DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SPECTRUM

TECHNICAL MAGAZINE

2K20-21

March

Volume-11

NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Editorial board

MESSAGES

Chairman's message

It gives me great happiness to note that the department of Electronics and Communication Engineering, NEC is bringing out the volume-11 of the department technical magazine, "SPECTRUM". From the first edition, I understand that this magazine is intended to bring out the hidden literary talents in the students and also to inculcate leadership skills among them. The newsletter has served as a platform for the students to share their knowledge and ideas. I expect the contributions to this magazine to be of high standard and quality. I wish all the success for this venture.

Vice Chairman's message

I feel extremely delighted to observe that the department of ECE is coming out with a magazine this year also with the dedicated and committed efforts of the faculty and the students of the Editorial Board. The activity depicts the commitment and involvement of students and their thirst for knowledge.

I congratulate the efforts of the members of the Editorial Board in bringing out the volume-11 of the magazine. It is because of their selfless and untiring efforts that we see the magazine enriched with variety of articles.

Principal's message

The magazine of the department is the reflection of the creativity of the students, involved in multifarious activities. It speaks about their imaginative creativity through the medium of a language given in literary and artistic shape.

I feel gratified to see that the department is doing its best in carrying out the mission of grooming the students as such professionals who are not only competent enough to combat the challenges in their life but also become good human beings with moral excellence and social sensitivity

HOD's message

I feel privileged in presenting the volume-11 of our department association magazine. I would like to place my sincere and heartfelt thanks to all those who have contributed to make this effort a success. My special thanks to the Management, for their guidance which enabled us to bring out this volume.

The magazine has a variety of articles endowed with different subjects contributed by the students of our department and their participation in various activities round the year.

I extend my gratitude to the entire team of the Editorial Board for their constant exertion, revision and support in bringing out the magazine in the present form.

INDEX

CELL PHONE OPERATED LAND ROVER ROBOTIC VEHICLE

Usually, remote control robots use RF circuits, which have the drawbacks of limited working range, limited control and limited frequency range. To overcome these drawbacks, cell phone operated land rover robotic vehicle is used. It provides the advantages of robotic control, intrusion free controllers and up to twelve controlling systems, etc. Although the capabilities and appearance of embedded robotics vary vastly, all robots share the features of a movable, mechanical structure under some form of control. The control of robots involves three different phases they are perception, processing and action. Normally, the sensors are mounted on the robot. The perception and processing is done by the on-board microcontroller, and the action is performed using motors.

The major building blocks are microcontroller, Cellphone, DTMF Decoder and DC-Motor-driver circuit. The cellphone is the most important part of the entire system because the entire system works and is activated by the cellphone. DTMF (dual tone multi frequency) receives the input signal from cell phone and decode it, and then generates 4-bit-digital output of the 8051 microcontroller. When the DTMF decoder gives a digital output, it also generates an interrupt every time. The microcontroller is the heart of the entire system as it performs the entire controlling actions. Microcontroller depends upon the code which is generated by the DTMF decoder to move the rover right or left and forward or backward by rotating both DC motors. The DC motor driver receives activating signals from the microcontroller in terms of low or high logic, and then it amplifies and rotates two motors in both directions. The control of robot involves mainly four different phases: perception, action processing and detection. In the perception stage if the cellphone attached to the robot receives a call, then the pressing action of the key on the cellphone decodes the generated DTMF tone. Then, the decoder chip receives the audio signal from the cellphone, and then converts the DTMF tone into a binary code, which is then fed to the microcontroller. In this project, an MT88710 IC is used as a DTMF decoder. In the processing stage, the microcontroller processes the binary code which is received from the DTMF decoder. The Microcontroller is preprogrammed in ‘C’ to perform this particular task according to the input bits.

