

SARANATHAN COLLGE OF ENGINEERING



E-magazine from the department of

ELECTRONICS AND COMMUNICATIONS ENGINEERING

Proudly presents

WIZARDZZ

Volume 19

An half yearly e-magazine by students of ECE

FROM THE HoD'S DESK

I am very delighted to see the department e-magazine getting released for this odd semester (2021-2022). It's been customary for our department to release an e-magazine once every semester. This initiative is an excellent way to prove and exhibit the skills of the staff and the students in technology and artistic capabilities. I really hope this would kindle a spark in the minds of the students who are yet to contribute towards the progress of the initiative in the upcoming years.

I extended my sincere thanks to the people who have contributed to this publication to enhance its perfection and beauty through this articles, drawing and photography. I congratulate the entire editorial team for their hardwork and dedication that has resulted in this publication of our e-magazine "WIZARDZZ. V. 19".

Best of luck students!!!



Dr . M.Santhi ,M.E., Ph.D HOD,ECE

VISSION OF THE DEPARTMENT

To become a leading department of Higher Learning and a Research Center of Excellence in Research in Electronics and Communication Engineering.



MISSION OF THE DEPARTMENT

1. M1: To enable budding engineers to obtain technical exposure in various areas of Electronics and Communication Engineering.

2. M2: To nurture career improvement.

3. M3: To initiate and sustain research activities in the department in cutting edge areas of Electronics and Communication Engineering.

4. M4: To develop professional and ethical attitude in the students.



PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

Graduates of Electronics and Communication Engineering will

• **PEO1:** have a strong foundation in the required sciences in order to pursue studies in Electronics and Communication Engineering.

• **PEO2**: have a broad exposure to the students in various topics related to Electronics and Communication Engineering fields, to enable them to excel in their professional career / higher studies.

• **PEO3**: possess innovative skills in order to solve the technical problems which will arise in their professional life.

• **PEO4**: have professional and ethical attitude and an ability to visualize the engineering issues in a broader social context

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

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.

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.

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.

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.

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.

7. Environment and sustainability:

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

8. Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work :

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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.

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.

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 (PSOs)

Graduates of Electronics and Communication Engineering will be able to:

PSO1:

Comprehend and demonstrate the principles and concepts of Semiconductor theory, Signal Processing & Embedded systems in the fields of Consumer Electronics, Medical Electronics and Defense Electronics.

PSO2:

Apply emerging Information and Communication Engineering Techniques to solve real time problems.





□Kaviya .K- 3rd year A



1) 2ND place for the project titled Retriver at SRM project Expo 2021 organised by SRM Institute of Science and Technology on 10th December 2021

2) Won a Community prize at Electronic Wings

3) 1)1st place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021

□Hari Ganesh. K – 3RD year A

1) 2ND place for the project titled Retriver at SRM project Expo 2021 organised by SRM Institute of Science and Technology on 10th December 2021

2) Won a Community prize at **Electronic Wings**

3) 1)1st place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021

Bharath Hari. S – 3rd year A

• 1) 2ND place for the project titled Retriver at SRM project Expo 2021 organised by SRM Institute of Science and Technology on 10th December 2021

2) Won a Community prize at Electronic Wings

3) 1)1st place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021

□ Vaishnavi .K - 3rd year B

Part of OrFa-Green project which was selected as one of the top 10 project in the entrepreneur conclave 2021 conducted by Inlustro.





□V.S. Roshana- 3rd year B

1)1st place in TECHIE TRICK (Vihaan 21 -KCH college)

2)2nd place in TALK SHOW (Engineer's day -IEEE SB PANIMALAR INSTITUTE

3)3rd place in TECHO TED DEBATE (Vihaan 21 - KCG college)

4)1st place in REBUTTAL REBELS (TECHASTRA 21 - DR. MGR INSTITUTION

5)2nd place in Paper Presentation (Intradepartmental comp - Saranathan College)

□Kaviya M.P- 3rd year A

1) 2ND place for the project titled Retriver at SRM project Expo 2021 organised by SRM Institute of Science and Technology on 10th December 2021

2) Won a Community prize at **Electronic Wings**

3) 1st place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021

-o □Ubendran.V – 3rd year B

1) won third place in Paper Presentation in ELCOMM FEST on 28.10.2021 oraganised by Saranathan 12 College of Engineering

2) won first place in technical quiz in ELCOMM FEST on 28.10.2021 oraganised by Saranathan College of Engineering

■P .Meenatchi – 3rd year B

3rd place in Paper presentation held on 28.10.2021 at Saranathan College

DEIVANAI M- 3rd year A



Secured second place in TECHINAL QUIZ organised by department of ECE Saranathan College of Engineering held on 29.10.2021

□ Tharunkumar S – 2nd year B

2nd place in circuit debugging in ELCOMM FEST on 29.10.2021 oraganised by Saranathan College of Engineering

Harithaa. S – 3rd year A

ELCOMFEST-2021(Technical quiz -2nd place) oraganised by Saranathan College of Engineering

Manoj Kumar M-3rd year B

3rd place in TECHINAL QUIZ by department of ECE held on 29.10.2021 oraganised by Saranathan College of Engineering

□Vignesh Saran T – 2nd year B

1st place in circuit debugging in ELCOMM FEST on 29.10.2021

S.Yogesh - 3rd year B

1) Won first place in Technical Quiz in ELCOMM FEST on 29.10.2021 oraganised by Saranathan College of Engineering

2) won third place in Paper Presentation in ELCOMM FEST on 28.10.2021 oraganised by Saranathan College of Engineering





Harini M- 3rd year A

3rd place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

Dharshini k-3rd year A

3rd place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

Aashikaa R Mohan-3rd year A

3rd place in mini project organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

Keerthana R-3rd year A

3rd place in mini project organised by department of ECE Saranathan College
of Engineering held on 29.10.2021.

MohamedRiyas A B-3rd year B

3rd place in TECHINAL QUIZ organised by department of ECE Saranathan College of Engineering held on 29.10.2021.



S. Bauma Ranjith – 3rd year A

Participated in Young entrepreneur conclave 2021 organised by Inlustro.

≻Harithaa. S - 3rd year A

1)Participated in Paper Presentation in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

2)Online Workshop-Introduction to Block Chain by TATA consultancy services (October 2021).

3) Online webinar - MATLAB and Simulink by YEMI foundation.

4) Participated in Guinness World Record Event programming lesson conducted by GUVI(May 2021).

5)Participated in Grand Summer Internship Fair @Internshala(March 2021).

Hemachandhar. N -3rd year A

1) Participated in Young entrepreneur conclave 2021 on inlustro.

2)1)Participated in mini project on ELCOMM FEST on 11.11.2021 organised by Saranathan College of Engineering.

S. Madumitha -3rd year B

1) Attended a Workshop on cyber security, empowering young minds to emerge as responsible and skilled professionals.

2) Participated in Mini Project and Paper Presentation in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

K. Dharshini – 3rd year A

Internship-Shivanjali society (content writting internship) between 11.07.2021-06.08.2021

M. kavya - 3rd year A

1) Internship at Visit Health as Operations Intern from April 2021 to August 2021.

