



# CHRONICLES-EEE 2021-22

Anyone who does anything to help a child in  
his life is a hero to me

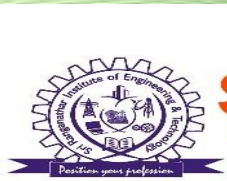


**SRI RANGANATHAR**  
INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution

Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792





**SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)

Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution

Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## MAGAZINE 2021-22





## SRI RANGANATHAR INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## ABOUT SRIET



### SRIET Profile

Sri Ranganathar Institute of Engineering and Technology (SRIET) came into existence in 2011, out of an ardent desire of Dr. V. Narayanasamy to contribute manifold to the society that nurtured him. SRIET is an Innovative Educational Institution where the curiosity, creativity and intellectual joy of students all drive to academic excellence. Our Institution provides complex problem-solving skill and imbibes service to the public good. SRIET is defined by strong association and working in ways that excel in traditional boundaries.

SRIET's academic excellence is rooted in a student-centered model of learning. The Curriculum is an accurate approach to education that pushes the students to be creative thinkers, intellectual risk-takers and entrepreneurial problem-solvers. SRIET leaves students prepared to thrive as independent and innovative leaders and equipped with the tools they need to become the next generation of leaders in their respective fields.



### Vision of SRIET

To be a unique Institution that enables students to become contributing Humans towards technology, business and sustainability of natural world.

### Mission of SRIET

Our mission is to facilitate students with harmonious teaching and experiential learning by integrating industrial and societal needs with curriculum, providing requisite infrastructure facilities and imbining ethical values



## ABOUT ECE

Electronics and communication engineering synthesizes science, mathematics, technology, and application-oriented designs into world-class consumer products, timely microprocessors, state-of-the-art computers, advanced electronic components, and much more. From cutting-edge technology revolutions to real life applications, the innovations of electrical engineers continue to lead the future and elevate the standards in the marketplace. With a shortage of electrical engineering talent in the job market, the demand for graduates with an electrical engineering degree remains at an all-time high.

### **Vision:**

To be a centre for Excellence in Electronics and Communication Engineering by fostering professional competence with ethical values.

### **Mission:**

- To embrace innovative teaching and learning methodologies that lead to the self-improvement of students.
- To embed contemporary technical knowledge in core and allied field by having collaboration with industry.
- To enhance the competency of students to meet the challenges posed in industry on employment through research and innovative ideas .
- To enlighten our students with ethical, human values and leadership.





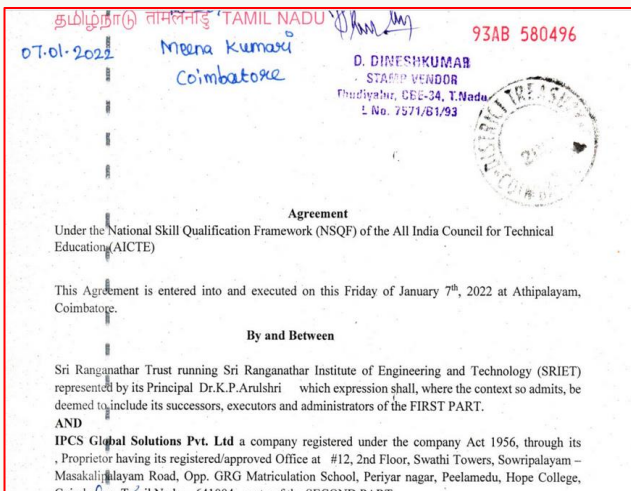
## MOU

The Following Companies are undersigned with SRIET as per the need of Anna University curriculum for industry exposure of the students and all other related activities in the academic year 2021-22.

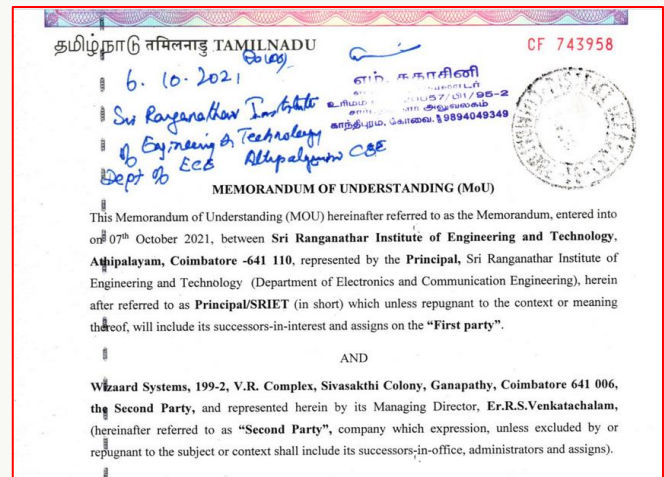
| S.No | Name of the Company             | Location                            | Date of Signed |
|------|---------------------------------|-------------------------------------|----------------|
| 1    | Wizaard System                  | Sivasakthi Colony, Coimbatore       | 6-10-2021      |
| 2    | KNR System                      | Coimbatore                          | 21-12-2021     |
| 3    | IPCS Global Solutions Pvt. Ltd. | Peelamedu, Hope College, Coimbatore | 7-01-2022      |



