K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ECE

ECE CHRONICLES

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State the Vision and Mission of the Department and Institute

Vision and Mission of the Institute

VISION

- To become a globally recognized Institution in Engineering Education, Research and Entrepreneurship.

MISSION

- Accomplish quality education through improved teaching learning process.
- Enrich technical skills with state of the art laboratories and facilities.
- Enhance research and entrepreneurship activities to meet the industrial and societal needs.

Vision and Mission statements of the Department

VISION

- To produce globally competitive Electronics and Communication Engineers and Entrepreneurs with ethical values.

MISSION

- Impart quality education through student centric teaching and learning process.
- Equip students with Industry driven skills by providing excellent Infrastructure and continuous interaction with academia and Industry.
- Empower students towards research, entrepreneurship and lifelong learning to meet societal needs.

State the Program Educational Objectives (PEOs)

PEOs of ECE Department

PEO	Keywords	Description
PEO 1	**Core Competency**	Graduates will have strong foundation in Engineering, Science and Technology for a successful career in Electronics and Communication Engineering.
PEO 2	**Professionalism**	Graduates will have effective communication skills, interpersonal skills and ethical values to exhibit professionalism in multidisciplinary environment.
PEO 3	**Higher studies and Entrepreneurship**	Graduates will pursue professional development through higher studies and have entrepreneurial attitude to address technological changes and societal needs.

ABOUT THE DEPARTMENT

The Department of Electronics and Communication with its cohesive team of faculty members, offers a sound programme at the UG level. Through curriculum, projects, forum and various clubs we meet the growing demands and the changing trends of the software industry and research laboratories.

The department of ECE is equipped with the best of resources to enrich the bloodline of the department ensuring high quality education to the students. The department has spacious laboratories, class rooms, staff rooms, and well stacked department library. The department has more than **120 computers** with the state of the art facilities. All the computers are installed with latest software supporting the recent advancements in the real time applications. The list of software includes MATLAB, Xilinx, Microwind, NetSim, NS2, OPNET, ModelSim, Multisim etc. The laboratories are fully equipped with latest equipment.

All the faculty and students are encouraged and sponsored to attend Winter / Summer programmes to upgrade & update the current trends in technological advancements.

EDUCATION SYSTEM IN INDIA

India, even after 70 years of its independence, is far away from the goal of universal literacy. The fact that India's higher education system is churning out millions of graduates who are employable speaks of the need to improve the quality of education in the country. However, on a positive note, India is engaged in the use of higher education as a powerful tool to build a knowledge-based information society of the 21st Century. Indian professionals are considered among the best in the world and are in great demand. This signifies the inherent strength of the Indian educational system.

Education in India dates back to its early civilization time where teaching and learning process revolved around the 'Gurukul System'. It was a residential concept wherein the students were educated under the guidance of a "Guru" in different areas of religion, philosophy and science. Historians speculate that these centers had a remarkable resemblance to the European medieval universities that came up much later.

The initial education system in India gradually got obscured due to subsequent invasions and disorder in the country. In the early modern age, the Islamic influences enriched the traditional learning centers and brought in the disciplines of Geography, Administration, Law, and Arabic Mathematics to India.

A major change in the design of higher education was brought by the European rulers. The British established the formal system of higher education focused on languages, literature, history, and philosophy. These learning centers were focused on generating English-speaking working-class people for the British administrative services, army and trade. The British model of University system, inspired by the University of London, continued to expand across India, leading to a rising number of higher learning centers by 1947.

The higher education system in India grew rapidly after independence. By 1980, there were 132 universities and 4738 colleges, enrolling around five per cent of the eligible age group in higher education. The number of institutions in India is four times more than the number of institutions both in the United States and the entire Europe.

India is dashing headlong towards economic success and modernization. It is counting on high-tech industries, such as IT and Biotechnology, to propel the nation to prosperity. Currently, Indian higher education system has many favorable factors to its advantage. India has a large higher education sector, the third largest in the world. It uses English as a principal language of higher education and research and has an extensive academic tradition. Academic liberty is appreciated and there are a small number of high-quality institutions that can form the foundation of quality education. The fact that State Government, rather than Central Government, maneuvers vital responsibility for higher education, creates a rather cumbersome structure, but the system allows for a diversity of policies and approaches.

Yet the weakness clearly outweighs the strengths. India educates approximately 10 per cent of its youths in higher education. Even though, none of its universities occupy a solid position at the top. A few of the best universities have some excellent departments and centers, and there are a small number of outstanding undergraduate colleges.