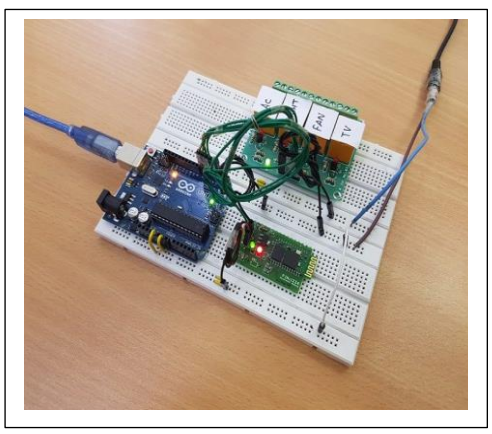
V. Deepthi,
II Year ECE

VOICE ACTIVATED HOME AUTOMATION

he concept of Home Automation is gaining popularity as it helps in reducing human effort and errors and thus increasing the efficiency. With the help of Home Automation system, we can control different appliances like lights, fans, TV, AC etc. Additionally, a home automation system can also provide other features like security, alarms, emergency systems etc. can be integrated. There are many types of Home Automation Systems like Bluetooth Controlled, Internet Controlled, RF Controlled, Remote Controlled (IR Remote) etc. Each type has its own advantages and disadvantages. In this project, we have designed a Voice Activated Home Automation system, where different appliances are controlled by sending a Voice Command.

The Voice Activated Home Automation project is implemented using Arduino UNO, Bluetooth and a smart phone. Further sections will explain circuit diagram, components required and working of the project. A simple Voice Activated Home Automation system is designed. Voice commands are used to control different appliances. We will now see the working of the project. All the connections are made as per the circuit diagram. After making the necessary connections, we have to switch on the power supply to the circuit. Now, we need to pair the Phone's Bluetooth to the HC – 05 Bluetooth Module. Before that, we have to install the App mentioned above in the phone. The home screen of the app looks something like this.

G. S. R. Krishna Reddy,
II Year ECE



PORTABLE COVID-19 VACCINE COLD STORAGE BOX

COVID Vaccines developed to counter the coronavirus threat require special storage provisions in temperature-controlled environments. The vaccines will be wasted in case they fall below desired temperatures during storage. To address this issue, we here develop a mini temperature-controlled fridge made especially for vaccine storage. We use Peltier modules with heat sink and dc fan to operate the modules.

The COVID Vaccine Box offers a wide variety of advantages including:

- Easy to Carry Portable Design
- On-board Digital temperature control panel
- Easy to Carry Lightweight Box
- 4x Peltier for Effective Cooling

The system makes use of 4 x Peltier modules for effective cooling. Each Peltier module is integrated with heat sink and cooler fan to cool the heated side of module so we can get effective cooling on the other side. It makes use of an LCD display based panel to allow user to set and control the temperature in fridge.

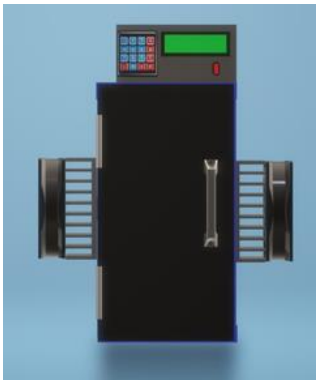
The user can set the required temperature in the panel on the fridge. The fridge now powers up the Peltier's to achieve the desired cooling, inbuilt temperature sensor constantly measures the internal temperature to feed it to the controller. The controller now operates the Peltier's to maintain the desired temperature for vaccine storage.

Advantages:

- Easy to Carry Portable Design
- On-board Digital temperature control panel
- Easy to Carry Lightweight Box
- 4x Peltier for Effective Cooling

Disadvantages:

- Requires AC Power Supply



U. Tabitha,
III Year ECE

DIY VENTILATOR USING ARDUINO WITH BLOOD OXYGEN SENSING FOR COVID PANDEMIC

Human lungs use the reverse pressure generated by contraction motion of the diaphragm to suck in air for breathing. A contradictory motion is used by a ventilator to inflate the lungs by pumping type motion.