## Agreement Signed with KNR Systems



## IPCS Global Solutions Pvt. Ltd.



## Wizaard System

**SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## Students Internship



GST NO : 33AAGPU2633K1ZK



**Aishwarya**  
Enterprises

Ph : 0422 - 2971333  
Mob : 98422 35781

334/1F, Agarwal School Road, Somayampalayam Post, Coimbatore - 641 108.  
web - [www.aishwaryaenterprises.in](http://www.aishwaryaenterprises.in) mail - [sales@aishwaryaenterprises.in](mailto:sales@aishwaryaenterprises.in), [aesesales@gmail.com](mailto:aesesales@gmail.com)

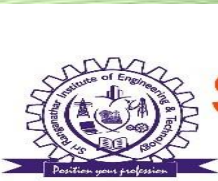
Coimbatore  
05 Mar. 22

### TO WHOMSOEVER IT MAY CONCERN

This to certify that **Ms.KAVIYA.G (713919106016)** student of Third year, **B.E ELECTRONICS AND COMMUNICATION ENGINEERING**, from Sri Ranganathar Institute Of Engineering and Technology had undergone her Internship training in our Organisation from 28 -02-2022 to 05-02-2022.

Student Attended Internship training at Aishwarya Enterprise, Coimbatore





## SRI RANGANATHAR INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



### Student In plant Training



#### PRICOL LIMITED

*Passion to Excel*

Plant 1,  
132 Mettupalayam Road  
Perianaickenpalayam  
Coimbatore 641020, India.

☎ +91 422 4331100  
☎ +91 422 4331122  
✉ factory@pricol.co.in  
🌐 pricol.com

REGISTERED OFFICE  
109, Race Course,  
Coimbatore 641018, India.

CIN: L34200TZ2011PLCO22194

▲ CUSTOMERS ▲ EMPLOYEES ▲ SHAREHOLDERS ▲ SUPPLIERS

PL/TRG/INT/37/2022

Mar 29, 2022

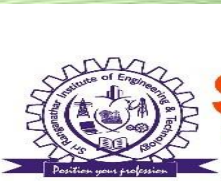
#### TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Sahaya Delphin S, student from Sri Ranganathar Institute of Engineering and Technology, Coimbatore, has undergone her Internship at Pricol Limited.

Department : Production Department  
Period : 14.03.2022 to 28.03.2022  
Performance : Good

We wish her all success in her future endeavors.

Student Attended Inplant training at Pricol Ltd, Coimbatore



**SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792

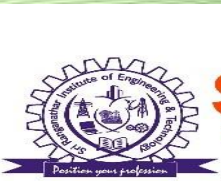


## Students Industrial Visit



II and III year Students of our college attended Industrial visit at ARK Automation System at Coimbatore.



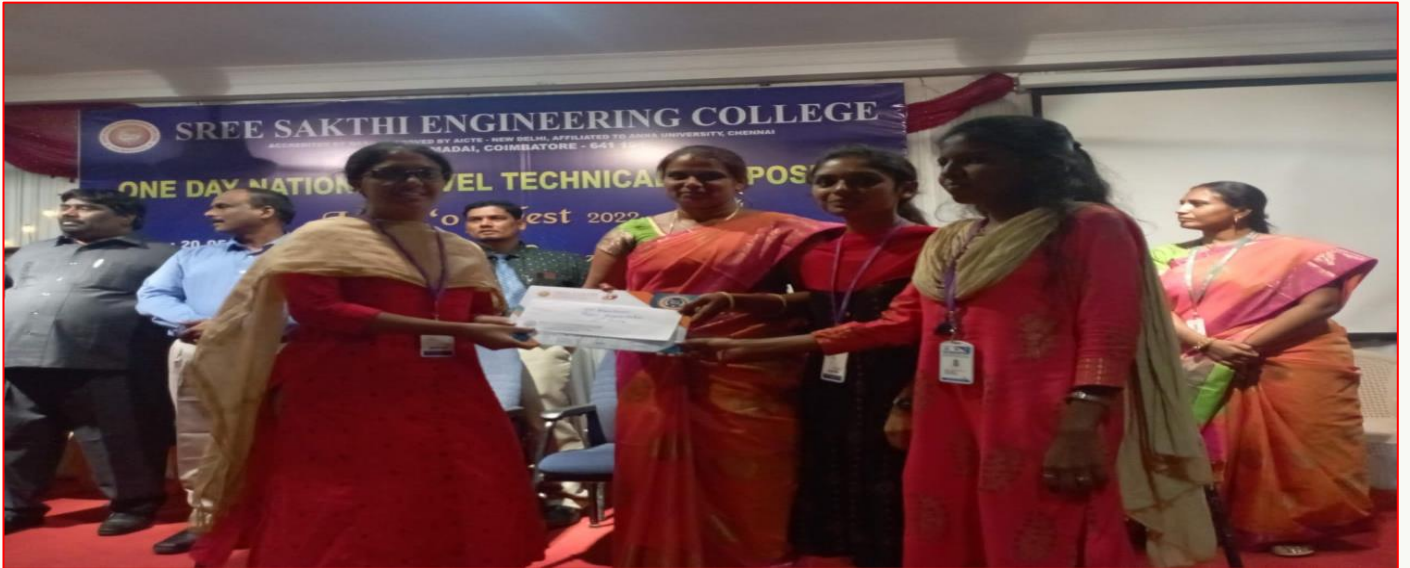


## SRI RANGANATHAR INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



### Students Participation & Prizes Won



Students Narmatha, Lisha and Keerthimalini II ECE Attended National Level Symposium at Sree Sakthi Engineering College, Coimbatore.



