PROJECT REPORT ON

AUTOMATED TESTING OF CODESYS PROJECT USING TEST MANAGER AND CO-UNIT TOOLS.

BY

Ms. Sambodhi Badve - C22019331503
Ms. Namita Biyani - C22019331505
Ms. Isha Tulapurkar - C22019331556
Ms. Yutika Subandh - C22019331555

Under the Internal Guidance of
Dr.Swati Madbe.

Under the Company Guidance of
Mrs. Reshma Kunjir

Cummins College of Engineering for Women, Pune-411052
Department of Instrumentation and Control

(2022-23)

CERTIFICATE

MKSSS's

Cummins College of Engineering for Women, Pune.

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Instrumentation & Control

This is to certify that the project titled

"Automated Testing of CODESYS Project Using Test Manager and CoUnit Tools"

is a bonafide record of project presented at this institute

By

Ms. Isha Tulapurkar

Ms. Namita Biyani

Ms. Sambodhi Badve

Ms. Yutika Subandh

In completion of project work for Fourth Year

In

Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This project is record of their own work carried out under our supervision and guidance.

Dr. Swati Madhe	**Mrs. Reshma Kunjir**	**Dr. Anagha Panditrao**	**Dr. Madhuri Khambete**
College Guide	Company Guide	HOD Instrumentation & Control	Director

Abstract

PLCs are computer devices often used in industrial control systems as primary components that provide operational control and monitoring. The software running on these controllers is usually programmed in an IDE using a graphical or textual language defined in the IEC 61131-3 standard.

Although traditionally, engineers have tested PLCs' software manually, test automation is being adopted during development in various compliant development environments. Via this project, we are trying to tackle the problem of choosing a test automation framework for testing PLCs, by focusing on the CODESYS development environment.

Test automation can be defined as the process of automating software testing tasks such as test script development, test execution, and requirements verification using an automation test framework. The importance of choosing the right test automation tool has received significant attention from both academia and industry in recent years. There are various frameworks and tools that are being used to automate testing in the industry today[8].

The objective of the project is to automatically test ifm IoTCore library and edge controller library and their function blocks (which are used to gather data from sensors) using two software's. To develop this, it is necessary to understand different IoT communication protocols, ifm IoT core libraries, and different software that are being developed for automated testing.

We will be gathering data from IoT sensors which are connected to IoT gateways and this data will be displayed on the HMI. IoT sensors perform functions like data conversion, digital processing, and communication with external devices and the Cloud. IoT gateway that we are using requires IoT sensors for sending data to the cloud or to locally analyse information. The IoT devices are connected to AL Master which is the gateway for establishing the communication between IoT devices and edge controller which has an HMI screen. To get the data of these IoT devices a connection must be established between the controller and IoT devices.

Through extensive research and study of various frameworks and software's we have selected two automation software's that were not only compatible with CODESYS but that have also gained popularity in industries for automated testing of PLC's. we have chosen two automation software i.e., CODESYS Test Manager which requires licence and is a paid software and CODESYS Co-unit which is a freeware, using these two software's we will be testing ifm IoT library function blocks, these function blocks will be used to collect and analyse the data from the sensor and in the end a comparison between the two software's will be drawn out to determine which software will work the best for PLC software.

Final Year Project Report on
Load Cell Based Level Transmitter

by

Sakshi Pandule	-	C22020332510
Shivani Said	-	C22020332513
Rutuja Vaidya	-	C22020332516
Mrunali Zarekar	-	C22020332517

Under the Guidance of

Dr. Vaishali Upadhye

MKSSS's
Cummins
COLLEGE OF ENGINEERING
FOR WOMEN

Department of Instrumentation and Control
Cummins College of Engineering for Women,
Pune-411052

(2022-23)

CERTIFICATE

MKSSS's Cummins College of Engineering for Women, Pune

Department of Instrumentation & Control

This is to certify that the final Year project entitled "Load cell based level Transmitter" is a bonafide record of Final Year project presented in this institute

by

Sakshi Pandule	-	C22020332510
Shivani Said	-	C22020332513
Rutuja Vaidya	-	C22020332516
Mrunali Zarekar	-	C22020332517

