DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

BITS & BYTES

E Newsletter

Department of Electronics and Communication Engineering

Student's Article

RFID BASED ATTENDANCE MANAGEMENT SYSTEM

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Even though we are living in a digital era, still the attendance-taking process is done by using pens and paper. Lets see a model that gives a smart solution for taking attendance using RFID and face recognition. The model will be having an automatic door locking system. If the authorized RFID card is swiped by the user from outside the door, the door will open. Once the person's face is recognized, attendance will be marked for that person. Similarly, when the same process is done from inside the classroom, the attendance will be unmarked. Finally, if the student's present time inside the classroom satisfies the minimum needed time limit, he will be given present for that period. For schools and colleges, the respective institution can set the minimum time limit, for which the students need to be inside the classroom, to get present for that period.

This model is a wireless system with two components RFID tags and RFID readers. The reader is a device which has one or more antenna that emit radio waves and receive signals back from RFID tag. It offers reliable track and trace in tough environment. In this we can easily track and provide real time data. RFID range is anywhere from a few inches to several feet. It has a frequency range from 300MHz to 960MHz. In this model, both the proximity card reader and biometric methods are combined for taking attendance to improve the security and reliability. Also, the attendance data will be saved in the system storage for easy access and security purpose.

The system will first wait for the RFID sensor to sense a card. The work flow ofthe model is described in the figure 1.

If a RFID card is sensed, the RFID sensor will send the corresponding id of that card to arduino board. Arduino then verify the user using the predefined user set. If the user is already present in the system, arduino will open the door. Else it will throw "Access Blocked" in console. After entering the classroom, the students need to scan their face. Python program for recognizing face will always be running in the background. It will detect the face then recognize it. After that it will match the person face with faces stored in database and give the response. Based on the response the attendance will be given to the student. The block diagram of the model is
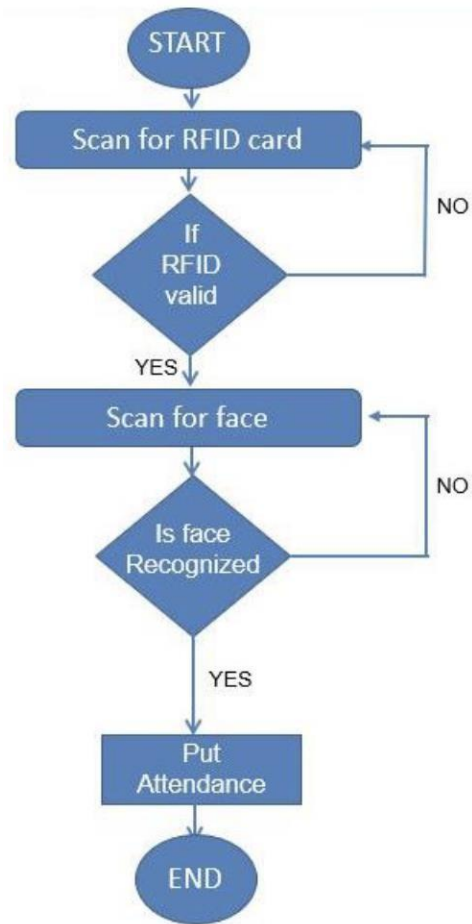
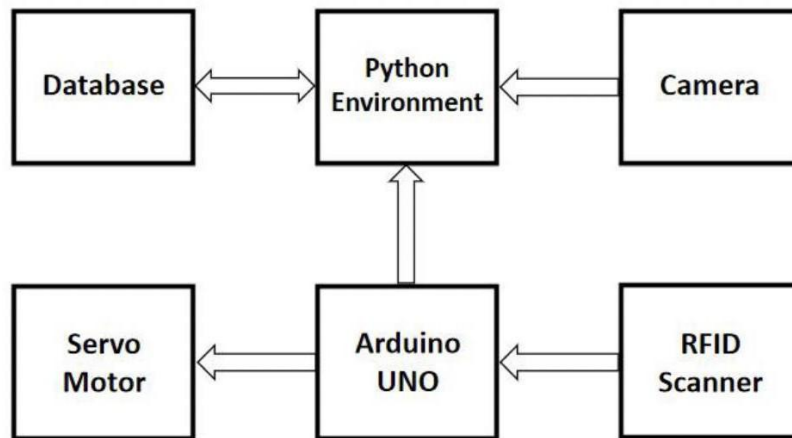described in the figure 2.