Student G.Kaviya, II ECE Attended National Level Symposium at PPG College of Engineering, Coimbatore.



M.Herosha, II ECE Attended National Level Symposium at Adithya Institute of Technology, Coimbatore.





## Guest Lecture




Faculty organising Seminar on VLSI Chip Design Technology




**SRI RANGANATHAR**  
INSTITUTE OF ENGINEERING AND TECHNOLOGY  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## FDP ATTENDED BY FACULTY



**GMR INSTITUTE OF TECHNOLOGY**  
&  
**SRI SAIRAM INSTITUTE OF TECHNOLOGY**





Department Of Electronics and Communication Engineering


**CERTIFICATE OF PARTICIPATION**


is hereby awarded to  
**Mr.A PERIYANAN**  
Sri Ranganathar Institute of Engineering and  
Technology, Coimbatore

For actively participating in FDP on "Advanced Signal Processing, Communications using AI and ML Techniques" jointly organized by Department of ECE of GMR Institute of Technology and Sri Sairam Institute of Technology from 21st to 25th March, 2022.

  
Dr. V Jagan Naveen  
Convenor, GMRT

  
Dr. S Rajarajan  
Convenor, SSIT

  
Dr. C.L.V.R.S.V Prasad  
Principal, GMRT

  
Dr. K Palani Kumar  
Principal, SSIT



**SVCE** Sri Venkateswara  
College of  
Engineering



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
in association with  
IETE CHENNAI CENTRE  
Presents  
FIVE-DAYS ONLINE FACULTY DEVELOPMENT PROGRAMME on  
RECENT TRENDS IN NETWORK SECURITY  
Certificate of participation  
This is to certify that  
**A PERIYANAN**  
of Sri Ranganathar Institute of Engineering and Technology  
has participated in the Five-Days Online Faculty Development Programme on "Recent Trends in Network Security" organised by the Department of Electronics and Communication Engineering in association with IETE Chennai Centre from 8<sup>th</sup> March 2022 to 12<sup>th</sup> March 2022.

  
Dr. N VENKATESWARAN  
CHAIRMAN, IETE CHENNAI CENTER

  
Dr. G.A.SATHISH KUMAR  
EVENT COORDINATOR

  
Dr. S.MUTHUKUMAR  
HOD - ECE



Mr.A.Periyanan, AP/ECE attended 5 days FDPs on Advanced Signal Processing, Communications using AI and ML Techniques and Recent Trends in Network Security





## Speech emotion recognition based on Bi-directional LSTM architecture and deep belief networks

Mr.P. Dhilipkumar, Assistant Professor/ECE

### Abstract

Machine learning algorithms are often not able to recognize the speech emotion of the individuals. The Speech Emotion Recognition (SER) plays a major role in real-time applications that involve analyzing the speech emotions. It can be used in various scenarios such as emergency centers and human behavior assessments. In this work, we design the architecture for analyzing similarity in clusters, which is based on a key sequence selection procedure. A sequence of information is transformed into a spectrogram with the advantage of the STRFT algorithm. The subsequent result is a discriminative and salient feature extraction program. We have also added new features to the CNN to improve its recognition performance. Instead of the whole utterance, the key segments are processed separately to diminish the structure complexity. The proposed system is compared to different standard datasets for recognizing different kinds of objects. It is evaluated over different time periods and achieves better recognition accuracy. The proposed SER model is proven to be robust and reliable when compared with latest state-of-the-art methods.

### Introduction

Machine learning has been presented with a wide variety of advantages in terms of processing speech signals in order to identify and recognize emotions from them. However, this field is still challenging due to the complexity of the task and the need for extracting salient and discriminative features [1]. Aside from deep learning techniques, most of the researchers also use speech spectrograms as an input feature for SER. These 2-D representations of speech signals are very suitable for extracting important features of speech signals [2], [13]. Researchers usually use 2-D CNNs for visual recognition tasks. They can extract salient formation from speech signals and perform time series classification tasks with them. Some researchers have also developed FCNs that can handle fixed input size [3], [15].

Due to the lack of FCNs to learn temporal information, the learning task of the LSTM-RNNs is usually focused on learning special features of sequences. Researchers are working on a method that will allow

speech recognition software to learn temporal features and identify segments of speech that are related to the emotional state of a person [5], [11].

Researchers are currently working on developing methods to learn and recognize the emotional states of speakers. They use deep learning techniques to learn and interpret complex data sets. AI and CNNs have increased the level of accuracy of recognition, but their cost has also increased due to their complexity [4]. This work suggested a method that combines deep belief network with K-Mean clustering to improve the efficiency of SER systems. We use the ResNet101 model's FC-1000 layer to extract high-level feature representations from chosen segments. The standard deviation approach is then used to extract temporal data and the final state [14].

