

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.

INSPIRATION OF THE CENTURY

LEI JUN

Lei was born on 16 December 1969 in **Xiantao**, Hubei, China. In 1987, he graduated from Mianyang Middle School and began attending Wuhan University, where he completed all credits within two years and graduated with a BA in computer science. He also started his first company during his last year in college. In 1992, Lei joined Kingsoft as an engineer, becoming the CEO of the company in 1998 and leading it towards an IPO. On 20 December 2007, he resigned as president and CEO of Kingsoft for "health reasons".

After resigning from Kingsoft, Lei became a prolific angel investor in China, investing in over 20 companies including Vancl.com, UC Web, and social platform YY.[6] He continues to invest in companies in the ecommerce, social networking, and mobile industries through Shunwei Capital. In 2000, Lei founded Joyo.com, an online bookstore, which he sold for USD\$75 million to Amazon.com in 2004.

XIAOMI

On 6 April 2010, Lei Jun founded Xiaomi Inc, a technology company that manufactures smart phones, mobile apps, and other consumer electronics.

His cofounders include Lin Bin, vice president of the Google China Institute of Engineering; Dr Zhou Guangping, senior director of the Motorola Beijing R&D center; YanJiahui, department head of industrial design at the University of Science and Technology Beijing; Li Wanqiang, general manager of Kingsoft Dictionary; Wong Kong-Kat, principal development manager; and Hong Feng, senior product manager for Google China.

The company has created a diverse portfolio of products, ranging from phones, tablets, TVs, routers, power banks, and earphones, to air and water purifiers and even robot vacuums and scooters.

By the end of 2014, Xiaomi had raised more than \$1 billion and was valued at \$45 billion. Lei Jun and his company Xiaomi Inc have already invested in more than 70 start-up companies and plans on investing in more so as to help Xiaomi Inc expand and grow its ecosystem exponentially.

TECHNOLOGY EXPERTISE ZONE

AUTOMATED RAILWAY CROSSING

This particular project is actually a solution to a real-life problem statement. We have been hearing lot of news lately regarding the number of people losing lives, vehicles getting into accident at the unmanned railway gates. This project gives an efficient solution to this, through which the railway gates can be programmed to open and close automatically by sensing the arrival of train.

As it is addressing a serious problem that we are facing, being an electronics engineer you should do this project to understand the technology behind it. This project works by 2 simple mechanisms. First an IR sensor is used to detect the arrival and departure of the train at certain location from the railway gate and will send the data collected (as signals) to the micro-controller.

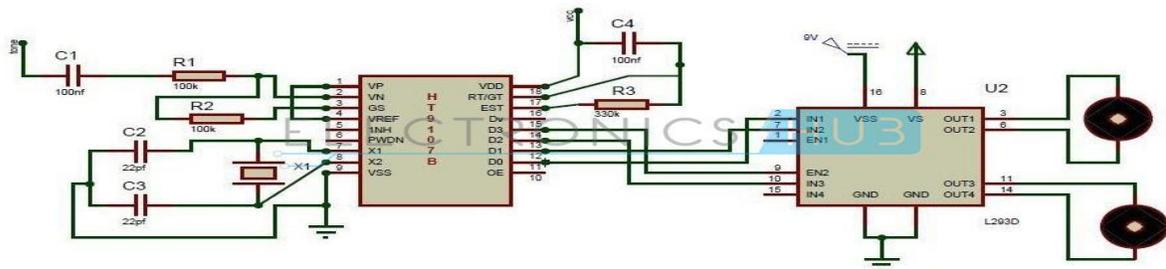


Then a micro-controller is used to detect these signals and facilitates the operation of motors which will then open/ close the gate. You can use IR sensors for detecting the train movement, micro-controller like 8051, 8052, Arduino Uno to act as the brain of the system and D.C motors to operate the railway gates.

- C. Ramya/IV year

DTMF CONTROLLED ROBOT WITHOUT MICROCONTROLLER

DTMF is the acronym for Dual tone modulation frequency. Robotic vehicle based on DTMF technology is explained in this article. Here is a circuit that operates the robot without using a microcontroller. This circuit consists of simple ICs. When a key is pressed from our mobile, it generates a tone combination of two frequencies from our keypad. In the two frequencies, one is high frequency and another one is low frequency. This frequency can be decoded by the decoder IC into binary sequence.