2)Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to 15.09.2021.

3) Participated in mini Project in MiniProject Expo organised by Saranathan College of Engineering on 11.111.2021.

▶<mark>8.M Sivasri – 3</mark>rd year B

1)Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to 15.09.2021.

2) Participated t in MiniProject Expo organised by Saranathan College of Engineering on 11.11.2021.

►M .Nandhini - 3rd year B

1)Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to 15.09.2021.

2) Participated in mini Project in MiniProject Expo organised by Saranathan College of Engineering on 11.11.2021.

Gopi Manickam R - 3rd year A

1) Participated in Young entrepreneurs conclave 2021 19- jun-2021, organised by inlustro.

2) Attended Huawei webinar, 25-oct-2021, Cyber security, (19-aug-2021).

3) Participated in mini Project in ELCOMM FEST on 11.11.2021 organised by Saranathan College of Engineering.

4) Participated in Paper presentation in ELCOMM FEST on 27.10.2021 organised by Saranathan College of Engineering.

5)Internship at EV Design and master from Aug 2021 to sep 2021.

S. Gayathri - 3rd year A

1) Internship - EMBEDDED SYSTEM AT NSIC.

2) Participated Paper presentation on LIFI TECHNOLOGY in ELCOMM FEST on 27.10.2021 organised by Saranathan College of Engineering.

Vaishnavi k-3rd year A

1)Internship at "Pledge a Smile" foundation from 10/05/2021 to 10/06/2021.

2)Internship at "Shine Project" from 13/05/2021 to 27/06/2021.

3)Internship at "Campusarmy Student Taskforce" from 10/07/2021 to 03/09/2021. 4)Attended a seminar on topic GREEN ENERGY TECHNOLOGY in RAMAKRISHNA COLLEGE OF ENGINEERING on 14th december 2021. **M.P Kaviya** - 3rd year A

Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to 15.09.2021.

K. Kaviya - 3rd year A

Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to 15.09.2021.

Hari Ganesh -3rd year A

Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to 15.09.2021.

➢Bharath Hari - 3rd year A

Internship at Kaashiv Infotech Chennai on topic Artificial Intelligence from 1.09.2021 to X5.09.2021.

≻Ajay S- 4TH year A

1)Internship - IOT APPLICATIONS-NODE MCU(ARDUINO).

2) Attended a Workshop on Practical Intro to Image Processing on Google Colab-Python Platform.

SRIHARI.P – 2nd year B

3 MONTHS INTERNSHIP AT **SHAPE AI AS DATA ANALYST** (WFH) FROM JUNE 2021 TO SEPTEMBER 2021 **V.S.Roshana – 3**rd year B

1) Participated in REFLATE 21 paper presentation (St.Josephs College), DEBATE VIDEO CONTEST, ON YOUR BOOTS - IEEE SB PANIMALAR, YESIST 21 PROJECT EXPO, AEROTRICZ -Kumaraguru Institution, Essay writing - IEEE SB PANIMALAR, Quizion quiz.

2) Attended a webinar on electric vehicles- KALAM ACADEMY OF RESEARCH, Power electronics ,GaN HEMT ,Realibility of power converters ,Road map to research ,Effective use of Mendely software ,BLDC Drive .

3) Virtual Internship- Content writing project with Hariyali NGO.

S.Sarulatha – 3rd year B

1)Participated in poster making Competiton in Harmony 2k21 organised by Chennai Youngsters NGO on 10th July 2021 and 11th July 2021.

2)Paticipated in rhyme theme Contest organied by **youth united council of India** on 29th July 2021.

3) Attended a seminar on topic GREEN ENERGY TECHNOLOGY in **RAMAKRISHNA COLLEGE OF ENGINEERING** on 14th december 2021.

Ø Arul Jyothi.A - 3rd year A

1) Participated in Young entrepreneurs conclave 2021 19- jun-2021, organised by inlustro.

2)Participated in MiniProject in ELCOMM FEST

on 11.11.2021 organised by Saranathan College of Engineering.

Deivanai M - 3rd year A

1)Participated in Paper Presentation in ELCOMM FEST on 27.10.2021 oraganised by Saranathan College of Engineering.

2) Participated in ZEAL EXPERTIA(Encrypt hurekka)conducted by K.RAMAKRISHNA COLLEGE OF ENGINEERING.

3) participated in LITERATURE PRACTICAL LIFE LESSONS conducted by karpagam University on 15.9.2020 and alsoparticipated in cyber security on 19.8.21.

4)Participated in mini Project in ELCOMM FEST on 29.10.2021 oraganised by Saranathan College of Engineering.

Deepika. R - 3rd year A

1)National webinar titled on Carbon based materials for sensor application (29.06.2020).

2) Attended Microsoft AI Classroom series (17.03.2021).

3) Attended Cybersecurity workshop on 19.08.2021.

4)Participated in Paper Presentation in ELCOMM FEST on 27.10.2021 oraganised by Saranathan College of Engineering.

5)Participated in mini Project in ELCOMM FEST on 11.11.2021 oraganised by Saranathan College of Engineering.

Keerthiga R - 3rd year A

Participated in MiniProject Expo oraganised by Saranathan College of Engineering on 11.11.2021.

B. Akilaa - 3rd year A

Participated in mini Project, Technical Quiz and Paper presentation in ELCOMM FEST on 11.11.2021, 27.10.2021 & 29.10.2021 organised by Saranathan College of Engineering.

Dhaslin jeni Monisha J - 3rd year A

1)Participated in mini Project in ELCOMM FEST on 11.11.2021 organised by Saranathan College of Engineering.

2)Participated in Paper presentation in ELCOMM FEST on 27.10.2021 organised by Saranathan College of Engineering.

Hemavathi R-3rd year A

1)participated in mini Project ELCOMMFEST on 11.11.2021 organised by Saranathan college of Engineering.

2)participated in paper presentation ELCOMMFEST on 27.10.2021 organised by Saranathan college of Engineering.

Jayalakshmi s-3rd year A

1)participated in mini Project ELCOMMFEST on 11.11.2021 organised by Saranathan college of Engineering.

2)participated in paper presentation ELCOMMFEST on 27.10.2021 organised by Saranathan college of Engineering.

Shruthi P.S – 3rd year B

Participated in Technical quiz and Paper Presentation in ELCOMM FEST on 29.10.2021 & 27.10.2021 organised by Saranathan College of Engineering.

M. Malavika - 3rd year B

Participated in mini Project and Technical quiz in ELCOMM FEST on 29.10.2021 & 11.11.2021 organised by Saranathan College of Engineering.

Ragavi. S - 3rd year B

Participated in Technical Quiz in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

► K.puja sri - 3rd year B

Participated in Technical Quiz in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

Prasanna Vengatesh K –3rd year B

Participated in MiniProject in ELCOMM FEST 11.11.2021 organised by Saranathan College of Engineering.

➢Nivedha.R- 3rd year B

Participated in Technical quiz and Paper Presentation in ELCOMM FEST on 29.10.2021 & 27.10.2021 oraganised by Saranathan College of Engineering.