## **Results and discussion**

The proposed architecture targets to increase the recognition of emotional state of speech by using sequence selection. It uses K-mean clustering to identify the sequence from utterance and convert all key segments into spectrograms. We selected the key segments from each cluster and converted them into spectrograms with 2-D representations. We then used the extracted features to classify them. We obtained better results than the previous methods on three key datasets: the IEMOCAP, EMO-DB, and

## **Conclusion**

Currently, the CNNs system of SER is not able to provide an accurate and efficient method for recognizing different kinds of models. This paper proposes a innovative methodology that aims to increase the accuracy while reducing computational complexity. We proposed a new method to improve the efficiency of speech sequencing by converting it into spectrograms. This method involves extracting the discriminative features and distinguishing features from voice signal. After the discriminative

## **Plant disease detection using fuzzy classification**

Mr.A.Periyanan, Assistant Professor/ECE

## **Abstract**

The economic growth of a nation mainly depends on agricultural productivity. This is the one of the reasons that early prediction of plant diseases plays a crucial role in agricultural field, as acquiring disease in plants is quite natural. Proper care has to be taken in this area to prevent serious effects on plants in earlier stages by which respective product quality, quantity and/or productivity can be improved. Automatic disease detection techniques are highly valuable for reducing the tedious work of monitoring in big farms of crops

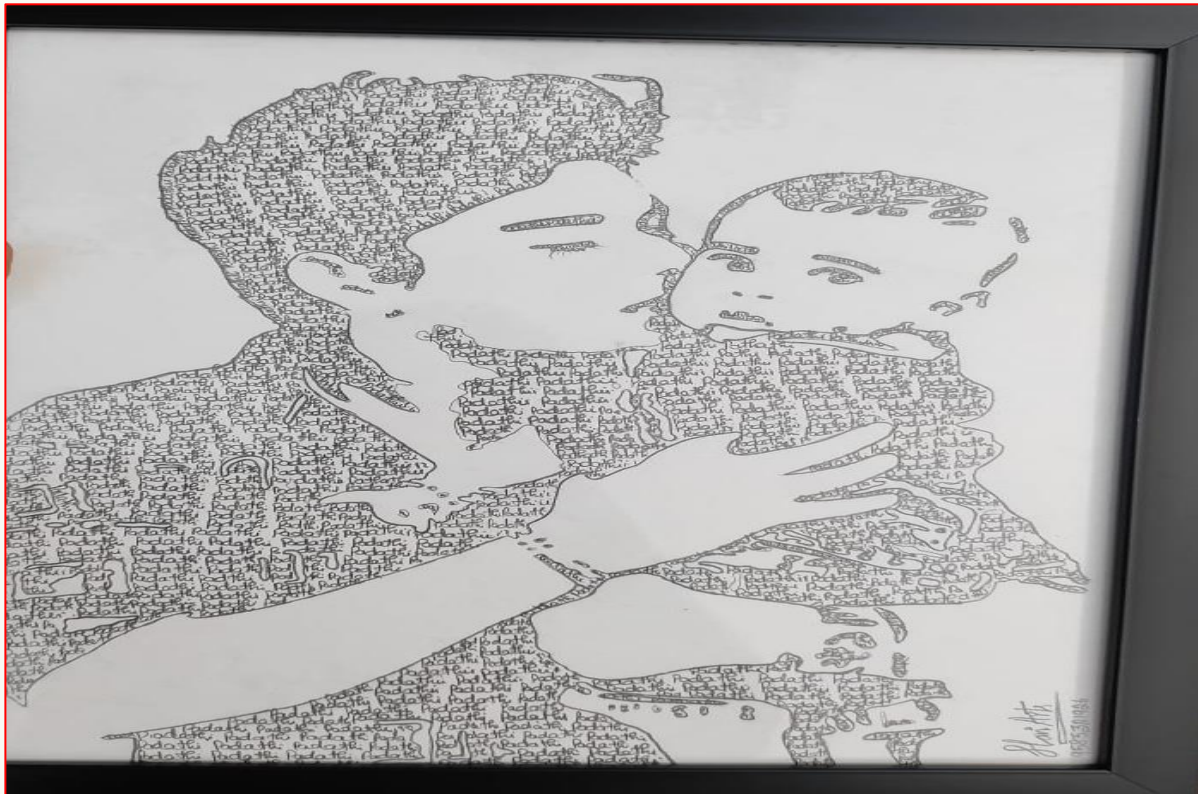


by detecting disease symptoms appearing on the plant leaves in a very earlier stage. Therefore, a new algorithm is proposed for automatic detection and classification of plant leaf diseases using fuzzy classification technique. Image segmentation forms an important aspect for disease detection in plant leaf disease, which is done by using K-means algorithm. Using the Fuzzy membership function, structure relationships between vertices are viewed in the terms of degree for detecting the plant disease. A test image is compared with database image and then dissimilarity is calculated with extracted parameters like skewness, extract mean and deviation. The accuracy of 93% is achieved by the proposed system, which is more as compared with that of the existing system.