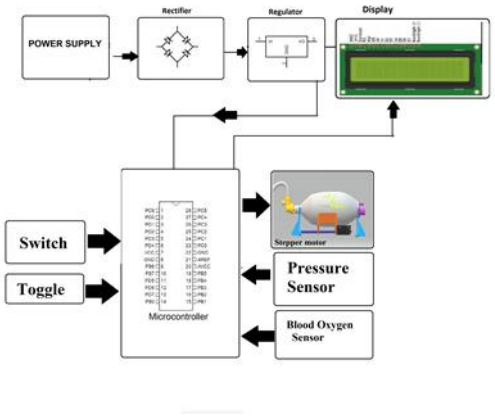
A ventilator mechanism must be able to deliver in the range of 10 – 30 breaths per minute, with the ability to adjust rising increments in sets of 2. Along with this the ventilator must have the ability to adjust the air volume pushed into lungs in each breath. The last but now the least is the setting to adjust the time duration for inhalation to exhalation ratio.

Apart from this the ventilator must be able to monitor the patients' blood oxygen level and exhaled lung pressure to avoid over/under air pressure simultaneously. The ventilator we here design and develop using arduino encompasses all these requirements to develop a reliable yet affordable DIY ventilator to help in times of pandemic.

We here use a silicon ventilator bag coupled driven by DC motors with 2 side push mechanism to push the ventilator bag. We use toggle switch for switching and a variable pot to adjust the breath length and the BPM value for the patient.

Our system makes use of blood oxygen sensor along with sensitive pressure sensor to monitor the necessary vitals of the patient and display on a mini screen. Also, an emergency buzzer alert is fitted in the system to sound an alert as soon as any anomaly is detected.

The entire system is driven by arduino controller to achieve desired results and to assist patients in COVID pandemic and other emergency situations.



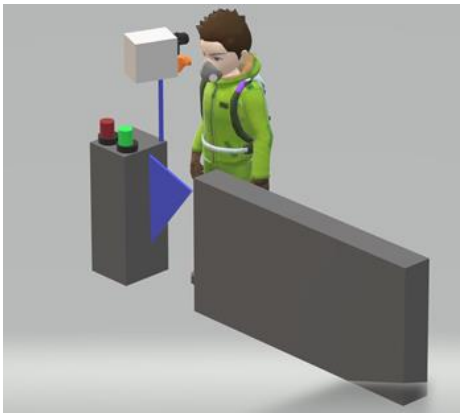
G.G. Siva Sai,
III Year ECE

IOT AUTO TEMPERATURE SCAN ENTRY SYSTEM | THERMAL FLAP BARRIER COVID PREVENTION

The first step to detect covid is by scanning for fever. Also, we need to monitor every person for a mask. We have temperature checking systems for every entrance for scanning but manual temperature scanning has a lot of disadvantages. The personnel are not well trained on using temperature scanner devices. There is human error in reading values. Many a time's people are not barred from entry even after higher temperature readings or no masks. The scanning is skipped by the personnel if supervisors are not watching. Manual scanning system is not suitable for large crowds.

To solve this problem, we here propose a fully automated temperature scanner and entry provider system. It is a multi-purpose system that has a wide range of applications. The system makes use of a contactless temperature scanner and a mask monitor. The scanner is connected directly with a human barrier to bar entry if high temperature or no mask is detected.

Any person will not be provided entry without temperature and mask scan. Only person having both conditions is instantly allowed inside. The system uses temperature sensor and camera connected with a raspberry pi system to control the entire operation. The camera is used to scan for mask and temperature sensor for forehead temperature. The raspberry processes the sensor inputs and decides whether the person is to be allowed. In this case the system operates a motor to open the barrier allowing the person to enter the premises. If a person is flagged by system for high temperature or no Mask the system glows the red light and bars the person from entry. Also, the face and temperature of person is transmitted over IOT to server for authorities to take action and test the person for covid. Thus, the system provides a 100% automated system to prevent the spread of COVID.