Nisha M – 2nd year A

Participated in Technical Quiz in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

K. SETHURAMALINGAM - 2nd year B

Participated in circuit debugging in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

K.V.NIVAEDHITHA - 2nd year A

Participated in Technical Quiz in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

T.U.AKAASH – 2nd year A

Participated in Mini Project and in circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

KISHORE KUMAR S - 2nd year A

Participated in Mini Project and in circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

VIGNESH T - 2nd year B

Participated in Mini Project and in circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

➢Vishvamaharaja.P- 2nd year B

Participated in circuit debugging in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

SADAM HUSSAIN. S - 2nd year B

Participated in circuit debugging in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

SATHYA .N T - 2nd year B

Participated in TECHINAL QUIZ organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

B. Sarojini - 2nd year B

Participated in TECHINAL QUIZ organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

SHAMITA S - 2nd year B

Participated in TECHINAL QUIZ organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

>YAHITHA.S - 2nd year B

Participated in TECHINAL QUIZ organised by department of ECE Saranathan College of Engineering held on 29.10.2021.

>M. Sadhana - 2nd year B

Participated in circuit debugging in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

Subashree. vs -2nd year B

Participated in circuit debugging in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

Sudharsan T - 2nd year B

Participated in Technical quiz and circuit debugging in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

➢Prabha K -2nd year B

Participated in Mini Project and circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

➢Prabakar. T -2nd year B

Participated in circuit debugging in ELCOMM FEST on 29.10.2021 oraganised by Saranathan College of Engineering.

S. Sivetha - 3rd year B

1)Participated in Technical Quiz in ELCOMM FEST on 29.10.2021 organised by Saranathan College of Engineering.

Srinithi R-2nd year B

Participated in Mini Project and circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

Rathi Aishwarya G- 2nd year B

Participated in Mini Project and circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.

Shifana Rifath A- 2nd year B

 Participated in Mini Project and circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.
Attended workshop of Cyber security, (19-aug-2021).

Vaanmarai S-2nd year B

 Participated in Mini Project and circuit debugging in ELCOMM FEST on 11.11.2021 & 29.10.2021 organised by Saranathan College of Engineering.
Attended workshop of Cyber security, (19-aug-2021).

Aarthi S-3rd year A

1)participated in mini Project ELCOMMFEST on 11.11.2021 organised by Saranathan college of Engineering.

2)participated in paper presentation ELCOMMFEST on 27.10.2021 organised by Saranathan college of Engineering.

PUBLICATIONS



- M.Santhi , G.Prathipa , "DESIGN AND ANALYSIS OF4 –BIT 1.2GS/s LOW POWER CMOS CLOCKED FLASH ADC", journal of intelligent automation and soft computing, pp. 1611-1626, vol. 31, issue. 3,2021.
- M.Santhi , K.Malaisamy, "DESIGN AND DEVELOPMENT OF DIPOLE ARRAY ANTENNA FOR WI-FI APPLICATIONS", journal of wireless communication, vol.121, issue.1,2021.
- M.Santhi, M. Kiran Kumar, "DETAILED MORPHOLOGY REVERSABLE OF LOGIC GATES A SURVEY", accepted for publication in 2021.
- C.Vennila, S.Venkatasbramanian, A.Subhasini, "EFFICIENT MULTIPATH ZONE-BASED ROUTING IN MANET USING TICKET-ID BASED ZONE MANAGER", journal of computer science and network security, pp. 435-443, vol. 8, issue4,2021.
- C.Vennila, S.Venkatasbramanian, A.Subhasini, "AN ENERGY EFFICIENT CLUSTERING ALGORITHM IN MOBILE ADHOC NETWORK USING TICKET ID BASED CLUSTERING MANAGER", journal of computer science and network security, pp. 341-349, vol. 7, issue7,2021.

- C.Vennila, Vijay Ranvindran, Chockalingam, "AN ENERGY-EFFICIENT CLUSTERING PROTOCOL FOR IOT WIRELESS SENSOR NETWORKS BASED ON CLUSTER SUPERVISOR MANAGEMENT" journal of comptes rendus de l'acade"mie bulgar des sciences, vol. 72, issue. 12,2021.
- C.Vennila, S.Venkatasbramanian, A.Subhasini, "QOS PROVISIONING IN MANET USING FUZZY BASED MULTIFACTOR MULTIPATH ROUTING METRIC", virtual conference oon innovations and research in marine electrical and electronical engnieering(ICIRMEEE), 17-18 june, 2021.
- C.Vennila, S.Venkatasbramanian, A.Subhasini, "AN EFFICIENT ROUTE OPTIMIZATION USIG TICKET-ID BASED ROUTING MANAGEMENT SYSTEM(T-ID BRM)", journal of springer wireless personal communication, pp. 1, vol.3, issue. Aug,2021.
- V.Mohan, P.Shanmugapriya, A.Sharan Jasmine, "EXTRACTION OF SPPECH ALONG WITH EMPHASIS ON ESSENTIAL NOISE", pp.25-42, vol. 191, issue. 7,2021.
- V. Mohan, P. Shanmugapriya, A. Revathi, C. Jeyalakshmi, C. Malarvizhi, "ROBUST NOISE CLASSIFICATION USING NEW NOISE EXTRACTION APPROACH", journal of tourkish, pp.2636-2647, vol. 32, issue. 3,2021.

- Mohan.v, Uthayan, K. R., Lakshmi, G., Bharatiraja, C., Pustokhina, I. V., "IOT CLOUD EMPOWERED AERIL SCENE CLASSIFICATION FOR UNMANNED AERIAL VECHILES", pp. 5161-5177, vol. 70, issue. 10,2021.
- P. Shanmugapriya, V. Mohan, A. Revathi, C. Jeyalakshmi, C. Malarvizhi, "ROBUST NOISE CLASSIFICATION USING NEW NOISE EXTRACTION APPROACH", journal of tourkish, pp.2636-2647, vol. 32, issue. 3,2021.
- P.Shanmugapriya, V.Mohan, A.Sharan Jasmine, "EXTRACTION OF SPPECH ALONG WITH EMPHASIS ON ESSENTIAL NOISE", pp.25-42, vol. 191, issue. 7,2021.
- K.Malaisamy," DESIGN AND DEVELOPMENT OF DIPOLE ARRAY ANTENNA FOR WI-FI APPLICATIONS", journal of wireless personal communication, vol. 121, issue. 11,2021.

ARTICLES

FINGERPRINT DOOR LOCK SYSTEM USING ARDUINO





INTRODUCTION

Biometric systems have overtime served as robust security mechanisms in various domains. Fingerprints are the oldest and most widely used form of biometric identification. The use of fingerprint for identification has been employed in law enforcement for about a century. A much broader application of fingerprint is for personal authentication, for instance to access a computer, a network, an ATM machine, a car or a home.

Electronic lock using fingerprint recognition system is a process of verifying the fingerprint image to open the electronic lock. This project highlights the development of fingerprint verification. Verification is completed by comparing the data of authorized fingerprint image with incoming fingerprint image. Then the information of incoming fingerprint image will undergo the comparison process to compare with authorized fingerprint image.