DTMF based robotic vehicle circuit consists of DTMF decoder IC, driver IC L293D IC and motors.

DTMF decoder IC used is HT9107B. It has 18 pins. Tone from DTMF encoder is given to the DTMF decoder IC. The decoder IC internally, consists of operational amplifier whose output is given to pre filters to separate low and high frequencies. Then it is passed to code detector circuit and it decodes the incoming tone into 4bits of binary data. This data at the output is directly given to the driver IC to drive the two motors. These motors rotate according to the decoded output.

- P. Devaraj/IV year

BLUETOOTH CONTROLLED ELECTRONIC HOME APPLIANCES

Bluetooth Controlled Electronic Home Appliances is a simple project, where we can control different electrical appliances and electronic devices using an Android device with the help of Bluetooth Technology.

We have already seen how a DTMF controlled home appliances system works in the earlier post. Operating conventional wall switches is difficult for physically handicapped or elder people. This project provides the solution to this problem by integrating all the electrical

appliances to a control unit that can be operated by an Android application on a device (Android smart phone or Tablet). The proposed system controls the electrical loads based on the data transmitted by the Android device. An Android application should be installed in user's mobile or tablet to control the electrical loads. Using this Android application user can send the commands to the Bluetooth module to control the electrical loads. Wireless technology used in this project is Bluetooth. It can also be called as "Bluetooth Controlled Electronic Home Appliances" or "Android based Home Automation System" or "Remote Password Operated Electronic Home Appliances Control System".

The main characteristic of the VANET is the infrastructure absence, such as access point or base stations, existing in the Wi-Fi, WiMax, GSM or UMTS. The communication between nodes that they are beyond of the reach of transmission of the radio is made in multi hops through the intermediate nodes contribution. On the other hand, the media without wire, into the absence of infrastructures and the multi hops routing transforms these networks in potential targets of diverse types of attacks that go since simple eavesdropping (espionages) passive of the messages until active interferences with the creation, modification and destruction of the messages.

-P.Nirmadevi/IV year

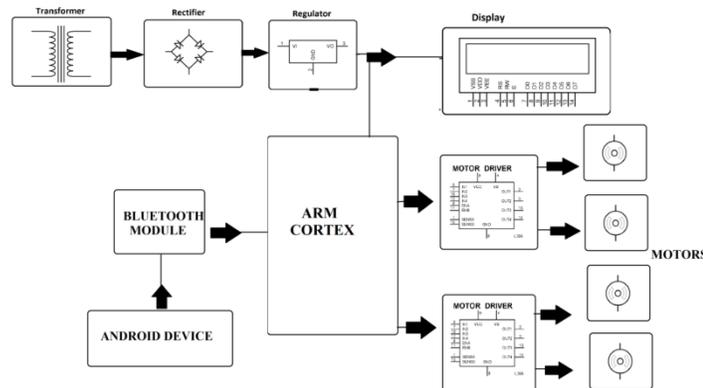
SYNCHRONIZED MULTIPLE MOTOR SPEED CONTROLLER USING ARM CORTEX

In various industrial processes we make use of motors to drive machinery. In many industrial applications of batch processing or bulk production systems, a conveyor belt passes a product through various machines to get the final finished product at the end.

So in such cases the synchronization between machines is vary important in order to get desired output. For this purpose we demonstrate the synchronized multi motor speed controller system that controls multiple motor speed at the same time to achieve desired synchronization. For this purpose we use an ARM Cortex to achieve multi motor speed control by supplying PWM to multiple motors at the same time.

Here we use android application to serially send user commands to the cortex through our circuit. User can send speed control instructions for each motor through easy to use GUI. Now the circuit system receives the commands through Bluetooth receiver and then operates the motors to run at user desired speed by supplying appropriate PWM to each motor. The

system keeps track of speed needed for each motor and simultaneously supplies necessary PWM to control motors as per users desire. Thus we demonstrate multi motor synchronization using ARM cortex.



-Preethiberlin.W/II Year

IOT IRRIGATION MONITORING & CONTROLLER SYSTEM

Farmers usually work on large portions of land to grow different types of crops. It is not always possible for one person to be able to keep track of the entire farmland all the time.

Sometimes it may happen that a given patch of land receives more water leading to water-logging, or it might receive far less or no water at all leading to dry soil. In either of the cases, the crops can get damaged and farmer may suffer losses.