Fig 1 Work flow

Fig 2 Block Diagram

The RFID RC522 sensor is connected to Arduino Uno digital pins and the VCC and GND are connected to the 3.3V power supply pin and GND of Arduino respectively. The servo motor VCC and GND are connected to the positive and negative supplies of the 9V
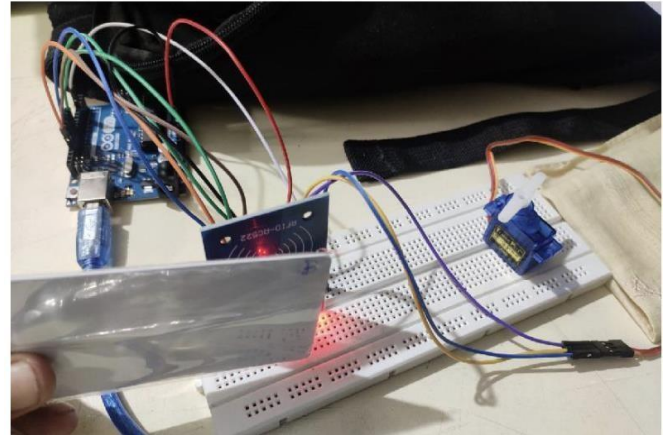
HW battery respectively.

Fig 3 Working Model

The PWM pin is connected to PWM digital pin of Arduino. Arduino is connected to the COM port of the computer or server. The computer will be running the python code. The data from RFID is transfer to which is again transferred to the computer. The working model is shown in the figure 3. Output of the model is shown in figure 4.

Fig 4 Output

This model can be developed by upgrading it with advanced algorithms for taking attendance. Applications and software can be developed to visualize the attendance of the students. It can be further developed to send short messages to the parent's mobile number if the student is not present for a period.

Faculty Publications

- S.Lavanya, A.Prasanth S. Jayachitra, A.Shenbagarajan "A Tuned classification approach for efficient heterogeneous fault diagnosis in IoT-enabled WSN applications Measurement", 183, 109771:1-22, October 2021.

- G.A.Sathish Kumar and K.Kiruthika Devi, "Stochastic Gradient Boosting Model for Twitter Spam Detection Journal of Computer Systems Science and Engineering" doi:10.32604/csse.2022.020836 October 2021.

- G.A.SathishKumar, C.T.Poomagal and Deval Mehta "Revisiting the ECMKEEM protocol with Vedic multiplier for enhanced speed on FPGA platforms" Journal of Ambient Intelligence and Humanized Computing October 2021.

- Ashvanth B, Partibane B, Alsath GN, "An Ultra-Miniaturized Frequency Selective Surface with Angular and Polarization Stability", IEEE Antennas and Wireless Propagation Letters, Vol.21, 1, pp.114-118 November 2021.

- Ashvanth B, Partibane B, Idayachandran "G Designing Miniaturized Metamaterial Absorber with Tunable Multiband Characteristics for THz Applications Bulletin of Materials Science"-Springer, Vol.44, pp.1-8 November 2021.

- Ashvanth B, Kanimozhiselvi "Tunable Six Band Miniaturized Metamaterial Absorber for IOT and THz Imaging Applications Pramana-Journal of Physics"-Springer, Vol.95, pp.1-7 November 2021.

- Babitha Lincy, R.B., Gayathri R "Optimized Convolutional Neural Network for Tamil-Handwritten Character Recognition", accepted for publication International Journal of Pattern Recognition and Artificial Intelligence WORLD SCIENTIFIC PUBL CO PTE LTD, Singapore December 2021.

- Babitha Lincy R.B., Gayathri R. "Transfer Learning Based Handwritten Character Recognition of Tamil Script UsingInception-V3 Model" accepted for publication Journal of Intelligent & Fuzzy Systems" IOS PRESS, Netherlands December 2021.

Books Published

      Ms. K.Srividhya authored a textbook on the title "Antennas and Microwave Engineering", along with Dr.Venmathi.A.R and Dr.Jullie Josephine, Kings Engineering College, which covers concepts in Antennas, Radiation mechanism, RF system design and Microwave Engineering. The book caters (but not limited) to the syllabus of the new course introduced under the latest Regulation of Anna University. The book is published by Charulatha Publications.

Events Organized

- Dr.Arun Janarthanan, Senior staff, Qualcomm technologies, Chennai (2003 batch) has delivered a Webinar titled 'Engineering Mathematics behind Smartphones' on 11/12/2021.
- Mr Karuppiah Vishaal Swaminathan (An alumni of batch 2013-17, SVCE and quality assistance engineer at Amazon) has delivered a Webinar titled 'Recent Advancements in Wireless technology on 30/10/2021.
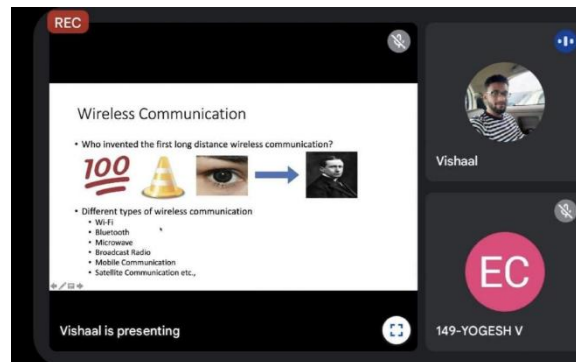
- The Workshop on PCB Design was organized ECEA, ISF SVCE and RAIC of the department of Electronics and Communication Engineering. The Chief Guest for the ceremony was Ms.R.Premalatha, Hardware Lead, Zettaone Technologies.