A.Dharani,
III Year ECE

LED GESTURE CONTROL BICYCLE INDICATOR GLOVE

Bicycles are the still a very economical and healthy means of transportation today. The use of bicycles has been increased in the wake of COVID pandemic with people becoming more health conscious as well as environmentally aware. Well with the increase in adaption of bicycles, so we have seen an increase in the number of bicycle accidents. There major reasons behind the increased number of bicycle accidents include:

- Unlike other vehicles bicycles rarely have any back lights which makes them impossible to see at night.
- Bicycles do not have brake lights to indicate if rider is braking.
- Bicycles do not have indicator lights for turning indications.

Well, here we solve this problem with an advanced system that makes use of sensor, microcontroller and wireless communication to avoid bicycle accidents. The system will provide following advantages:

- Back Lights to be seen even in Dark
- Automatic Brake Lights when Bicycles applies a brake
- Gesture based Gloves for Button less Operation
- 2 X Brake Lights Attachment for the Bicycle
- Wireless Communication between Gloves and Lights
- Battery Powered Lightweight System

The system consists of 2 key components, the gesture control glove to be worn by user and a indictor unit to be mounted below the seat of bicycle. The 2 nits wirelessly communicate with each other to achieve the desired output. The Glove unit consists of a gyro sensor, rf transmitter which are controlled by an Arduino pro mini. The glove unit is powered by a battery. The glove controller receives tilt commands from the gyro sensor when user tilts hand in a direction. This command is processed and transmitted by the RF transmitter to the receiver system as per the direction of tilt. Also, when the user breaks the braking motion is captured by the gyro and transmitted by the RF transmitter wirelessly.

The indicator unit is also a battery powered unit integrated with an atmega controller and RF receiver. When the RF receiver receives a command, it is processed first by the atmega controller. The controller decodes the command and checks if it is a braking command or direction indication. If it is a direction indication it glows the respective light and if it is a braking command, it glows both the back lights together. Thus, the system provides a safe and comfortable bicycle indicator system.

Dr. V. Venkata Rao,
Professor & HOD,
ECE Dept.,

GPS VEHICLE TRACKING & THEFT DETECTION

It proposes a GPS based vehicle tracking system that tracks the vehicle and sends the tracking data over through a SMS. The microcontroller acts as the controlling head of the system. When the system goes in Theft mode the authorized user gets the alert message and user will Able to stop the vehicle engine immediately via sending SMS to system with 'S' Keyword. The system includes a GPS modem that tracks the vehicle location in the form of latitude and longitude. This location can be accessed via SMS that is being sent to the user.

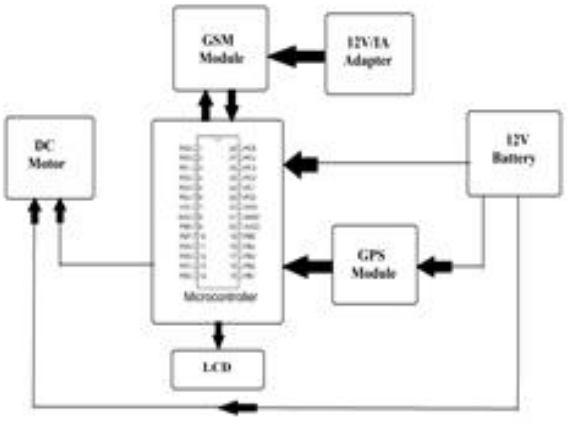
With the help latitude and longitude information SMS user will able to locate vehicle with Google map. This system proves very beneficial for transport and travel companies as they can now keep track of their vehicles.