So in order to solve this problem, we propose an “IOT Irrigation Monitoring and Control Project”. This is a very useful project wherein, the user can monitor and control the supply of water from a remote location.

The circuit keeps checking the moisture content of the soil by means of a moisture sensor, and updates the “Moisture level” on the website. The user can then check the current moisture level from a remote location and control the water supply. For this, the user only has to toggle the “Motor status” from ‘ON-OFF’ or ‘OFF-ON’; and the “water pump” will be ‘turned ON’ or ‘turned OFF’ accordingly. Thus the ‘soil-moisture’ gets monitored and the ‘water supply’ can be controlled just by the toggling the “Motor status”. So the user doesn’t have to worry about his crops or plants getting damaged due to ‘water-logging’ or ‘drought’.

This system makes use of a concept called IOT (Internet of Things). So for our project, we connect our system to the internet using a Wi-Fi module. We use an Arduino Uno board to

send the control signals and to connect to our desired website. This system can also be useful for people having small gardens, while it may not be possible for a person to be continuously present at his/her garden but one can use this project to keep a track of 'soil-moisture' and ensure proper water supply even from a distance.

-V.Soundharya/II Year

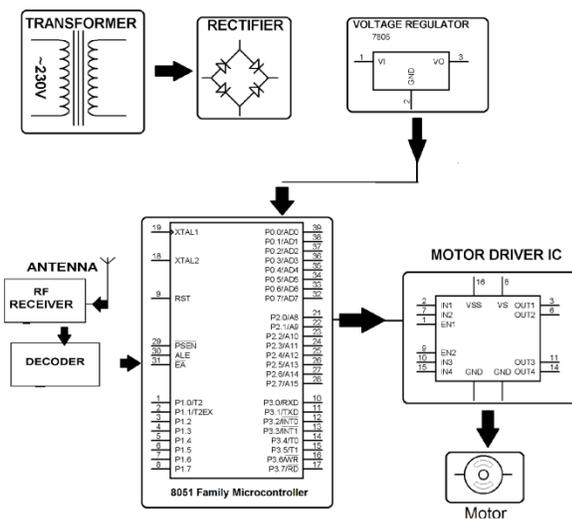
WIRELESS RED SIGNAL ALERTING FOR TRAINS

Railway networks are the biggest transportation networks used worldwide. Handling and managing such a vast network is not an easy task. The rail network consists of a lot of junctions and vast amount of signals on set distances to manage the train flow. Well the train driver needs to constantly check for any red signals on every post and decide whether to stop or move forward.

It is very difficult to constantly keep track of every visual signal for the driver. So here we propose an automatic alerting system that alerts the driver of any red signal ahead. Our system works on the basis of Rf technology. Whenever a signal turns red, it sets on an rf transmitter fitted in it.

The transmitter constantly transmits rf signals informing about a red signal. Now every train needs an receiver circuit on it. The receiver circuit when comes within certain range of the rf transmitter, it receives the input and sends it to the microcontroller. The microcontroller then processes this data in order to alert the driver about the signal ahead.

Receiver



-Priya R/II Year

SOLAR POWER MEASUREMENT SYSTEM USING ARM CORTEX

Today human beings have been advancing in technology and other fields at a rate which seems incomprehensible, but at the same time our needs have increased as well. Mankind is now exploiting fuel resources at the rate faster than which, those resources can be replenished. At this rate, we might have to face An Energy Crisis in the near future.

Now, to tackle this problem we must shift our focus to Alternative Sources/Renewable Sources of energy. Some of the Renewable Energy Sources include: Solar, Wind and Tidal Energy. Out of these, Solar Energy is available very abundantly. And with the help of this project, System to measure solar power using ARM CORTEX; we attempt to harness the Energy of the Sun.

This project deals with Solar Power and its parameters. Our system is designed to measure the voltage, current, temperature and light intensity of the energy incident on it. A Solar Panel is used to convert the incident sun-light into DC voltage.

An LDR is used to sense the intensity of the incident sun-light. A temperature sensor senses the incident heat. With this arrangement, it is possible to significantly take a small part of the Sun's Energy and measure its parameters. With the help of an ARM CORTEX board and an LCD, we can take the values from the sensors and display them.

The ARM CORTEX board has an inbuilt ADC which helps to convert the raw sensor readings into user understandable values. Once the board has converted the sensor readings, it then displays them on the LCD. At a later stage, the concept of this project can be applied to develop a system so as to use the harnessed Solar Energy for running different peripherals. The energy can be stored by a battery and this battery can then be used to power different D.C. appliances. And in this way, we offer a method to obtain energy from a renewable source thereby, taking a step towards A Clean and Green Future.