In partial completion of term work for the final year

In

Instrumentation & Control Engineering

in the academic year 2022-23 as prescribed by in the curriculum. This final year project is a record of her own work carried out under our supervision and guidance

Dr. Vaishali Upadhye	Dr. Mrs. Anagha Panditrao	Dr. Mrs. Madhuri Khambete
Guide	HOD, Instrumentation & Control	Principal

Abstract

The proposed novel system consists of a loadcell and supporting electronic hardware. The loadcell is attached to a Plastic pipe and other end of pipe is closed. It acta as a float. The loadcell is installed on top of the tank. So the float will be oriented in to the bottom of the tank. As the liquid is filled in the tank, the force will be exerted on stem and intern on the loadcell. The force on loadcell is converted in to electrical signal. The Same signal is then processed to provide the output as 4-20m Load cell is interfaced to the main controller through HX711 module. Arduino is used for software-based signal conditioning. As we know the output of transmitter is 4 to 20 mA and loadcell gives the output in voltage. So, a V to I converter is connected at the output. The system is capable of connecting display and keyboard for on-site calibration. The calibration constant is stored in the internal memory. The same is used for providing output.

B.Tech. Project Report

On

"MICROCONTROLLER BASED AUTOMATION OF SHIRODHARA PROCESS"

C22019331537 Ms. Oorja Patil

C22019331538 Ms. Shruti Pawar

C22020331542 Ms. Swarali Savale

C22020331550 Ms. Vaishnavi Sutrave

Under the Guidance

Of

Dr. Atul Joshi

MKSSS's Cummins COLLEGE OF ENGINEERING FOR WOMEN

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

CERTIFICATE

MKSSS's Cummins College of Engineering for Women, Pune

Department of Instrumentation & Control

This is to certify that the B.Tech. Project Report entitled

"MICROCONTROLLER BASED AUTOMATION OF SHIRODHARA PROCESS"

is bonafide record of B.Tech. Project Report presented in this Institute

By

C22019331537	Ms. Oorja Patil
C22019331538	Ms. Shruti Pawar
C22020331542	Ms. Swarali Savale
C22020331550	Ms. Vaishnavi Sutrave

In

Department of Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This B.Tech. Project Report is record of her own carried out work under our supervision and guidance.

Dr. Atul Joshi	**Dr. Mrs. Anagha Panditrao**	**Dr. Mrs. Madhuri Khambete**
Project Guide	HOD, Instrumental & Control	Director

ABSTRACT

The term 'Shirodhara' comes from two Sanskrit words, where '**Shiro**' means 'head' and '**Dhara**' implies to 'flow', together it infers to pouring of warm herbal ayurvedic fluids on the forehead from a specific height, for a specific time period in a continuous stream, allowing the oil to run through the scalp and down into the hair.

The present process requires manual operation in which the operator has to maintain the temperature of the fluid, collect the fluid, refill the vessel and perform oscillations of the vessel. This entire process is tedious and time consuming, hence the aim of the project is to automate the entire process of Shirodhara operation in an efficient and cost-effective manner.

The initial phase of the project consisted of designing and testing of the temperature control loop (continuously stirred system) and the fluid recycling control loop and the second phase involved the designing and building of the Printed circuit board (PCB) and fabrication of the complete Shirodhara apparatus.

JOSHI LABORATORIES

SHOP NO – 7, SHRINIVAS APPARTMENT, SAI CHOWK, NEW SANGVI, PUNE – 411027
GST NO – 27AAJFJ4507R1Z2 MOB NO- 9272631540

Date:

To,

Dr. Anagha Panditrao (HoD)

Dept. of Instrumentation and Control

Cummins College of Engineering for Women

Karve nagar, Pune-411052

Subject: Letter for sponsorship

With reference to our discussion regarding the project name as **'Semi- automatic "Shirodhara" apparatus', we** are pleased to **technically sponsor** the project **for the following Final Year B Tech students of your department for the AY 2022-2023.** We will also help to check the performance of the apparatus

C22019331537	Oorja Patil
C22019331550	Vaishnavi Sutrave
C22019331542	Swarali Savale
C22019331538	Shruti Pawar

Thank you.

FOR JOSHI LABORATORIES

Partner,

PARTNER

(For Joshi Laboratories)

B.Tech. Project Report

On

"PORTABLE KASHAYA MAKER"

C22019331515	Ms. Devyani Dhanegave
C22019331532	Ms. Priyal Mehta
C22020332507	Ms. Purva Jagadale
C22020332512	Ms. Vaishnavi Pore

Under the Guidance

Of

Dr. Atul Joshi

MKSSS's
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COLLEGE OF ENGINEERING
FOR WOMEN

Cummins College of Engineering for Women, Pune
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

CERTIFICATE

MKSSS's Cummins College of Engineering for Women, Pune

Department of Instrumentation & Control

This is to certify that the B.Tech. Project Report entitled

"PORTABLE KASHAYA MAKER"

is bonafide record of B.Tech. Project Report presented in this Institute

By

C22019331515	Ms. Devyani Dhanegave
C22019331532	Ms. Priyal Mehta
C22020332507	Ms. Purva Jagadale
C22020332512	Ms. Vaishnavi Pore

In

Department of Instrumentation & Control Engineering

in the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This B.Tech. Project Report is record of her own carried out work under our supervision and guidance.

Dr. Atul Joshi	Dr. Mrs. Anagha Panditrao	Dr. Mrs. Madhuri Khambete
Guide	HOD, Instrumental & Control	Director

Abstract

Kashaya is widely used formed of dosage in Ayurveda. Kashaya refers to a water extract of a single Herb or group of Herbs. We have taken this problem statement from the SIH (Smart India Hackathon). Kashaya making process requires strictly continuous monitoring and controlling. As this process takes a lot of time, user stuck in the process.

So, to overcome this problem we are making automatic portable Kashaya making system. There is no such product available in the market which follows the traditional method of making Kashaya. We have used HX711 Load Cell Signal Conditioning Module and MAX6675 cold junction compensated K thermocouple-to-digital converter, it is interfaced with the Arduino.

Our product is taking inputs from the user like weight of the Kashaya *Churna, the* amount of water user wants to add and also user can decide amount of Kashaya he want after heating process. After taking the inputs from the user, system will start heating process. During this process system will continuously monitor temperature up to a default given setpoint. Also, system will continuously measure the weight of the mixture. After heating when desirable amount of mixture is produced, our system will stop the heating process.

B.Tech. Project Report

On

"PORTABLE KASHAYA MAKER"

C22019331515	Ms. Devyani Dhanegave
C22019331532	Ms. Priyal Mehta
C22020332507	Ms. Purva Jagadale
C22020332512	Ms. Vaishnavi Pore

Under the Guidance

Of

Dr. Atul Joshi

MKSSS's
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COLLEGE OF ENGINEERING
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Cummins College of Engineering for Women, Pune
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(2022-2023)

JOSHI LABORATORIES

SHOP NO – 7, SHRINIVAS APPARTMENT, SAI CHOWK, NEW SANGVI, PUNE – 411027
GST NO – 27AAJFJ4587E1Z2 MOB NO- 9272631540

Date:

To,

Dr. Anagha Panditrao (HoD)

Dept. of Instrumentation and Control

Cummins College of Engineering for Women

Karve nagar, Pune-411052

Subject: Letter for sponsorship

With reference to our discussion regarding the project name as **'Semi-automatic "Kashay" maker, we** are pleased to **technically sponsor** the project **for the following Final Year B Tech students of your department for the AY 2022-2023.** We will also help to check the performance of Kashay maker.

1. C22019331532 Priyal Mehta
2. C22019331515 Devyani Dhanegave
3. C22020332507 Purva Jagadale
4. C22020332512 Vaishnavi Pore

Thank you.

FOR JOSHI LABORATORIES

Partner,

PARTNER

(For Joshi Laboratories)

PROJECT REPORT

On

PID TUNING USING DATA ANALYSIS

Gayatree Borul C. No.C22019331508

Savani Kulkarni C. No. C22019331527

Kshitija Naik C. No. C22019331533

Nidhi Tanksale C. No. C22019331551

Under the Guidance

of

MKSSS's Cummins COLLEGE OF ENGINEERING FOR WOMEN

Prof. Manisha Narwane

Cummins College of Engineering for Women, Pune

(2022-2023)

MKSSS'S

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Instrumentation and control

CERTIFICATE

This is to certify that the B-Tech Project entitled

PID TUNING USING DATA ANALYSIS

is bonafide record of B Tech Project presented in this institute

By

Gayatree Borul C. No.C22019331508

Savani Kulkarni C. No. C22019331527

Kshitija Naik C. No. C22019331533

Nidhi Tanksale C. No. C22019331551

In Department of

Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This B-Tech-Project is a record of her own carried out under our supervision and guidance.

Prof. Manisha Narwane	**Dr. Mrs. Anagha Panditrao**	**Dr. Mrs. Madhuri Khambete**
Guide	**HOD**	**Principal**

Abstract

PID controllers are found in a wide range of applications for industrial process control. Approximately 95% of the closed-loop operations of the industrial automation sector use PID controllers. PID tuning is the procedure of finding the values of proportional, integral, and derivative gains to achieve desired performance and meet design requirements. These three controllers are combined in such a way that it produces a control signal to regulate various process parameters like temperature, pressure, flow and level in a closed loop. As a feedback controller, it delivers the control output at desired levels. Before microprocessors were invented, PID control was implemented by the pneumatic analog electronic components. But today all PID controllers are processed by the microprocessors. Programmable logic controllers also have the inbuilt PID controller instructions.

PID controllers are generally tuned using various methods in the industries, but most of these methods are ineffective as they do not consider the system variables. The aim of the project is to auto tune a PID controller for DC motor speed control using data analysis. This can be achieved by collection of data from hardware assembly and applying data analysis algorithms such as linear regression on this collected data.

This project focuses on reducing setup time of the real time system by providing accurate tuning parameters from the developed algorithm.

CONCORD
TECHNOLOGIES

SPONSORSHIP CERTIFICATE

Date: 26/09/2022

To,

Dr. Anagha Panditrao (HoD)

Dept. of Instrumentation and Control

Cummins College of Engineering for Women

Karve nagar, Pune-411052

Subject: Sponsorship letter for Final Year Project

With reference to our discussion regarding the project titled **'PID controller using data analysis'**, we would like to provide **technical sponsorship** to the project to implement the **Proof-of-Concept (POC). Following students of your department are working on the project during AY 2022-2023.**

1. C22019331527 Savani Kulkarni
2. C22019331551 Nidhi Tanksale
3. C22019331533 Kshitija Naik
4. C22019331508 Gaytree Borul

Thank you.

Mr. Shrihari Naik

Partner

Concord Technologies

B.Tech Project Report on

'Posture Monitoring Apparatus for Physiotherapy'

by

Miss Aradhana Bakare (C22019331504)
Miss Kalyani Dalvi (C22019331510)
Miss Shruti Dalvi (C22019331511)
Miss Sharvari Deshpande (C22019331511)

Under the guidance
of
Dr. Anagha Panditrao

COLLEGE OF ENGINEERING
FOR WOMEN

Department of Instrumentation and Control

MKSSS's Cummins College of Engineering for Women, Pune.

(An Autonomous Institute affiliated with Savitribai Phule Pune University)

(2022-2023)

CERTIFICATE

MKSSS's Cummins College of Engineering for Women, Pune.

Department of Instrumentation and Control

This is to certify that the project entitled **"Posture Monitoring Apparatus for Physiotherapy"** is submitted by

Ms. Aradhana Bakare:	C22019331504
Ms. Kalyani Dalvi :	C22019331510
Ms. Shruti Dalvi :	C22019331511
Ms. Sharvari Deshpande:	C22019331512

is a record of their work carried out under our supervision and guidance, in partial Completion of team work for the final year in Instrumentation & Control Engineering is a bonafide record of seminar presented in this institute.

In the academic year 2022-2023 as prescribed by Savitribai Phule Pune University. This Project is a record of her work carried out under our supervision and guidance.

Dr Anagha Panditrao
Guide & HoD
Instrumentation and Control

Dr.Madhuri Khambete
Director

Abstract

The increase in technological advancements in recent years has led to the emergence of a new lifestyle. Although being assisted by machines for small-scale tasks in daily housework makes daily life easier, this has caused people to reduce their daily active movements and negatively affects human health.

Especially during the COVID-19 pandemic, with the conversion of the working style to the home environment, working hours spent at the desk are more than ever. Due to the prolongation of the working time, the employees stay in the same position more inactive, thus their muscles weaken and they start to have muscle disease. Weaknesses in the muscles have occurred to the formation of postural problems in people.

Technology advancements in wireless communication and embedded computing are fostering their evolution from standalone elements to smart objects seamlessly integrated in the broader context of the Internet of Things. In this context, wearable sensors represent the building block for new cyber-physical social systems, which aim at improving the well-being of people by monitoring and measuring their activities and providing immediate feedback to the users.

In our project we will be designing posture monitoring apparatus for physiotherapy. The efficacy of home-based physiotherapy depends on the correct and systematic execution of prescribed exercises. Biofeedback's systems enable it to accurately track exercise execution and prevent patients from unconsciously introducing incorrect postures or improper muscular loads on the prescribed exercises. This is often achieved using an inertial sensor as it can be used to monitor human motion variables and muscular activation.

The main aim of the system is to detect the correct or incorrect posture by detecting the changes occurring in human posture using sensors i.e. accelerometer sensor. The changes occurring in different directions left, right, forward and backward are detected using the sensor, by which angles are calculated depending on the direction of tiltation of the body.

Depending on the threshold set by the physiotherapist the patient will continue the movement, and once the angle of movement is equal to threshold the beep will be given by the buzzer. The proposed methodology will be applied to a controlled laboratory trial, for a set of different exercises often prescribed by physiotherapists.

Final Year Project Report

on

ETHYLENE OXIDE, PROPYLENE OXIDE-INSTRUMENTATION AND CONTROL ENGINEERING

Deeksha Jagtap	**C.No. 22019331521**
Srushti Khomane	**C.No. 22019331525**
Priti Khopade	**C.No. 22019331526**
Sanjana Yadav	**C.No. 22019331554**

Under the Guidance of

Dr.Vaishali Upadhye

MKSSS's
Cummins
COLLEGE OF ENGINEERING
FOR WOMEN

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule, Pune University)

(2022-23)

CERTIFICATE

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule, Pune University)

This is to certify that the Final Year Project entitled "**ETHYLENE OXIDE, PROPYLENE OXIDE- INSTRUMENTATION AND CONTROL ENGINEERING**" is Bonafide record of Final Year Project presented in this institute by

Deeksha Jagtap
Priti Khopade
Srushti Khomane
Sanjana Yadav

in

Department of Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This Final Year Project is a record of her own carried out under our supervision and guidance.

Dr. Vaishali Upadhye Guide	Dr. Mrs. Anagha Panditrao HOD, Instrumentation & Control	Dr. Mrs. Madhuri Khambete Principal

CERTIFICATE OF COMPANY

This certificate is to acknowledge that following students: Deeksha Jagtap, Srushti Khomane, Priti Khopade, Sanjana Yadav from Cummins College of Engineering, Pune have successfully completed a project at our company, Worley, Pune in the academic year 2022-2023. Throughout the duration of the project, they have demonstrated a high level of commitment and dedication to their work. During the project they have successfully completed the tasks assigned to them. We wish them good luck for their future career.

Sandeep Palve,

S.G. Palve
26/05/2023

Worley India Pvt. Ltd.

Dy. Manager
Control & Instrumentation Engineering Department
Worley India Pvt. