

InstruTech

TECHNICALMAGAZINE

A.Y.2022-23



ICONS

Instrumentation & Control Student's Chapter

Department of Instrumentation and Control Engineering
Maratha Vidya Prasarak Samaj's
Karmaveer Adv. Baburao Ganpatrao Thakare College of
Engineering, Nashik-422013 (India).

Institute Vision

To be internationally accredited, Multidisciplinary, and Multi-collaborative institute working on technology enabled platform fostering innovations and patents through state-of-art academic system designed by highly qualified faculty for the development of common masses at large.

Institute Mission

To educate and train common masses through undergraduate, post graduate, research programs by inculcating the values for discipline, quality, transparency and foster career and professional development for employment thereby contributing to the development of society

Department Vision

To be an accredited department of preferred choice among common masses in the multidisciplinary field of automation and control engineering.

Department Mission

- To prepare competent professionals to meet current and future demands of industry, academia and society of multidisciplinary field of automation.
- To strengthen collaboration with reputed industries and institute of global insight.
- To inculcate spirit of research and entrepreneurship amongst the students.

Program Educational Objectives

Following are the competencies will developed in the students after 3-5 years of his/her graduation.

1. To build core competency in the multidisciplinary field of automation to cater the industry and research needs.
2. Develop multi-disciplinary skills, team spirit and leadership qualities with ethics, to excel in professional career and higher studies in Instrumentation and Control Engineering.
3. To learn and apply contemporary technologies for addressing impending challenges for the benefit of organizations and society.

About This

This department magazine covers the abstracts of the projects participated in the project competition under InstaTech-2k23 Techfest. This competition provides an excellent opportunity for students to showcase their talent, research orientation, and potential. The goal of this competition is to prepare the future generation of engineers to not only be problem solvers but also innovative leaders and responsible citizens. The students deserve recognition for the hard work they put into their projects.

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1. DEVELOPMENT OF ROBOTIC ARM AND CONVEYOR FOR COLOR-BASED SORTING OPERATION

Name of Students: Aqsa Khan,
Atharav Aher,
Prasad Bondarde, and
Bhakti Boob

Year: B.E. _2022-23

Abstract:

Efficiency and automatization can be improved in several ways. This project proposes use of Pick and Place robotic arm and a Conveyor belt for color-based sorting operation. We have designed and developed a prototype of a Robotic arm and a Conveyor system that could demonstrate the industrial object sorting system. The workflow is, a workspace will have the mixed colored objects. The robotic arm detects the position of objects on conveyor and picks them one at a time and place it in designated boxes of that color. The sensor mounted on Robotic arm detects the color of object and accordingly places the object into the designated box. The controller used for Robotic arm is Arduino UNO and GY-31 color sensor module is used for color detection.

2. QUESTION PAPER GENERATION

Name of Student: Kadlak Shivani,
Ushire Bhagyashri and
Thakare Roshni

Year: B.E. _2022-2023

Abstract:

In any educational course curriculum, the courses are defined with learning objectives. Teachers conduct assessments to know if students have achieved certain learning objectives or not. Teachers generate variety of question papers as per the universities' assessment requirements. It is very challenging for the teachers to make question papers with varied questions and which meet learning objectives of the course. There are no standardized methods to ensure quality of question paper. Hence there arises a need to have a system which will automatically generate the question paper from teacher entered specification within few seconds. Researchers recommend different sets of tags such as cognitive level, difficulty level, type of question, content /topic for defining a question etc. The existing tools are rigid and support very basic or limited tags. The proposed system will automatically generate a question paper from semantically tagged question repository. This system offers flexibility by supporting all four tags and allows entry of every property in the form of ranges i.e. lower bounded upper bound. The question paper is generated in xml format and as Microsoft Word document.

3. TREE TRANSPLANTATION

Name of Student: Minal Damodhar,
Pratik Damodhar and
Rohit Malunjkar

Year: B.E. _2022-2023

Abstract:

Environmental degradation is currently the most critical area of concern not only in India but also globally and the pace of degradation is increasing at a rapid rate. Urbanization, Mining, Infrastructure growth etc. have resulted in deforestation which is adversely impacting the weather and leaving behind severe repercussions on Human life. When it comes to re-planting the trees and improving the green cover, there is a significant ecological imbalance and disparity. The bigger and moderately mature living trees will provide wide range of benefits to us in terms of air filtration, produce sufficient oxygen, supporting the flora and fauna, reducing the soil erosion, help conserve the energy, reduce the UV-B sun rays impact on us and also acting as the carbon dioxide sinks etc. Whereas the newly planted seedlings and very young trees will of course help improve the extent of green cover but a no-match in comparison to value benefits from a bigger tree. Hence for a sustainable future, it is very much essential for all of us together to conserve the trees and protect our environment to the extent possible Hence we are making a project on tree transplantation machine.