- Sangeetha.N/III Year

MACHINE OVERHEAT DETECTION WITH ALERT

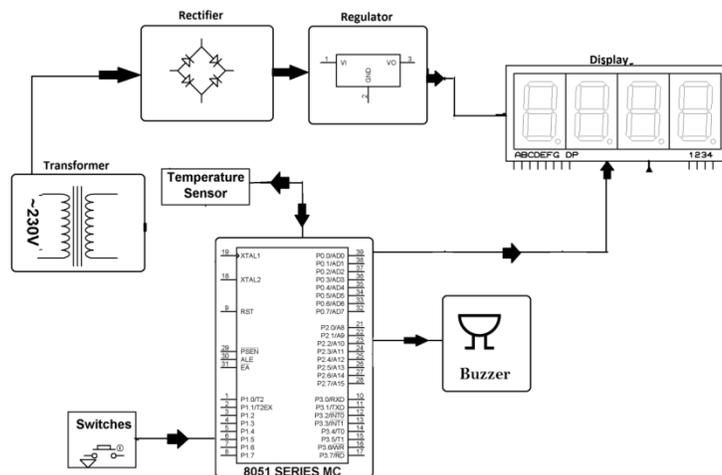
This proposed system is used to detect temperature of devices that are overheated. This project is very beneficial especially in places like factories or industries consisting of big machines where it is very necessary to take some action in case the machine is overheated. The system uses a digital temperature sensor in order to detect temperature and pass on the data to the microcontroller.

The 8051 microcontroller processes data and sends the temperature to be displayed on LCD screen. The display consists of 7 segment display unit to display up to 3 numbers.

It consists of 4 push buttons for setting the high and low temperatures. Pressing set button allows user to increment and decrement the temperature of the system.

The system uses 12V transformer to supply power to the system. We can set a limit to the temperature and in case if the system exceeds the temperature limit, an alarm rings to indicate that the system has exceeded the set temperature.

The choices are numerous and have an impact at the system level, as well for deeply embedded products. And C is no longer the only programming language. Whatever the complexity of the embedded system you're developing software for, New Electronics addresses the issues regularly by looking at the latest tools and techniques available.



VOICE CONTROLLED ROBOTIC VEHICLE

Very-large-scale integration (VLSI) is the process of creating an integrated circuit (IC) by combining thousands of transistors into a single chip. The first semiconductor chips held two transistors each. Subsequent advances added more transistors, and as a consequence, more individual functions or systems were integrated over time.

The first integrated circuits held only a few devices, perhaps as many as ten diodes, transistors, resistors and capacitors, making it possible to fabricate one or more logic gates on a single device

Current technology has moved far past this mark and today's microprocessors have many millions of gates and billions of individual transistors.

New developed state-of-the-art VLSI memory chips, exemplified by DRAM, SRAM, and Flash memory, are discussed. Second, technology trends concerning standard DRAM's, embedded memories, and low-voltage memories are reviewed.

For standard DRAM's, memory cells with high cell capacitance, high-speed subsystem technologies (such as synchronous operations, pipelining/perfecting, and use of packet protocols), and small-swing interfaces are investigated. Regarding embedded memories, the advantages and the challenges involved in reducing process costs are presented.

-V.Srinithi/III Year

LAMP ILLUMINATION CONTROL WITH PRECISION

The project is a system that uses a microcontroller to maintain the illumination of a lamp by controlling a thyristor. The illumination is maintained by varying the voltage across it. The system uses the concept of firing angle control of thyristors. A matrix keypad is used to enter the percentage of illumination required by user.

This system overcomes the faults in the present system and provides a solution for light illumination control mechanism of the lamp. This system is built by using an 8051 microcontroller and based on the principle of firing angle control of thyristors, which in turn can control the illumination of lamp. An LCD display unit is used, which displays entered percentage of the illumination through a matrix keypad. The firing angle control of thyristors is done by the microcontroller, according to the desired percentage entered by the user.

Based on this input the microcontroller will automatically adjust the power delivered to the lamp through a solid state switching mechanism.

- M.Kowsalyashivani/III Year

TECHNOLOGY EXPERTISE ZONE

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

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

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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.