UGC recently released a report describing the current scenario of the Indian Higher Education System. It shows that despite the growing numbers of colleges and enrollments, it is not adequate enough to cater to the educational needs of the increasing young population.

Albert Einstein once said, "*Everyone's a genius. But if you judge a fish on its ability to climb a tree, it will live its whole life believing that it is stupid*." With the difference in ability, aptitude and interest of a student and the societal demands of expertise and specialization, the standardized testing and curriculum does not give much scope for the students to relate to the world of work and wages. Creativity that has nurtured our influences in almost all of life's passions and interests drops dead at standardized tests. The current educational system expects conformity and rewards predictable behaviors, both intellectually and emotionally.

- Alexraj / IV year

VEHICLE-TO-VEHICLE COMMUNICATION USING WIFI

Nowadays the number of vehicle in the roadways are increasing day by day and hence when happens any unfortunate situation, there exists huge traffic congestion in the transport system. Under such road transport conditions, when people on emergency situations travelling on the same road they need to find easy way without the cause and much distance to both. To further the transportation, an intelligent system is needed to be incorporate in all vehicles. In the proposed system work, vehicle communications is carried out using Arduino ATMEGA328 for processing and communication in recent day Wi-Fi from one vehicle to other. The software used in embedded C tool for editing in done by Arduino IDE. Hence, the designed project will make a further transportation for people under emergency conditions and thereby this designed work will compositely gives a high end and very effective transport solution.

- M.Priyadharshni / III Year

NEURO FUZZY LOGIC – A NOVELTY APPROACH

Fuzzy logic works on the concept on deciding the output on the basis of assumptions. It works on the basis of sets. Each set represents some linguistic variable defining the possible state of the output. Each possible state of the input and the degrees of change of the state are a part of the set, depending upon which the output is predicted. It basically works on the principle of If-else-the, i.e. If A AND B Then Z.

Suppose we want to control a system where the output can be anywhere in the set X, with a generic value x, such that x belongs to X. Consider a particular set A which is a subset of X such that all members of A belong to the interval 0 and 1. The set A is known as fuzzy set and the value of $f_A(x)$ at x denotes the degree of membership of x in that set. The output is decided based on the degree of membership of x in the set. This assigning of membership depends on the assumption of the outputs depending on the inputs and the rate of change of the inputs. These fuzzy sets are represented graphically using membership functions and the output is decided based on the degree of membership in each part of the function. The membership of the sets is decided by the IF-Else logic. Generally the variables of the set are the state of the inputs and the degrees of changes of the input and the membership of the output depends on the logic of AND operation of the state of the input and the rate of change of the input. For a multi input system, the variables can also be the different inputs and the output can be the possible result of the AND operation between the variables.

WIRELESS SENSOR NETWORKS

Wireless network is effective method because it is quickly reconstruct network than wired network. Low-frequency radio communication is suitable for long distance communications and lower influence of obstacles such as trees. But it is not suitable for the transfer of multimedia content and large volume of contents. IEEE802.11b/g has spread to many houses, and these devices could be interfere to Emergent Communication System like Disaster Information Network. In the actual disaster case, there is certain possibility that electric power line is damaged and power energy cannot be supplied to those communication network devices. Disaster Information System needs a robust Never Die Network (NDN) which will be unaffected by any changes in environment after severe disaster. We introduce the Combination of Cognitive Wireless Network (CWN) and Satellite System for Disaster Information System. CWN is consisted of combining with multiple LANs with different transmission characteristics such as IEEE802.11b,g,j,n, IEEE802.16, and cellular network. Satellite System provides the function of checking wireless nodes' alive and their locations, reconstructing the topology, alternating data transmission if there is no possible activate nodes, and so on.

User policy and network parameters are observed at the observation stage. At this stage, we set various policies for video, VoIP, text, disaster applications, and so on. Network parameters like throughput, latency, jitter, packet error rate, bit error rate, and electric field strength are continuously measured and also used for the calculation of AHP. In the decision stage, the results of AHP for each communication link are compared and the proper link is selected. when the results are changed. In the acting stage, the selected link or route is applied for proposed network and then simulation is carried out for proposed methods.