Fingerprint door lock incorporates the proven technology. Fingerprint reader scanning is the most mature and tested type of biometric technology. Recent studies on biometrics have shown that compared to the hand method, fingerprint is more accurate and cost-effective. The duplication of biometric fingerprint technology is virtually impossible, only one in one billionth of a chance. Biometric security guarantees a positive method of user identification with something that cannot be lost, replicated or stolen.

USING ARDUINO

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP HEADER, AND A RESWT BUTTON. It contains everything needed to support the microcontroller; simply connect it to a computer with USB cable or power it with most shields designed for the Arduino.

The Arduino Mega can be powered via the USB connection or with an external power supply. The power source is selected automatically.

External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm centre-positive plug into the board's power jack. Leads from a battery can be inserted in the Gnd and Vin pin headers of the POWER connector.

The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

The Mega2560 differs from all preceding boards in that it does not use the FTDI USB-to serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter.



BLOCK DIAGRAM

Circuit Diagram

Relay Module

12 Volt IN

Solenoid Lock


Working principle

The circuit of this Arduino Fingerprint Security System is very simple which contains Arduino Mega2560 which controls whole the process of the project, push button, buzzer, and LCD. Arduino Mega2560 controls the complete processes.

The push button is directly connected to pin A9 (ENROL), A10 (OK/DEL), A11 (UP), A12 (DOWN) and A8 (CLOSED) of Arduino Mega2560 with respect to ground and Red LED is connected at Digital pin D4 of Arduino Mega2560 with respect to ground through a 10 ohms resistor and Green LED is connected to D3 of Arduino Mega2560 with the same method. Finger Print Module's Rx and Tx directly connected at Software Serial or Digital pin D11 and D10 of Arduino Mega2560. 5v supply is used for powering finger print module taken from Arduino Mega pin and Servo motor is also connected to PWM pin D5 of Arduino mega2560. A 16*2 LCD_is configured in 4-bit mode and its RS, EN, D4, D5, D6, and D7 are directly connected at Digital pin D13, D12, D6, D7, D9, and D8 of Arduino Mega2560. Buzzer is connected at the Digital pin D2 of Arduino Mega2560 and with respect to the ground. DHT is connected at the Digital pin D2 of Arduino Mega2560 and with respect to the ground and Vcc. Potentiometer of middle pin is connected LCD (Vo).

Firstly, "Enroll" button is pressed to enroll the finger print of the authenticate user. Finger print is stored by pressing "OK/Del" button. Gate is closed by pressing the "Close" button of the module.

When any user tries to open the gate, module checks the authenticity of the user by comparing his/her fingerprint with the database, if the users fingerprint matches with the one that is stored in the database then arduino sends the signal to run the motor which then opens the gate with the "WELCOME" "DOOR OPENED" message on the LCD.

ADVANTAGES

- ✓ This project provides security.
- ✓ Power consumption is less.
- ✓ Used commonly available component.
- Circuit diagram is simple and easy.
- ✓ Easy to use and setup.

LIMITATIONS

- ✓ Different biometric technologies need the use of different devices that have a range of cost.
- Entry and delete fingerprints need to operate multiple steps, the program is too much trouble, convenience is not enough.
- ✓ Performance can be fluctuate to dry, wet, dirty fingers.
- Population coverage may be a problem with old age people or people with skin disease.

CONCLUCSION

Fingerprint door locks are great investment for home or business. It provides great security by providing restrictions to unwanted access. This device increases level of security by adding unique biological features of authorized person. For anyone who wants more security to their homes, fingerprint door locks are best choice.

Keerthana. R 3rd year A section

LASER SECURITY ALARM SYSTEM

INTRODUCTION:

•A Laser security system can acts as a standalone system, which makes some sound or noise when it detects any irregular activity, or can be part of a much bigger security and home automation system, which can send messages, call the owner etc.

In this project, we have designed a simple DIY laser based security system, which acts as a tripwire like security system and triggers an alarm when the laser is interrupted.

Components Required

LM358 (Op – Amp IC), NE555 (Timer IC),LDR, 68 KΩ Resistors , 320 Ω Resistor,10 KΩ Potentiometer, BC547 (NPN Transistor), Small Buzzer , 102 nF Capacitor (Ceramic Disc Type Capacitor – Code 104), Push Button, Laser Pointer, 9V Battery, Connecting Wires, Breadboard (Prototyping board)

Component Description

Laser Pointer

Laser Pointer acts as the main source of light in this project. We have used a small laser pointer with an output power of less than 1mW. The laser pointer emits red light and the wavelength of the laser output is between 630 nm to 680 nm.

LDR (Light Dependent Resistor)

The LDR acts as a light sensor in this project. As the intensity of the light falling on the LDR increases, the resistance of the LDR decreases and vice – versa. The LDR is used in combination with the laser to form the light sensor and source.

NE555 (IC 555)

IC 555 is a precision timing IC that provides time delays or oscillations. <u>555 Timer IC</u> has three modes of operation: Astable, Monostable and Bi-stable. In this project, we are going to use the IC 555 in Bi-stable mode.

LM358 (OP – Amp)

LM358 is a dual Operational Amplifier IC and it is capable of operating in all the conventional operational amplifier circuits. In this project, the LM358 is used as a Comparator.



Circuit Design

Coming to the design of the circuit, first, the LDR and a 10 K Ω resistor are connected in a voltage divider fashion and its output (common point) is connected to the pin 3 (non – inverting) of the Op- Amp IC LM358.

For the inverting terminal (pin 2), connect the wiper of a 10 K Ω potentiometer (other two terminal of the POT are connected to VCC and GND).

The output of the Op – Amp (Pin 1) is connected to the base of the transistor (BC547) through a resistor.

The trigger pin of 555 (Pin 2) is pulled high using a 10 K Ω resistor. The reset pin (pin 4) of the 555 is connected to VCC through a 10 K Ω resistor and a push button is connected between Pin 4 of 555 and GND.

A bypass capacitor of 100 nF is connected between pins 5 and GND. A buzzer is connected to pin 3 of 555 IC. Rest of the connection are shown in the circuit diagram.



Working of the Project

First, the Op – Amp circuit acts as a comparator i.e. it compares the voltages at the inverting and non – inverting terminals and produces an output accordingly.

The LDR – 10 K Ω resistor Voltage divider is connected to the non – inverting terminal of Op –Amp and a POT is connected to the inverting terminal.

Assume, the laser pointer is placed directly in line of sight to the LDR and the light from the laser is continuously being incident on LDR.

In this situation, the resistance of LDR falls down to few Ohms (or tens of Ohms) and as a result, the voltage at the non – inverting terminal will be less than that at the inverting voltage. The output of the Op –Amp is low and the transistor is OFF. If the laser light is blocked by an intruder from falling on the LDR (even for a small duration), the resistance of the LDR goes to few hundreds of Ohms and as a result, the output of the Op –Amp will be HIGH. This will turn on the Transistor.

As the output of the transistor is connected to the Trigger Pin (Pin 2) of the 555 Timer IC, if the transistor is ON, the trigger pin gets a short low pulse and as a result, the output of the 555 becomes HIGH. This will activate the alarm by turning ON the buzzer.