 **SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## Students Art



C. Andichamy, II ECE , Student

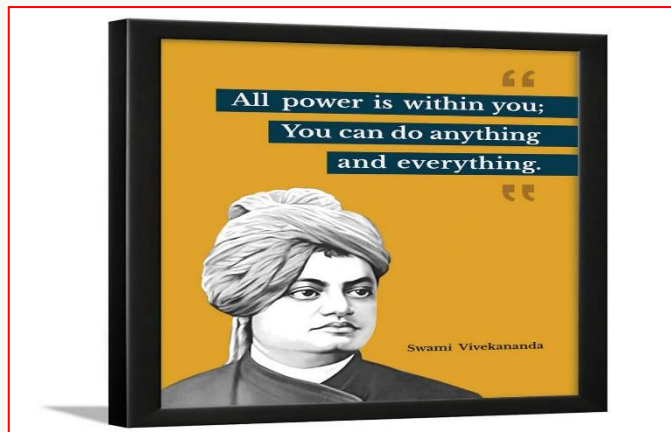




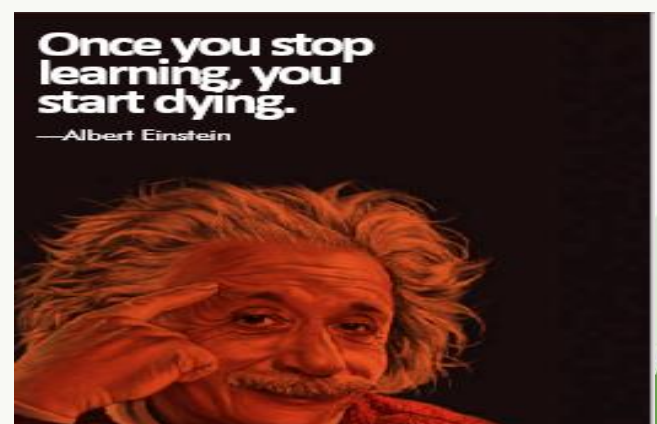
## Quotes



G.Kaviya, III ECE



S.Divya, II ECE



S.Reshma, IV ECE



## Artificial intelligence

Artificial intelligence is **the ability of a computer or computer-controlled robot to perform tasks that are commonly associated with the intellectual processes characteristic of humans**, such as the ability to reason.



AI is being used today **across different industries from finance to healthcare**. Weak AI tends to be simple and single-task oriented, while strong AI carries on tasks that are more complex and human-like. Some critics fear that the extensive use of advanced AI can have a negative effect on society.

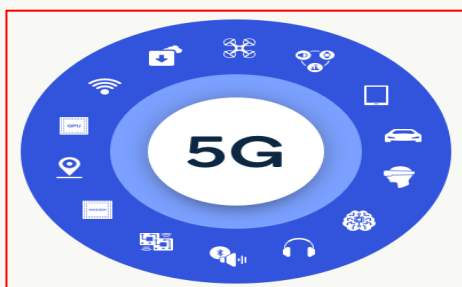
By,

G.Kaviya, III ECE

## 5G Wireless Technologies

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra-low latency, more reliability, massive network capacity, increased availability, and a more uniform user experience to more users. Higher performance and improved efficiency empower new user experiences and connects new industries.



By,

M.Ajaykumar, II ECE





## Project Expo



Automatic theft alarm system model by III ECE students, Kaviya, Varsha and Keerthimalini.



Smart Home project model designed by II ECE students Divya, Theeshna, Ramya and Vinitha.





**SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
 (Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
 Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
 Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## Faculty Organising Webinar



**SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
 ATHIPALAYAM, COIMBATORE-641110



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
 &  
**INSTITUTION'S INNOVATION COUNCIL**



INAUGURATION OF ERNICKA ASSOCIATION  
**"OPPORTUNITIES IN INDUSTRY 4.0 & IOT"**



Date: 07.10.2021



**Chief Guest**  
 Mr.R.S.Venkatachalam  
 Managing Director  
 Wizaard systems  
 Coimbatore



Time: 11.00AM to 12.30PM

Mrs.P.Jeyabharathi,M.E.(Ph.D)  
HoD-ECE

Dr.M.Meenakumari Prof./ECE  
Association Coordinator

Dr.K.P.Arulshri M.E.Ph.D  
Principal, SRIET

Organized Seminar on "Opportunities in Industry 4.0 & IoT" by R.S.Venkatachalam



**CHIEF PATRON :**  
**Dr. V. NARAYANASAMY**  
 CHAIRMAN, SRI GROUPS

**PATRON :**  
**Mr. M. S. VENGATESAN**  
 CE – HR, SRI GROUPS

**PRESIDENT :**  
**Dr. K. P. ARULSHRI**  
 PRINCIPAL SRIET

**VICE – PRESIDENT :**  
**Dr. H. GANESAN**  
 DEAN – SRIET



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
 &  
**INSTITUTION'S INNOVATION COUNCIL**

ORGANIZES NATIONAL LEVEL WEBINAR ON  
**IMPORTANCE OF GATE EXAM**

**CHIEF GUEST**

**Mr.S.SIVAKUMAR**  
 DIRECTOR, GATE FORUM  
 TRICHY

Organized Webinar on "Importance of GATE Exam", by S.Sivakumar





## SRI RANGANATHAR INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



### RANK HOLDERS

II  
YEAR

**DIVYA**  
**CGPA-9.75**

III  
YEAR

**KAVIYA.G**  
**CGPA-9.75**

IV  
YEAR

**RESHMA**  
**CGPA-10.0**

 **SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792 

## TEACHERS DAY CELEBRATION in SRIET



Teachers Day Celebration in SRIET by ECE Department





## STUDENT'S FINE ARTS ACTIVITIES



Student Ms Hemalatha and Mr Praveenkumar are participating Drawing competition in Department Level.



## ALUMNI TALK



2021 Passed out Student Mr.Sri Sudharshan gave interactive talk about Emerging technologies in IT sector with Second year ECE students.





