hindusthan College of Arts And Science	Participation
30	26.10.2020	P.Bhuvaneswari	Ignnovate 3.0 - Startup Opportunities in Media Industry	Centre For Entrepreneurship Development (CED)	Participation
31	09.08.2020	Poorani M	Programming Fundamentals	Duke University	Participation
32	30.07.2020	Sathyanarayanan S	Programming Fundamentals	Duke University	Participation

NPTEL Certifications

S.No.	Name of the Faculty	Title of the Course	Status
1	Dr. S. Syed Jamaesha	Sensors and Actuators	Completed
2	Mr. A. G. Paranthaman	Antennas	Completed
3	Ms.S. Madhumitha	Sensors and Actuators	Completed
4	Mr.S.Pragadeeshwaran	Sensors and Actuators	Completed

Editorial Board





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