Since, the 555 Timer IC is configured as a Bi – Stable Multivibrator, a small active low trigger pulse at the trigger pin will set its output to HIGH and in order to reset it we need to push the reset button.

Until the reset push button is pushed, the alarm will stay on hence, we can place the reset button at a secret location so that only the owner can disable the alarm.



By Madhumita. M 3rd year A section

OBSTACLE DETECTOR FOR BLIND

Inchi

INTRODUCTION

since the running of daily life of blind people is very difficult. This project helps them to run their life as usual. They can make this project as a gadget or a device in their hands which detects the obstacle. This project is more efficient than the existing system with cheaper and accurate one. Here we are using arduino UNO board to perform this operation. To make the life to be as a normal one for the blind peoples this may be very helpful project for them. By making this as a gadget or a device in their hand they can easily judge an object by their own by knowing the buzzer sound. The system uses ultrasonic sensor as a wide range of field to detect an object with its higher detection range. Based on this project we take survey in our institution.



COMPONENTS

ARDUINO UNO

The Arduino is an open source hardware and software that can make a user to do effective operation in it. The Arduino is a microcontroller. These microcontroller devices help in sensing and controlling the objects in the realtime situations and environment. These boards are available cheaper in the market. There are a number of inventions performed in it and still it is going on.





✓ ULRASONIC SENSOR

The ultrasonic sensor consists of transmitter, receiver and transceiver. The transmitter convert electrical signal into soundwaves. The receiver converts the soundwaves into electrical signal again. The transceiver performs both the receiver and transmitter operations. It also has crystal oscillators in it. It will perform the stabilization operation in the ultrasonic sensor.

✓ JUMPING WIRE

The jump wires are also known as jumper wire used to connect devices. Without soldering we can make an easier connection with devices. These are available as a set of wire that has the pin on both sides. These wires are used as making their one end connecting to the corresponding device and another end to the breadboard.



✓ PIEZO BUZZAR

The piezo buzzer is an electronic device which generates sound through it. The buzzer is used as an indication to the user. It is used in the car reversing system and braking system as an indication. It is based on the principle of piezoelectricity discovered in 1880 by Jacques and Pierre Curie.

✓ ARDUINO SOFTWARE

The Arduino is the most used programming software to perform the abovementioned operation. Using some program in the software we can do every operation. The arduino is now connected with ultrasonic sensor as the primary input to the arduino. Then the output from the arduino is connected to LED and buzzer.

WORKING PRINCIPLE

This proposed system consists the equipment like Arduino UNO, ultrasonic sensor, bread board, buzzers for detecting the obstacles and letting the user know about the obstacle, Red LEDs, Switches, Jumper cable, power bank, Male and female header pins, some elastic and stickers to make the device wearable as a band for wearing for the users. The wiring of the device is done in a following manner. The Ground of LED, buzzer are connected to GND of the Arduino. The +ve of the LED and the middle leg of switch is connected to the Arduino pin 5. The +ve of the Buzzer is wired to the first leg of the switch.



CIRCUIT DESIGN

The Ultrasonic sensor is wired accordingly. The Ultrasonic sensor pin VCC is connected to the Arduino pin VCC, Ultrasonic sensor pin GND is connected to the Arduino pin GND, Ultrasonic sensor pin Trig is attached to the Arduino pin 7, Ultrasonic sensor pin Echo is connected to the Arduino PIN 6. The switch used here is for selecting the mode. (Buzzer should need or not). At the end, after all the connections are done to the Arduino board upload the code to arduino board and power the other modules using a power bank or the power supply.

The Ultrasonic sensor here used as a transceiver. The ultrasonic waves are emitted by the transmitter when the objects are detected. Both the transmitter and receiver re resent inside the ultrasonic sensor. We calculate the time interval between the transmitted and received signal. The distance between the object and sensor is calculated using this.



INITIAL STAGE

When we increase the distance between the object and the sensor the coverage angle will decrease. Sensor has coverage of 60 degree. Thus, the objective is to cover a wide angle to detect the obstacles with the help of the ultrasonic sensors to help the blind and make it easy for them to move around easily without any hassle. Hence, the distance calculation is calculated and the sensor detects and the further procedure of the buzzing sound to the user is carried out.

Thus, this way Third Eye for Blind will be designed for the visually impaired people and will make it very easy and convenient as it will be a wearable device and thus will help the user in travelling and detecting the obstacles while walking very easy.



FINAL STAGE



With the improvement of the living standards of the people, we have become so materialistic that we have forgotten how the physically disabled people live a tough life. They undergo rigorous, indifferent behavior towards them for being physically disabled. They become dependent on other people in a way for their day to day routine chores. Blind and impaired persons always depend on other people for their regular activities. Eyes are responsible for observing and listen the outside environment; dysfunction of such prime sense organ severely affects the knowledge perceiving capability of the outside environment. Therefore, going around to places in such an environment is a very big challenge because blind people cannot depend on their own eyes and thus face many difficulties. This project will help them to overcome their obstacles.

CONCLUSION

The objective of this project is Third Eye for the Blind is to design a product which is very much useful to those people who are visually impaired and those who often have to rely on others. The third eye for Blind project is an innovation which helps the blind person to move around and go from one place to another with speed and confidence by knowing the nearby obstacles using the help of the wearable band which produces the ultrasonic waves which notify them with buzz sound or vibrations. It allows the user those who are visually impaired to walk freely by detecting the obstacles. They only need to wear this device as a band or cloth on their body.

Thus, this project Arduino based obstacle detector for blind people is a new method to resolve their problems. A less complex portable, cost efficient, easy to manage an effective system with many more amazing properties and advantages are proposed to provide support for the blind. The system will be very easy to find the distance between the objects and the sensor. It can detect the objects in every directions th the blind person. Without the help of others the blind person can move from one place to other and lead their regular lives independently

> Aarthi .M 3rd year A section

PASSWORD BASED CIRCUIT BREAKER

INTRODUCTION

Now a days, electrical accidents of the line man are increasing while repairing the electrical lines due to lack of communication between the electrical substation and maintanence staff. This paper gives a solution to this problem to ensure line man safety. In this proposed system the control(ON/OFF) of the electrical lines lies with line man. This paper is arranged in such a way that maintenance staff or line man has to enter the password to ON/OFF the electrical line. Now if there is any fault in electrical line then line man will switch off the power supply to the line by entering the password and comfortably repair the electrical line, and after coming to the substation line man switch on the supply to the particular line by entering the password. Here, there is also a provision of changing the password. circuit breakers are actually provided as a means of protection to completely isolate the downstream network in the event of a fault. The demand for electrical energy is ever increasing. Today over 21% (theft apart!!) of the total electrical energy generated in India is lost in transmission (4-6%) and distribution (15-18%). The electrical power deficit in the country is currently about 18%. Electric power is normally generated at 11-25kV in a power station. To transmit over long distances, it is then stepped-up to 400kV, 220kV or 132kV as necessary. The demand for electrical energy is ever increasing , to overcome this problem Load sharing concept is included. This paper focusing on village side and city side based on the load demand and the required voltage is transferred from village side to city side and vice versa.