Parameters like observed network conditions or AHP results are transferred by Satellite System as communication link. The message of prefer link or route is sent through link, and a reconfiguration procedure is acted at both sender and receiver nodes. Location of every node is also collected by link 0. Secondly, wireless nodes are checked whether nodes are destroyed or not after disaster through Satellite System. Also, the system makes alternative data transmission if there is no route after disaster. Finally, alternative wireless network topology is committed for reconstruction of network.

-SANTHIYA.T /II year

Bus protocol

Nowadays the protocols play an essential role in the embedded system design. Without going to the protocols, if you want to expand the peripheral features of the microcontroller, the complexity and power consumption will increase.

There are different types of bus protocols available such as USART, SPI, CAN, I2C bus protocol, which are used for transferring the data between two systems. To add a joint to any link of a robot, we need to know about the degrees of freedom and degrees of movement for that body part.

Degrees of freedom implement the linear and rotational movement of the body and Degrees of movement imply the number of axis the body can move.

- The I2C protocol operates three modes such as: fast mode, high-speed mode and standard mode wherein the standard mode data speed ranges 0Hz to 100Hz, and the fast mode data can transfer with 0Hz to 400 KHz speed and the high speed mode with 10 KHz to 100KHz. The 9-bit data is sent for each transfer wherein 8-bits are sent by the transmitter MSB to LSB, and the 9^{th} bit is an acknowledgement bit sent by the receiver.

The I2C bus protocol is most commonly used in master and slave communication wherein the master is called “microcontroller”, and the slave is called other devices such as ADC, EEPROM, DAC and similar devices in the embedded system.

The number of slave devices is connected to the master device with the help of the I2C bus, wherein each slave consists of a unique address to communicate it. The following steps are used to communicate the master device to the slave

-Yasodha.P/II year

IMPORTANT WEBSITES

http://www.engineering.com/

http://www.efunda.com/home.cfm

http://www.engineeringtoolbox.com/

http://www.howstuffworks.com/

http://www.eng-tips.com/

http://www.discoverengineering.org/

http://www.fun-engineering.net/

http://www.manufacturingiscool.com/

http://pbskids.org/designsquad/

http://www.futuresinengineering.com/

http://www.engineeryourlife.org/

https://www.indiabix.com/

www.knowafest.com

http://www.ece.org/

http://www.mathworks.in/products/matlab/

http://www.opencircuitdesign.com

http://www.nptel.iitm.ac.in

http://www.engineering.carrers360

COMPANIES FOR EC ENGINEERS

- ISRO -Indian Space Research Organization
- BEL -Bharat Electronics Limited
- ECIL -Electronics Corporation India Limited
- DRDO -Defense Research and Development Organization
- BSNL JTO -Bharat Sanchar Nigam Limited Junior Telecom Officers
- SAIL -Steel Authority of India Limited
- GAIL -Gas Authority of India Limited
- HAL -Hindustan Aeronautics Limited
- NTPC -National Thermal Power Corporation
- ONGC -Oil and Natural gas Commission Limited
- Bharat Sanchar Nigam Ltd (BSNL)
- CMC Ltd
- Amara Raja Batteries Ltd
- Bartronics India Ltd
- Cranes Software International Ltd
- Datamatics Global Services
- Dell India Private Ltd
- Delta Energy Systems (India) Pvt Ltd
- Educomp Solutions Ltd
- EMC India
- Eveready
- Bharthi Airtel Ltd
- Industries India Ltd
- Exide Industries Ltd
- Bharthi Teletech

Editorial Board

It is with great pride and privilege that we place before you the lovely edition of **ECE CHRONICLE – Innovation illustrated**. A small beginning made few years ago, has now blossomed into a superfine structure. It has given vent to the creative talent of the students and faculty members alike. We have made an earnest attempt to project the best possible as to make this issue an informative and interesting one. We look forward to your chronicle support and guidance in future also to bring out **ECE CHRONICLE – Innovation illustrated in an excellent way.**

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Program Outcome for Electronics and Communication Engineering

PO 1: Engineering Knowledge: Apply knowledge of mathematics, science and engineering principles to solve problems in the domain of Electronics and Communication Engineering.

PO 2: 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.

PO 3: 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.

PO 4: 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.

PO 5: 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.

PO 6: 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.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: 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.

PO 11: 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.

PO 12: 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 (PSO)

PSO1: Embedded system design: Graduates will be able to analyze, design, construct and test electronic and embedded systems for desired specification.

PSO2 : Simulation Tools: Graduates will be able to solve emerging real world problems using suitable hardware and software tools.