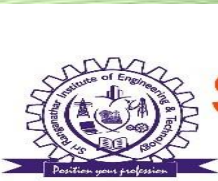
## Technical Quiz

S.Divya, II ECE  
V.Ramya, II ECE

- In which of these is reverse recovery time nearly zero?
  - Zener diode
  - Tunnel diode
  - Schottky diode
  - PIN diode
- A transistor has a current gain of 0.99 in the CB mode. Its current gain in the CC mode is
  - 100
  - 99
  - 1.01
  - 0.99
- A decade counter skips
  - binary states 1000 to 1111
  - binary states 0000 to 0011
  - binary states 1010 to 1111
  - binary states 1111 to higher
- A ring counter with 5 flip flops will have
  - 5 states
  - 10 states
  - 32 states
  - infinite states
- In an ac circuit the fundamental component of current wave lags the corresponding voltage wave by  $20^\circ$ . The third harmonic component of current wave lags the corresponding voltage by an angle.
  - less than  $20^\circ$
  - more than  $20^\circ$
  - equal to  $20^\circ$
  - equal to or more than  $20^\circ$
  - e.
- VSB modulation is preferred in TV because
  - it reduces the bandwidth requirement to half
  - it avoids phase distortion at low frequencies
  - it results in better reception
  - none of the above
- Most popular IF for receivers tuning to 540 to 1650 kHz is
  - 433 kHz

- b. 455 kHz
  - c. 545 kHz
  - d. 555 kHz
8. A 20 m antenna gives a certain uplink gain at frequencies of 4/6 GHz. For getting same gain in the 20/30 GHz band, antenna size required is metre.
- a. 100
  - b. 4
  - c. 1
  - d. 10
9. In a klystron amplifier the input cavity is called
- a. buncher
  - b. catcher
  - c. Pierce gun
  - d. collector
10. IC (instruction cycle), FC (fetch cycle) and EC (executive cycle) are related as
- a.  $IC = FC - EC$
  - b.  $IC = FC + EC$
  - c.  $IC = FC + 2EC$
  - d.  $EC = IC + EC$





**SRI RANGANATHAR**  
INSTITUTE OF ENGINEERING AND TECHNOLOGY  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## Innovative Ideas

### You may soon be able to stretch your TV



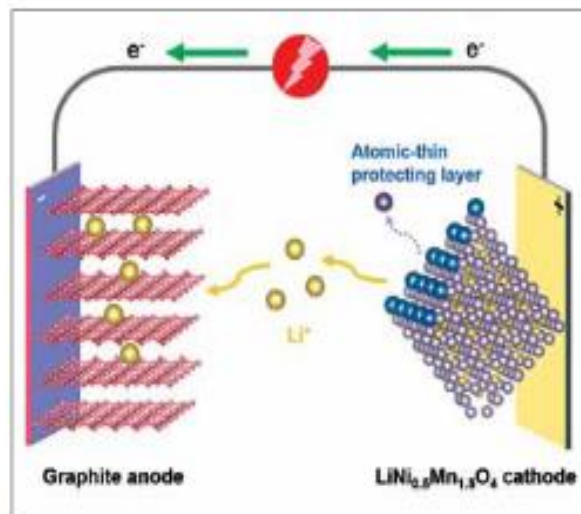
Stanford University researchers have developed a proof-of-concept of a re-shapable display made up of a stretchy polymer called 'super yellow' and the synthetic plastic material polyurethane. It has a maximum brightness of at least two times that of a cellphone screen and can be stretched up to twice its original length without tearing. The display can be stuck to your skin, making wearable electronics a valuable market for this technology. "Imagine a display where you can both see and feel the three-dimensional object on the screen," says Stanford University chemical engineer Zhenan Bao.

*Zhitao Zhang wears the flexible light-emitting film, featuring a Stanford logo, on the knuckle of their finger. This shows how the film can hold up to flexing and wrinkling (Credit: Zhitao Zhang and Jiancheng Lai of Bao Group Research Lab)*

### The lifespan of lithium-ion batteries doubled

Researchers at the University of Queensland have developed a technology that more than doubles the lifespan of highly sought-after high-voltage lithium-ion batteries, which achieve higher energy density but last only several hundred cycles. The researchers have demonstrated a battery that remains stable for more than 1000 charge/discharge cycles. They designed a uniquely-grown atomic-thin functional layer on the surface of a high-voltage cathode, which is the source of lithium ions and is a critical aspect that limits the cycle life in a battery. It should be noted that with the industry under increasing pressure to decarbonise, the development of lithium-ion batteries of lower cost, higher energy density, and longer cycle life is vitally important.

*Atomic-thin layer grown on cathode enables long-lasting battery (Credit: <https://www.uq.edu.au>)*



Mr.V.R.Mani, Assistant Professor/ECE





## INDIA SEMICONDUCTOR MISSION: India Needs To Do Enough To Sit On The World Table

The government's strong foot forward with regards to the semiconductor space was a much-needed move and, although late, it is expected to herald the golden era of the electronics industry of the country

SEENA DWAR

**E**ven kids today are aware that there are things called semiconductors and chips. Some of them even know where these are used thanks to the semiconductor shortage that has been rattling the world since the onset of the Covid-19 pandemic.

But in India, this awareness is not just an outcome of the global chip crisis. The government of India's recent endeavors to make the country self-reliant in the areas of chip manufacturing has a greater part to play in beginning a conversation around hardware manufacturing in every other household, something very few in the country cared about before.