COMPONENTS REQUIRED

- BREAD BOARD
- ARDUINO UNO R3

BLOCK DIAGRAM

- 16*2 LCD DISPLAY5V RELAY MODULE
- ➢ 4*4 KEYPAD
- ARDUINO UNO CABLE
- > JUMPER



PRINCIPLE OF OPERATION

In this project 4*4 keypad is used to enter the password

The password which is entered is compared with predefined password, If the entered password is correct then the corresponding electrical line is turned on or off.

In this project a separate password is provided to each electrical line for activation and deactivation of the line(Cricuit Breaker)

It is indicated by the load(LED lights)

WORKING PRINCIPLE

This proposed system provides a solution, which can ensure the safety of the maintenance staff e.g. Lineman. The control to turn ON/OFF the line lies with the line man only. This system has an arrangement such that a password is required to operate the circuit breaker (ON/OFF). Line man can turn off the supply and comfortably repair it, and return to the substation, then turn on the line by entering the correct password. Since it has the provision of changing the password, person can give any password of his will and have his work done safer

In this proposed system the control (ON/OFF) of the electrical lines lies with line man. This project is arranged in such a way that maintenance staff or line man has to enter the password to ON/OFF the electrical line. Now if there is any fault in electrical line then line man will switch off the power supply to the line by entering password and comfortably repair the electrical line, and after coming to the substation line man switch on the supply to the particular In this project 4×3 keypad is used to enter the password. The password which is entered is compared with the predefined password. If entered password is correct then the corresponding electrical line is turned ON or OFF. In this project a separate password is provided to each electrical line. Activation and deactivation of the line (circuit breaker) is indicated by the load.



CONCLUSION

- The Government always gives poor excuses for not rolling out tenders to get safety gears for the lineman.
- In addition to this there are overstressed workers who on an average work 12 hours a days a situation which gets worse for contractual employees.
- According to a survey there are reportedly 1,400 deaths in 3 years across India due to electricity related accidents
- By this project electrical accidents can be avoided

Sri prasanna J 3rd year B section

Sun tracking solar panel

Introduction

- The sunlight is a natural and free source of energy. The sun emits solar radiations or electromagnetic radiations.
- In the solar energy systems, these radiations are used to generate electricity with the help of photovoltaic cells or solar cells.





NEED FOR SOLAR TRACKING

- Rotationally every season comes with its translational movements which affects the cycles of day and night and temperature differences around the world.
- Electromagnetic radiations depend on these movements and these radiations will change depending on the latitude and the time of the year.

Types Of solar tracking system

SINGLE AXIS SOLAR TRACKER

Solar trackers can have either horizontal or vertical axis. The horizontal type is used in tropical regions where the sun gets very high at noon but the days are short. The vertical type is used in hight latitudes where the sun does not get very high but summer days can be very long In concentrated solar power application, single axis trackers are used with parabolic and linear Freshnel mirror designs.

DUAL AXIS SOLAR TRACKER

Solar trackers have both a horizontal and ve rtical axis and thus they can track the sun's apparent motion virtually anywhere in the world.

Dual axis tracking is extremely important in solar tower applications due to the angle er rors resulting from the longer distances between the mirror and central re ceiver located in the tower structure.

How it will work?

The solar panel uses photovoltaic cells(PV cells). The PV cells detect the light intensity and according to that, the tracker adjusts the direction that a solar panel to the position of sun in the sky.

Every time, the tracker adjusts the panel perpendicular to the Sun so more sunlight strikes the solar panel, less light is reflected. Hence, it absorbs more energy which can be converted into power.

COMPONENTS REQUIRED

- Arduino Uno
- Single axis tracking stand
- 2×10k resistors
- 2×LDRs
- 1× Solar panel
- Connection wires
- Servo Motor



CONCLUSION

- Solar tracking systems are used to continually orient panels towards the sun and can help maximize the investment in PV system.
- They are beneficial as the sun's position in sky will change gradually over the course of a day and over the seasons throughout the year.
- Advantages to using a tracker system like this will depend mainly on it's placement in determining on how well it will increase the effectiveness of the panels.
- Energy production is at an optimum and energy output is increased year round. This is especially significant throughout the summer months with its long days of sunlight available to capture and no energy will be lost.
- For those with limited space this means that a smaller array only needs to be installed, a huge advantage for those smaller sites with only a smaller area to place solar tracker.

By Akila .G 3rd year A section



EMBEDDED SYSTEM

INTRODUCTION:

Today, security in one form or another is a requirement for an increasing number of embedded systems, ranging from low-end systems such as PDA's(Personal Digital Assistants), wireless handsets, networked sensors, and smart cards, to high-end systems such as routers, gateways, firewalls, storage servers, and web servers.

Technological advances that have spurred the development of these electronic systems have also ushered in seemingly parallel trends in the sophistication of security attacks. It has been observed that the cost of insecurity in electronic systems can be very high.

In an increasing number of distributed embedded applications the individual nodes must communicate with each other over insecure channels like e.g. the public Internet or via wireless communication links. Internet connections expose applications to intrusions and malicious attacks. Unfortunately, security techniques developed for enterprise and desktop computing might not satisfy embedded application requirements because of the following reasons which will be explained in detail later.

- Cost sensitivity
 Interactive matters
- 3) Energy constraints
- 4) Development environment



INTRODUCTION TO EMBEDDED SYSTEMS

Embedded Systems vs Standard Computer Systems



Microcomputer system e.g. PC, printer, disk drive Embedded system e.g. automotive application

DEFINITION: EMBEDDED SYSTEM

Embedded systems cover a large range of computer systems from ultra small computer-based devices to large systems monitoring and controlling complex processes. IEEE has the following definition for embedded systems:

A computer system that is part of a larger system and performs some of the requirements of that system; for example, a computer system used in an aircraft or rapid transit system. (IEEE, 1992).

In many cases embedded systems are safety or mission critical systems and hence the demands on reliability, robustness, availability and other characteristics of dependable systems are important.

The most important requirements of an embedded system are:

> Real-time properties: The real-time system functions are time-related; a violation of time requirements even of a proper functional response violates the system functionality.

> Dependability: Dependability is defined as an ability of a system to deliver service that can justifiably be trusted and an ability of a system to avoid failures that are more severe and frequent than is acceptable to the users. The main means to attain dependability are related to avoidance of faults. Dependability is characterized by several attributes such as reliability, availability, integrity, safety, confidentiality and maintainability.

> Resource consumption: Many embedded systems have strong requirements for low and controlled consumption of different resources. The reasons may be the size of the systems and/or the demands on lower production costs.

> Life cycle properties: In general embedded systems are tightly coupled with their environment and the absence of their services can have large consequences on the environment. In many domains the embedded systems have very long life time running round the clock year after year. During the lifetime of a system several generations of hardware and software technologies can be used. The long life systems must be able to cope with these changes introduced either into the surrounding environment or into the systems themselves.

WHAT'S DIFFERENT ABOUT EMBEDDED SECURITY?

Internet connections expose applications to intrusions and malicious attacks. Unfortunately, security techniques developed for enterprise and desktop computing might not satisfy embedded application requirements.