4. PLATTEN TEMPERATURE CONTROL SYSTEM

Name of Student: Ashwini Devkar,
Pooja Dhage and
Sakshi Patil

Year: B.E. _2022-2023

Abstract:

Project entitled “Platten Temperature Control System” is used in tyre curing process. The existing system of curing press is based on pneumatic controller and recorder. The system has slow response, facing hysteresis problem therefore controller does not take corrective action and it is directly affected by production of tyres. In this project, we are going to replace the pneumatic controller and recorder with the electronic controller, gives alarming and monitoring of system data. To achieve higher accuracy and to improve quality of tyres production. This system will be easy for operation and maintenance.

5. SMART GLOVE FOR DEAF AND DUMB PEOPLE

Name of Student: Aadesh S. Kadam,
Pranit Geet and
Kaustub Balve

Year: B.E. _2022-2023

Abstract:

The main objective of this project is to help deaf and dumb people. These people are unable to communicate in day-to-day life with the normal people. They communicate with sign language. This sign language is difficult to understand to the normal people, so indirectly communication barrier occurs between deaf-dumb people and normal people. This project will help to eliminate the communication barrier between normal people and deaf-dumb people. This work proposes the design and implementation of a smart system which will solve this problem. The device consists of a wireless glove with flexible sensors and buttons. The buttons are acting the role of sign language programmed by the microcontroller. The practical application of the device will provide an effective means of communication among the deaf-dumb and normal people and will reduce the gap between them.

6. PESTICIDES SPRAYING DRONE

Name of Student: Kadam Pranav Chagan,
Bhamare Jayashri Sushant and
Mali Tejal Mangesh

Year: B.E. _2022-2023

Abstract:

The world-wide farming system faces tremendous challenges. The United Nations Food and Agriculture Organization (UN FAO) expects that food production must be raised by 70% throughout the following 40 years to meet increasing demand due to rising economic welfare and population growth. The main challenge of global agriculture is providing a food to the growing population, which is predicted to increase from seven billion people today to approximately nine billion around the year 2050. Whereas India's population, currently estimated at 1.34 billion, is projected to rise to 1.51 billion by 2030 and further to 1.66 billion by 2050. India is categorized by small-scale farmers. Furthermore 80% of the total land in the country is divided into pieces of less than 5 acres. So, drone being a modern technology can be solution for farming to reduce drudgery and with less time lots of data for research can be reported for easiness to bring sustainability in futuristic agriculture.

7. PERFORMANCE ANALYSIS OF PROCESS LEVEL CONTROLLER USING LABVIEW

Name of Student: Thorat Vikrant Arjun,
Patil Mrunal Subhash and
Pawar Akanksha Sanjay

Year: B.E. _2022-2023

Abstract:

The Level controller can be designed by various Methods, but in that process, we need to mathematically calculate all the terms and we cannot get the comparison of the various methods. The introduction of the concept of virtual instrumentation has led to greater flexibility in developing a more adaptable measurement system. The tank's Level control system simulation is performed in the LabVIEW software. In our project "Performance Analysis of Process Level Controller Using LabVIEW" we are developing a Program which helps to analyse this different tuning Methods and helps to select appropriate method. This will increase the efficiency of the Process. In this we have successfully simulated the Level Control Loop using PID controller in LabVIEW.

8. Smart Attendance System Using QR

Name of Student: K. Ruban Buddha,
Tanmay Aher and
Atharva More

Year: B.E. _2022-2023

Abstract:

Recording attendance is something repetitive and time consuming. The process of attendance taking is the same and repeat for every day. However, the attendance system today is not automated. It requires a lot of manual workforces to accomplish it. An automated attendance system can save human labour's, and increase efficient of attendance taking. This will directly help lecturers to save time, and spend more time on academic, rather than attendance records. This project intended to automate the attendance recording. The adopted development methodology is evolutionary prototyping to cater for constantly user feedbacks and improvements. The results were accurate and eliminated the needs of signing attendance on attendance sheets, the manual efforts to transfer data on attendance sheets to computer system. In conclusion, the project had achieved the objectives, which ultimately save lecturers' time in managing attendance, bring convenience to students on attendance registration, and reduce the likelihood of fake attendance records.