The government has come up with an ambitious ₹760 billion incentive to build the semiconductor industry of the country. Although the roots of it lie in reducing its dependence on China, the move has been long awaited by the industry, and thus, highly lauded. Better late than never, right? However, no matter how ambitious the plan, the

industry which has been neglected for the longest time now needs to buckle up and get a few things straightened out before it can dive headlong into the game.

"I think we always talk about three aspects: economic security, cybersecurity, and infrastructure security. The infrastructure in particular needs to be built. It is high time because otherwise we will be in trouble in the future. You need to have a seat on the table," says Dr Satya Gupta, President, VLSI Society of India.

### **Building the ecosystem: There's more than what meets the eye**

"I think that if there is any nation that can emerge as a superpower in chip design, along with China, India has to be there," notes Dr Naveed Sherwani, CEO, Rapid-Silicon. The road to the zenith, however, is a long and risky one, something Indian businesses are yet to be ready for. In our bid to achieve self-reliance, big corporations are



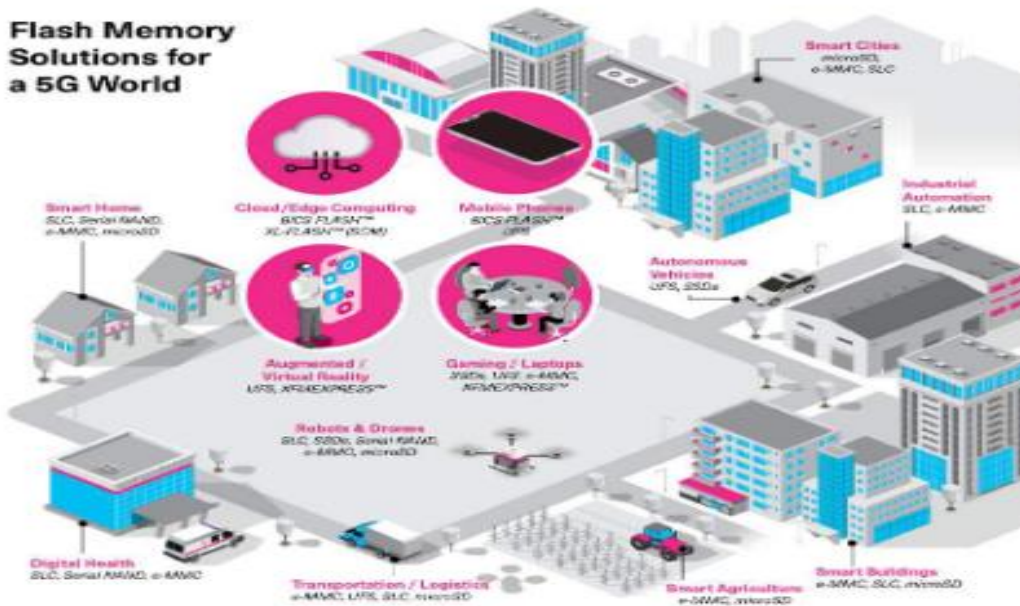
## Fueling the 5G Data Revolution

# KIOXIA

5G networks are poised to deliver levels of speed, scale and complexities that far surpass those of today's mobile networks. KIOXIA has the advanced flash technology that applications built for the next generation mobile broadband and cellular standard require.

One of the largest flash memory makers in the world, KIOXIA delivers high performance, high density, cost-effective memory storage solutions to address the data growth of today – and tomorrow.

### Flash Memory Solutions for a 5G World



The Memory Fueling a 5G-Enabled Future

M.Praveen, IV ECE

## AI HARDWARE That's Tailored For COMPUTER VISION

Neural networks, AI, ML, and neuromorphic computing are technologies that are actually ways to make machines behave more like humans! Similarly, computer vision focuses on imitating the complex human vision system and leveraging it in applications

AARYAA PADHYE@URJAR

**C**omputer vision is a type of artificial intelligence (AI). The aim is to make computers visualise and understand images or videos as humans do. The field has grown a lot over the last decade, especially due to the new hardware and algorithms that came into the picture. Not just that, this type of computation has become faster and more accessible since the amount of data that is generated has also increased. Thanks to improved training models, deep learning, and better hardware, we are able to identify objects more accurately today. Computer vision works by recognising patterns in images and videos. You feed the

computer with an image of a particular object and then make the computer analyse it using algorithms—the borders, colours, shades, and shapes. We are essentially training a computer to understand and interpret the world.

### Computer Vision at Work!

For the 2018 Masters Golf event, IBM employed computer vision to produce My Moments. IBM Watson was given hundreds of hours of film, after which it was able to recognise the sights (and sounds) of key scenes. These pivotal moments were chosen and distributed to viewers as individual highlight clips!



S.S.Sri Sudharsan, IV ECE





  
**SRI RANGANATHAR**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
 (Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
 Accredited by NAAC with "A+" Grade & ISO 9001:2015 Certified Institution  
 Athipalayam, Coimbatore - 641 110. Web site: sriet.ac.in Ph: 0422 2697792



## Students Collections for Projects

### MULTI-USER CALL BELL For Up To Nine Persons

S.C. DWIVEDI

**T**his unique but simple call bell can be used to call an office boy or a help at home from up to nine different places. Besides ringing, it shows the number of caller's room or place from where the call is being made.