Hardware Specifications

- GSM Modem, GPS Module, LCD Display, Atmega328 Controller, DC Motor
- LED's, Resistors, Capacitors, Diodes,

Software Specifications,

- Arduino Compiler, MC Programming Language: C



M. Sreenivasa Rao
Asst. Professor,
ECE Dept.,

WORKSHOP DETAILS

S.no	Department	Name of the Training Program/Seminar/ Workshop/Conferences /Guest Lecture	Name of the Resource person and organization	Name of the coordinator	Date/s of the Event	No of Participants
1	ECE	STTP on**"IOT APPLICATION DEVELOPMENT USING PYTHON"**	**Dr. Ananda Kumar Subramanian,** Assoc. Professor, VIT-University, Vellore Mr.P Madhusudhana Rao, MD, Orange Research Labs , Hyderabad **Mr. C. Sudhakar**, Retd. Professor & Retd. AGM, Andhra Bank, Hyderabad **Mr. J. Narasimham**, Retd. Scientist, BHEL Entrepreneur	Dr. K. Sreenivasa Ravi, Professor	7-12-2020 to 12-12-2020	103
2	ECE	AICTE SPONSORED STTP on **"ADVANCES IN REMOTE SENSING AND ITS APPLICATIONS"**	Dr. Bharati Bidakar, Research Analyst, AUCE, Andhra University Dr. G. Rama Murthy, Professor, Mahindra University, Hyderabad. Dr. N. Pappa, Professor & HoD, MIT, Chennai Dr. Natraj Vaddadi, Vice President, Genpact & Adjunct Faculty, Petroleum Technology at the University of Pune (now SPPU) Mr. P. Madhusudhana Rao MD, MadBlocks Technologies Pvt. Ltd., Hyderabad Dr. Naresh Kumar Mallenahalli, NRSC, Hyderabad Sabitha Ramakrishn Instrumentation Dept, M Chennai	Dr.A.V. Nageswara Rao, Associate Professor	14-12-2020 to 19-12-2020	123
3	ECE	Six-day Workshop on "**Embedded Systems Fundamental &Advances"**	APSSDC	A. Ravindra Babu, Assistant Professor	1-2-2021 to 6-2-2021	60
4	ECE	Guest Lecture on **"Fundamentals of IOT"**	Dr. D. J. R. Kiran Kumar Associate professor, KL University	Dr. V. Venkata Rao, Professor & HoD	04-03-2021	120
5	ECE	Two-day Workshop on **"Important topics in Signals and systems"**	Dr.D. J. R.Kiran Kumar Associate professor, KL University	Dr. V. Venkata Rao, Professor & HoD	5-3-2021 & 6-3-2021	185

Two-day Work shop on "Important topics in Signals and Systems" by Dr. D.J. R. Kiran Kumar, Associate Professor, KL University, On 05-03-2021and 06-03-2021.

Guest Lecture on "FUNDAMENTALS OF IOT" for Dr. D.J.R. Kiran Kumar, Associate Professor, KL University, On 04-03-2021.

3-Day Workshop on Problem Solving with PYTHON for II B. Tech ECE-C Students in Association with APSSDC from 3-2-2020 to 5-2-2020.

STUDENT TOPPERS


NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
III B.Tech. I Semester, ECE Toppers List (2018 Batch)
U.TABITHA 18471A0458 9.45
SK. A. SIDDIKA 18471A0450 9.32
M. CHAITHANYA KUMAR 18471A04F0 9.32
P. VIJAYKRISHNA 18471A04G3 9.32
SK. JOHNVALI 18471A04G9 9.32
A. DHARANI 18471A0401 9.18
G. RAMYA 18471A0420 9.18
G. G. SIVA SAI 18471A0421 9.18
K. SREE DEVI 18471A0430 9.18
P. BHAVYA LAKSHMI 18471A0447 9.18
K. JASWANTHI 18471A0490 9.18
SK. MASUDA 19475A0402 9.18
Management, Principal, HOD & Faculty Express their Hearty Congratulations to Toppers in III B.Tech. I Sem.


NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
III B.Tech. II Semester, ECE Toppers List (2017 Batch)
K.Hemanth Sai 17471A0485 9.05
MD.Z.H.KHAN 17471A04B1 9.05
CH. Kasi Maithri 17471A0409 8.91
D.P.Kumar Reddy 17471A0449 8.77
N.V.SIVA SAI 18475A0406 8.77
G.V.S.D.K.REDDY 17471A0475 8.64
G.PRATHYUSHA 17471A04C2 8.64
K.Ganaga Bhavani 1747A104E8 8.64
P. HARITHA 18475A0407 8.64
Management, Principal, HOD & Faculty Express their Hearty Congratulations to Toppers in III B.Tech. II Sem


NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
IV B.Tech. I Semester, ECE Toppers List (2017 Batch)
MD. Z. H. KHAN 17471A04B1 9.45
CH. KASI MAITHRI 17471A0409 9.05
N. VENKATA SIVASAI 18475A0406 8.91
K. HEMANTH SAI 17471A0485 8.82
D. PAVAN KUMAR REDDY 17471A0449 8.77
B. J. B. YASWANTH BABU 17471A04C0 8.77
N. UMAMAHESWARI 17471A04I9 8.77
SK. SHAMEEM 17471A04D6 8.68
P. SHARONU 17471A04K0 8.68
P. HARITHA 18475A0407 8.68
Management, Principal, HOD & Faculty Express their Hearty Congratulations to Toppers in IV B.Tech. I Sem.


NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)
Department of Electronics & Communication Engineering
IV B.TECH. II SEMESTER, ECE Toppers List (2016 Batch)
SHAIK RESHMA 16471A04E3 9.59
KODURU KASI VISWANATH 16471A04C8 9.59
GANGADHARI MANO CHAKRI 16471A04E4 9.45
KARNATI SIVA RANJANI 16471A04G9 9.45
KUCHIKA MOUNIKA 16471A0426 9.32
BRUNDAVANAM V L N VISHNU BHARADWAJ 16471A0429 9.32
CHIGURUPATI SRIVANI 16471A0441 9.32
KONDA NANCY SUSHMA 16471A0488 9.32
NARAPAREDDY ROHINI PRIYA 16471A04A1 9.32
ANDE NAGA PAVANI 16471A04A9 9.32
KUNCHALA VENKATA VAMSI 16471A04B2 9.32
YEPURI SAI SARANYA 16471A04B9 9.32
KANCHARLA KUSALA 17475A0402 9.32
SHAIK SRINADH 17475A0405 9.32

NPTEL CERTIFICATION DETAILS

S.No	Name of the Student	Name of the Course	Type of certificate
1	Sravani.I	Introduction to Internet of Things	Elite
2	Ramya priya .M	Introduction to Internet of Things	Elite

MOUs

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is executed on this __ Day of November 2020 at Hyderabad by and between: -

M/s. BYTEXL INDIA PRIVATE LIMITED (A subsidiary of KP2 Associates LLC, USA) a company registered at HYDERABAD(Telangana), having its office at **16/1/25, Road No.7, Ida Nacharam Hyderabad, TG - 500076**, being represented by its Authorised Representative Mr. Raman Subramanyam (hereinafter referred to as "**First Party**" which term shall include all its successors in interests and permitted assignees)

And

Narasaraopeta Engineering College [**Address:** Kotappakonda Rd, Narasaraopeta, Andhra Pradesh 522601, India] (hereinafter referred to as the "**Second Party**" which term shall include all its successors in interests and permitted assignees)

WHEREAS the First Party is in the business of providing a platform that offers access to programming and coding courses, via the ByteXL website URL namely bytexl.in, bytexl.com and through ByteXL mobile application.

IN WITNESS WHEREOF, this Memorandum of Understanding is executed on this ___ **day of November 2020** in the presence of witness with free will and without any undue influence or duress.

FIRST PARTY

S V Raman

ByteXL India PVT LTD.

Executive Director

November __, 2020

SECOND PARTY

PRINCIPAL
NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)
NARASARAOPET - 522 601
Guntur (Dist.), A.P.