9. VISION BASED PICK AND PLACE APPLICATION BY USING OMRON ROBOT

Name of Student: Sharma Gaurav Vinod,
Waghchaure Swapnil Prakash and
Yadav Vishal Ramvilas

Year: B.E. _2022-2023

Abstract:

In recent days, the industry and daily routine is getting easier through automation via robotics. The robotics automation gives an error free precise work, where the human fails. The pick and place robotic application is one of the technologies which is widely used in industry. To implement this application, we are using six axis articulated Omron viper 850 robot, which can be easily program. Our aim is to improve the more accuracy of this pick and place application by vision-based system. Software used for robot programming is ACE 4.4 (Automation Control Environment), Which is dedicated for Omron's Robot only.

10.VISION BASED PICK AND PLACE APPLICATION BY USING OMRON ROBOT

Name of Student: Mansi Ahire

Year: B.E. _2022-2023

Abstract:

The Smart Earth Leakage Circuit Breaker research & power electronics-based protective switchgear for domestic consumers for the protection against earth leakage faults. In this project , we have shown how to create a custom programming language and. Along with protection against earth fault it provides, controlling of tripping current or fault current, monitoring voltage, power, current, parameters of the connected load, monitoring fault parameters, Indicating the device status whether the ELCB is on or off, and the condition of ELCB it is in faulty condition or healthy condition and to let the user set the value of the tripping current on the webserver at which the ELCB must trip through the relay.

11. IOT BASED COLOUR SORTING CONVEYOR SYSTEM

Name of Student: Nikhil Kandare, and
Onkar kapadane

Year: B.E. _2022-2023

Abstract:

Recording attendance is something repetitive and time consuming. The process of attendance taking is the same and repeat for every day. However, the attendance system today is not automated. It requires a lot of manual workforces to accomplish it. An automated attendance system can save human labours, and increase efficient of attendance taking. This will directly help lecturers to save time, and spend more time on academic, rather than attendance records. This project intended to automate the attendance recording. The adopted development methodology is evolutionary prototyping to cater for constantly user feedbacks and improvements. The results were accurate and eliminated the needs of signing attendance on attendance sheets, the manual efforts to transfer data on attendance sheets to computer system. In conclusion, the project had achieved the objectives, which ultimately save lecturers' time in managing attendance, bring convenience to students on attendance registration, and reduce the likelihood of fake attendance records.

12.PLC BASED CONTROL LOOP VERIFICATION

Name of Student: Lalit Badhan

Year: B.E. _2022-2023

Abstract:

Programmable logic Controller is an electronic digital device. PLC has a programmable memory that is used for storing codes and implement functions like timing, logic, Counting, sequencing & Arithmetic. This Instruction are used for controlling Machines & Processers & implement a monitoring & Control prototype products transfer system from one point to another point based on PLC technology & There are two types of control system used in this project.

13. IOT APPLICATION FOR REAL TIME PLC MONITORING THROUGH MQTT PROTOCOL

Name of Student: Kasturi A Gawale,
Bhavana C Boraste, and
Aditya P Tambade

Year: B.E. _2022-2023

Abstract:

The internet of things (IoT) is rapidly growing technology. the IoT is a communication system and embedded system, which is used to connect hardware devices to a network or internet. IoT is used for data transmission and reception. This system is used to monitor industrial PLC application. By utilizing IoT to implement industry standard protocols Modbus, MQTT, COAP etc. Small scale industrial application such as liquid level control, energy monitoring and it can monitor the wireless devices, mobile phone, and laptop to computer of system. The primary goal of this project is to be summarize the significance of IoT in the monitoring small scale of industrial application.

14. IOT BASED COLOUR SORTING CONVEYOR SYSTEM

Name of Student: Nikhil Kandare, and
Onkar Kapadane

Year: B.E. _2022-2023

Abstract:

Recording attendance is something repetitive and time consuming. The process of attendance taking is the same and repeat for every day. However, the attendance system today is not automated. It requires a lot of manual workforces to accomplish it. An automated attendance system can save human labour's, and increase efficient of attendance taking. This will directly help lecturers to save time, and spend more time on academic, rather than attendance records. This project intended to automate the attendance recording. The adopted development methodology is evolutionary prototyping to cater for constantly user feedbacks and improvements. The results were accurate and eliminated the needs of signing attendance on attendance sheets, the manual efforts to transfer data on attendance sheets to computer system. In conclusion, the project had achieved the objectives, which ultimately save teachers time in managing attendance, bring convenience to students on attendance registration, and reduce the likelihood of fake attendance records.

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