1.Cost sensitivity

Embedded systems are often highly cost sensitive—even five cents can make a big difference when building millions of units per year. For this reason, most CPUs manufactured worldwide use 4- and 8-bit processors, which have limited room for security overhead. Many 8-bit microcontrollers, for example, can't store a big cryptographic key. This can make best practices from the enterprise world too expensive to be practical in embedded applications. Cutting corners on security to reduce hardware costs can give a competitor a market advantage for price-sensitive products. And if there is no quantitative measure of security before a product is deployed, who is to say how much to spend on it?

2 Interactive matters

Many embedded systems interact with the real world. A security breach thus can result in physical side effects, including property damage, personal injury, and even death. Backing out financial transactions can repair some enterprise security breaches, but reversing a car crash isn't possible .Unlike transaction-oriented enterprise computing, embedded systems often perform periodic computations to run control loops with real-time deadlines. When a delay of only a fraction of a second can cause a loss of control-loop stability, systems become vulnerable to attacks designed to disrupt system timing .

3 Energy constraints

Embedded systems often have significant energy constraints, and many are battery powered. Some embedded systems can get a fresh battery charge daily, but others must last months or years on a single battery. By seeking to drain the battery, an attacker can cause system failure even when breaking into the system is impossible. This vulnerability is critical, for example, in battery-powered devices that use power-hungry wireless communication.
4 Development environment

Many embedded systems are created by small development teams or even lone engineers. Organizations that write only a few kilobytes of code per year usually can't afford a security specialist and often don't realize they need one. However, even seemingly trivial programs may need to provide some level of security assurance. Until standard development practice includes rigorous security analysis, developers may overlook even the solutions already available.

5 Case study : Internet Thermostats

Because embedded systems can effect changes in the physical world, the consequences of exploiting their security vulnerabilities can go beyond mere annoyance to significant societal disruption. Let's dispense with the most obvious potential attack first. Attackers that break into a computer and get complete control of it can do anything they want with the attached sensors and actuators—send commands to traffic lights, shut down power stations, and so on. We could argue that industrial-strength security approaches will take care of the really big systems, but smaller systems are less likely to receive lavish attention .Consider, for example, the household thermostat, which controls heating and cooling.

Many have an embedded computer that adjusts the set point a few times each day to keep the house comfortable when people are present and to save energy when they aren't. Some thermostats let a homeowner use the Internet, perhaps via cell phone, to communicate imminent arrival home after a vacation or a day at work. This gives the thermostat time to reach a comfortable temperature before the owner actually arrives. However, allowing Internet control of a thermostat gives rise to several potential attacks.

Conclusion

Embedded systems are ubiquitous in the modern world. Such systems are used in a wide variety of applications, ranging from common consumer electronic devices to automotive and avionic applications. A property common to all embedded systems is that they interact with the physical environment, often deriving their inputs from the surrounding environment. Due to the application domains such systems are used in, their behavior is often constrained by functional (such as the input–output relationship) as well as non-functional properties (such as execution time or energy consumption). This makes the testing and validation of such systems a challenging task. In this chapter, we discussed a few challenges and their solutions in the context of testing embedded systems. In particular, we take a closer look into existing works on testing nonfunctional properties, such as timing, energy consumption, reliability, for embedded software. To put the existing works in perspective, we classify them in three distinct categories, based on the level of system abstraction used for testing. These categories include black-box, greybox and white-box abstraction based testing approaches. In general, black-box abstraction based testing methods use sampling based techniques to generate failure-revealing test cases for the system under test. Such methods consider the system as a black-box and hence are equally applicable to simple and complex systems alike. However, such ease of use usually comes at the cost of effectiveness. In particular, these methods often cannot provide completeness guarantees (ie, by the time the test-generation process completes, all failure revealing test inputs must have been uncovered). The grey-box abstraction based approaches are usually more effective than the *black-box abstraction* based approaches.

Hemavathi R 3rd year A section

Internet at the Speed of Light



LIFI- LIGHT FIDELITY

- Life is a new way of wireless communication that uses LED lights to transmit data wirelessly.
- The ideology behind this technology is that the data can be transferred through LED light by varying light intensities faster than what the human eye can perceive.
- Lifi a type of bidirectional high speed wireless communication can be up to 100 times faster than Wi-Fi.
- IEEE 802 .15.7(LIFI) is a high speed ,bidirectional ,fullly networked wireless communication technology similar to IEEE 802.11(WIFI).
- Internet at the speed of light is the idea behind this.
- Its characteristics are energy-efficient, directional lighting, intrinsic security, high data rate capability, signal blocking by wall, integrated networking capability, broader spectrum, topology is point to point, hundreds of Terahertz frequency, greater than 1 Gbps, cheaper than wifi.

WHY ONLY VLC?

- Radio waves will be having limited bandwidth, less secured, expensive.
- Infrared can be used only with low power applications due to eye safety regulations.
- Ultraviolet rays are dangerous for human beings so it can be used only in places without people.
- X rays are used in hospitals they will be showing similar health issues.
- Gamma rays can't be used as it is dangerous.

HOW DOES IT WORKS?



WORKING

- When a constant currect is applied to an LED lightbulb(LIGHT EMITTING DIODE), a constant stream of photons are emitted from the bulb which is observed as visible light.
- \checkmark If the current is varied slowly, the output intensity of the light dims up and down.
- Thus data is captured in modulated light frequencies of a solid-state LED light source and is then transmitted and received by lifi enabled devices
- A photosensitive detector demodulates the light frequency signal and converts it back to an electronic data stream and in doing so ,it allows wireless communication.
- ✓ If the LED is on ,then the device transmits digit 1 and if it is off then the device transmits the digit 0.
- \checkmark LED can be switched on and off very quickly so it is easier for transmitting data.
- ✓ LED and a controller that code data into those LEDs are required for working of lifi.

Features of LIFI

- Capacity- 10000 times more spectrum than RW
- Efficiency- highly efficient as LED consume less energy.
- Availability- light is present everywhere and data is present where light is present.
 - Security-light waves does not penetrate through wall so it can be intercepted.



ADVANTAGES

- Cost efficient .
- Transmission of data is faster and easier. DISADVANTAGES
- Presence of light is essential.
- Works better with fluorescent light and LEDS but very low efficiency with bulbs.

APPLICATION OF LIFI

- Street and traffic light.
- Underwater scenarios
- Airplane scenarios and military scenarios.
- In RF restricted environment.
- Lifi in live streaming.

K. Vaishnavi 3rd year B section

FACE RECOGNITION DOOR LOCK SYSTEM USING RASPBERRY PI MODEL

INTRODUCTION:

Security deft has suggested various preferred approaches like biometric and password to enhance security. But the technology is developed and growing with the usage of different equipment's. The trend's moved from fingerprint to face recognition. So we prefer a face recognition system for unlocking the door. Facial recognition is widely used in various industries and corporate sectors.

This door unlocking system mainly uses facial recognition. The latest camera is used to detect the images and the images are sending to the database. If the image matches with the admin's image then the door is unlocked and an acknowledgement is sent via Zigbee as "y" if it does not match the image an acknowledgement is sent as "n". A pass code column is shown which takes values from the keypad to unlock the door.

In today's world by using smart devices we are make our needs smart. By following trends and updates we have to consider and remove drawbacks in existing system and add more features and updates. Face detection system is more complex because of unstable characteristics. Example: let us consider glasses and beard will show some impact to detect the faces. So by considering the different angles and multiple images of faces and it will influence on detection process. The study of OpenCV and its inbuilt library functions helps to generate a code will do correct and authentic facial recognition system with new and more efficient use of hardware. Human body will identified as an input within environment by capturing live video from a web camera and the process will be done on captured video frames.



Components:

- Raspberry pi 3b+ mode 1.
- 2. Servomotor
- **Camera module** 3.
- **Power supply** 4.
- 5. Lock system

PROPPSED WORK The aim of our project is to provide a high security system using face recognition on Raspberry Pi board and send an alert to the authorised person via GSM module, this will increase the security of our project. The proposed work is as follows:

- Interfacing of camera module to capture live Face image. \checkmark
- Create a database of authorized person.
- ✓ Capture current face, save it and compare with data base image.
- Interface GSM module to send security alert to Authorized person while unlocking the locked \checkmark door.
- Interface relay as an output module.



CIRCUIT DI&GR&M:



WORKING

In above figure 1 show the basic block diagram of the Raspberry pi based face recognition system for door unlocking. Our project system can be operated in two different sections, i.e. one for capturing and creating a data base and the other section is to capture the image and which is used for identifying or comparing the images in the database. Here in the second section we use Eigen faces methodology of face recognition for finding the matches.

Camera module: Camera module is Pi camera interfacing to the raspberry pi module. It is used for captures an image and send captured image to the Raspberry pi module.

Raspberry pi module: Raspberry pi B+ module is small computer board. When image taken by the raspberry pi it is compared with Eigen face image. At the first time when we capture the image to create a data base raspberry pi module capture six types of the images to create a data base in the system and this data base is compared with the live captured image. After comparing two images output is positive/negative then it gives commands to GSM module.

GSM module: GSM module is used to sending a message to the authorities after comparison output is positive or negative. If output is positive then "Person Identified!! DOOR OPENS!!" message send to the authority person otherwise send "unknown person is trying to unlock the door"

FLOWCHART:



Capture face image

Compare database

Unknown person detected

Unlock the door automatically Door will remain closed

End

MHY RASPBERRY PI?

- A Raspberry pi is a general-purpose computer with a Linux operating system, and the ability to run multiple programs.
- Very low cost(\$25/Rs.1550) for Model
 A &(\$35/Rs.3000) for Model B/B+
- Lower power consumption(less than 5W)
- Lighter , smaller , efficient
- Smartcard swapping , alcohol detection and agriculture humidity sensing etc.,
- Raspberry Pi 3Model B+ is a microprocessor.
- It has a 900MHZ quad-core ARM Cortex-A7 CPU and 1GB RAM.
- A 4 USB port for connecting the camera, keyboard, speaker and mouse.
- A full HDMI port which is needed for connecting it to the monitor.



FUTURE SCOPE

Using raspberry pi the current project can be modified by an Infrared camera interfacing it can be used in Smart Surveillance Monitoring security system which any type of public security is using Living body detection or spying, Also it can be used in Attendance system of the class, Also some profound applications can be implemented using interfacing of Raspberry pi and Arduino UNO board like sensor application of smartcard swapping, finger detection, alcohol detection, agriculture humidity sensing, Temperature sensing using web server, and many more.

CONCLUSION

The design of the face recognition system using Raspberry pi can make the smaller, lighter and with lower power consumption, so it is more convenient than the PC-based face recognition system. Because of the open source code, it is freer to do software development on Linux. We use Principle component analysis algorithm for the face recognition and detection process. Also send a security alert message to the authorized person utilities. The developed scheme is cheap, fast, highly reliable and provides enough flexibility to suit the requirements of different systems

> By Afrah Zainab khan 3rd year B section

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Parental love is the only love that is truly soffless, unanditional and forgiving. We never know the love of a parent till we become parents surrectives. Forents evere the only ones obligated to love you; from the rest of the world you had to earn it. Tapacrical deparation.

> Jayapriya.M 4th yearECE-A

Bauma Ranjith.S 3rd year ECE-A

Nr













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Janet Priscilla.A.J 2nd year ECE-A

ON ...

by Janet

LIFE GOES ...



LIFE

Whether the life is sweet or bitter;
Taste it. Then you know your real existance...
Admire ,Adore your success,Anoy your failures ,
A word LIFE with four letters,fight it with severe letter word courage,
It is yours Anyway,u don't need any permission to Enjoy...!

Janet Priscilla.A.J 2nd year ECE-A

EVERGREEN BLOSSOMS

Young Energetic Kiddie **Having Fantastic Fantasy** Striving hard to attain Just to steadily sustain Dreaming high to conquer the fight **Overcoming the hurdles that are in sight** Perceiving to reach the goal **Toiling with dedicated soul** Nurture the future with Kind Gesture; Achieve your endeavour with great pleasure.

> Vaishnavi.K 3rd year ECE-B

அகிலமும் அன்னையே

கண்ணில் பார்க்கும் முன்னே கண்ணே என்று ஆருயிராய் அழைத்த அன்னையே! <u>உன் உயிரில்</u> ஓர் அங்கமாய் என்னை உதிர்த்த என் தாயே! அன்பின் அடையாளமாய் பாசத்தின் உருவமாய் எனக்கு உருவம் கொடுத்தாயே! என் பிறவிக்காக நீ மறுபிறவி எடுத்தாயே! என் பசியாற உன் உதிரத்தை அமிர்தமாக்கினாயே! யாதும் சொந்தமில்லா இம்மண்ணில் என்னை சொத்தாய் பார்த்தாயே! ஒன்றும் அறியா என்னை அறிவுக்கசுடராய் வடித்தாயே! உறுதியாய் கதிரவன் உதிப்பான் என்பது போல் சந்திரனாய் மிளர்வேன் என்று நம்பிக்கை கொண்டாயே! ஒடும் நதியாய் பயணிக்க கற்றுத்தந்தாயே! உன் மடி மீது சாய; இருளும் ஒளிராய் மாற! தாயே நீ இல்லையேல் நான் இல்லை நீ தந்த பரிசு இவ்வாழ்க்கை!! அதையே உன் காலடியில் சமர்ப்பிக்கிறேன்!!!

> கா.வைஷ்ணவி 3rd year ECE-B
THEY!

I dreamt of flying high,

They called me a sly!

I became calm,

They said, I can't perform!

I made myself a bit ambitious,

They named me ferocious!

I became kind,

They murmured , I had a plan in my mind!

What should I do?

Just sit idle,

Will that stop there meddle?

Nope, I don't have hope!

"Dude, just keep going

No matter what they are saying!"

Finally, a voice in me whispered.

A.Shifana Rifath

2nd yearECE-B



K. Kaviya



R. Gopi Manickam



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M. Nandhini









M.P. Kaviya