- The ECEA in association with SVCE-ISF and RAIC club conducted a debate competition titled "Tug of Word's War", a technical quiz competition titled "Tech Mystery "on 24/10/2021

- The Forum of Data Science Engineers in association with IETE was inaugurated on 31/10/2021. The Introduction of the club was delivered by **Ms.D.Uma Maheshwari**, Secretary FODSE and she discussed how FODSE acted as a platform for students to equip themselves with Data Science and domains related to Data Science.

- The ECEA in association with SVCE-ISF and RAIC club conducted a two day of "Linear Data Structures with STL" on 06/11/2021(Saturday) and 06/11/2021 (Sunday).
- The Webinar on "How To Study Masters Abroad with Minimal Investment and Scholarships" was organized by the ECEA in association with SVCE-ISF and RAIC club. The expert talk was delivered by Mr.Raghavan, Overseas Admissions Expert, Jamboree Education on 29/12/2021 (Wednesday).
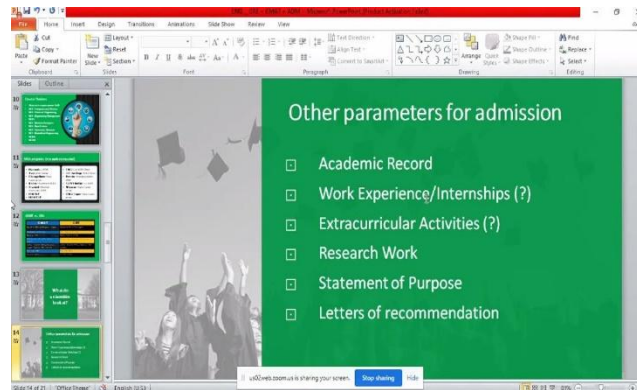
Faculty Participation in STTP/Workshop/FDP

- Dr.S.R.Malathi, Asso prof, ECE participated in the three days online FDP on "Remote Access to Intel FPGAs & SoCs for Embedded System Design" organized by SASTRA from 11/11/2021 to 13/11/2021.
- Mr.S.Senthil Rajan, and Mrs.K.Srividhya AP/ECE Attended a Faculty Development Programme on "Advanced Electromagnetics and Modern Antenna Design Principles" organized by SSN College of Engineering 6/12/2021 to 10/12/2021.
- Mr.S.P.Sivagnana Subramanian, AP,ECE attended an ATAL FDP on "Object detection and recognition using deep learning Techniques" organized by Koneru Lakshmaiah Education Foundation from 8/11/2021 to 12/11/2021.
- Ms.S.Radhika, Ms.Rajeswari Ramaraj, Mr.M.K.Varadarajan, Mr.N.Sathish, Ms.S.M.Mehzabeen, Mr.Kanagaluru Venkatesh, Dr.K.Ashwini, Dr.P.Mathivanan, AP, ECE attended a Faculty Development Programme on "Incorporating Universal Human Values in Education (An AICTE Initiative)" organised by AICTE (online mode) from 24/11/2021 to 28/11/2021
- Dr.G.A.Sathishkumar, Prof, ECE, participated in the Workshop on "Chatbots in Healthcare – Patient care in the new normal" from 15-11-2021 to 19-11-2021.

- Mr.M.Athappan, Ms.S.M.Mehzabeen, AP, ECE attended a National Workshop on "KLA Workshop on AI and HPC in Semiconductor Manufacturing" at IIT.

Lectures Delivered by Faculty Members

- **Dr.P.Jothilakshmi**, Prof., ECE delivered the orientation program on topic "Current Breakthrough and Opportunities in Modern Electronics" organized by the Department of ECE, Sri Venkateswara College of Technology, Vadakal, Sriperumbudur on 21/10/2021.

- **Mr.S.Senthil Rajan**, AP, delivered a guest lecture titled "Antenna Design on Modern Tools" in IEEE Day 2021 organized by the Department of ECE, Panimalar Institute of Technology in association with Hertz and Shannon's club, Chennai. 06/10/2021

- **Dr.A.Prasanth**, AP ECE Served as a resource person at **AICTE-ISTE** Sponsored FDP and delivered a lecture titled "Advanced Machine Learning Algorithms for Data analytics applied for Smart Grid" Organized by the Department of EEE, Sri Krishna College of Engineering and Technology, Coimbatore, on 16/12/2021.