The author's prototype is shown in Fig. 1 while its block diagram is shown in Fig. 2. The call bell is built around LM7805 voltage regulator IC1, ICs 74LS147, 74LS04, and 74LS247 (IC2-IC4), NE555 timer ICs, BCs47 transistors T1 and T2, and 1N4148 signal diodes D1-D4.

IC1 provides 5V regulated power supply to the circuit except piezo buzzer PZ1, which is connected to the 9V battery directly.

IC2 is 10-line to 4-line priority encoder. It encodes nine data lines to four-line BCD. Zero condition

| PARTS LIST                               |  |
|--|--|
| Semiconductors:-                         | - LM7805, 5V voltage regulator               |
| IC1                                      | - 74LS147 10-line to 4-line priority encoder |
| IC2                                      | - 74LS04 Hex inverter                        |
| IC3                                      | - 74LS247 7-segment decoder driver           |
| IC4                                      | - NE555 timer                                |
| T1, T2                                   | - BC107 NPN transistor                       |
| D1-D4                                    | - 1N4148 signal diode                        |
| LED1-LED9                                | - Green LED                                  |
| DIS1                                     | - 7-segment display, LTS-6960HR, LTS542      |
| Resistors (all 0.25-watt, 5% tolerance): |  |
| R1, R2, R11, R12                         | - 1-kilo-ohm                                 |
| R3                                       | - 10-kilo-ohm                                |
| R4                                       | - 1.1-kilo-ohm                               |
| Capacitors:-                             |  |
| C1                                       | - 100µF, 25V electrolytic                    |
| C2                                       | - 0.001µF ceramic disk                       |
| C3                                       | - 0.1µF ceramic disk                         |
| Accessories:-                            |  |
| SO-610                                   | - On/off switch                              |
| PZ1                                      | - Piezo buzzer                               |
| BATT1                                    | - 9V battery/regulated power supply          |

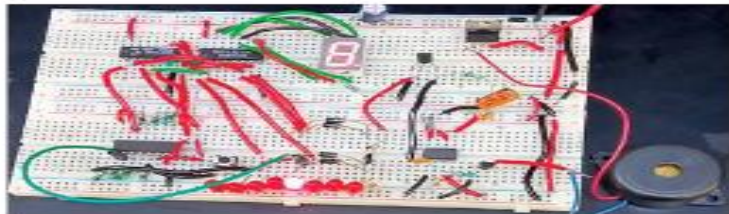


Fig. 1: Author's prototype

requires no input, as zero is encoded when all nine data lines are at a high logic level.

IC3 is hex inverter, which inverts output of 74LS147. Only gates IC3(A) through IC3(D) are used to invert the four-line BCD. The inverted outputs of IC3 are given to IC4 and the four diodes.

IC4 is a BCD-to-seven-segment decoder/driver. It has active-low outputs to directly drive the signal diodes. Output of IC4 is given to the common anode display LTS-6960HR/LTS542 (DIS1), which is used to display the caller's room number.

The input switches (S1 through S9) are used to trigger timer ICs through four signal diodes (D1 through D4). IC5 drives the piezo buzzer for a pre-set time.

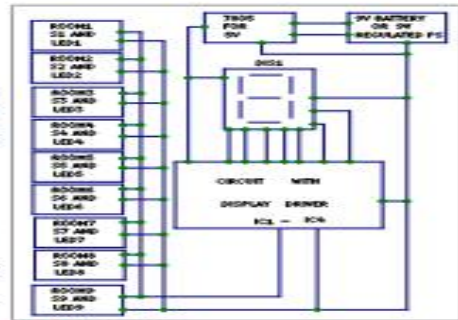


Fig. 2: Block diagram

Output of IC5 is decided by resistor R13 and capacitor C1. The nine switches (S1 through

### First Ever Finger-Size FULL-TOUCH E-INK PHONE

ASHWINI KUMAR SINHA

**P**hones are getting smarter and complex with many functions that most of us find difficult to use. The modern smartphone uses either backlight display or an

OLED display that can harm our eyes on prolonged use. You may have wondered how phones are designed and whether you could make your own smart-

phone. So, here is how you can make your own smartphone having an impressive E-ink technology. This full-touch, finger sized phone uses UI-powered Linux operating system (OS) that can be accessed using any OS and VNC HDMI. It can perform all the basic functions of a phone.

The author's prototype is shown in Fig. 1 and the prototype with its calling screen is shown in Fig. 2. It is so small (see Fig. 3) that it can be strapped to your little finger.

E-ink technology saves power due to absence of backlight display and is good for those who want to avoid the glare of OLED and backlight displays. E-ink display, like the printed paper, remains visible even when power is cut off, until you refresh it.

However, this is not all. We are going to develop the E-ink phone,



Fig. 1: Author's prototype



R.Sasikala, IV ECE



Dear Readers,

We hope this message finds you well and in good spirits. It is with great pleasure and a sense of responsibility that we take a moment to reflect on the journey we have embarked upon with you, our cherished readers.

As the editorial team of this magazine, we are committed to bringing you informative, thought-provoking, and engaging content that enriches your lives and inspires you to explore the world around you.



**Mr.V.R.Mani**  
**Prof./ECE**



**Mr.D.Silambarasan**  
**AP/ECE**

**Mr.M.Praveen**  
**IV-ECE**

**Mr.M.Kumaresan**  
**III-ECE**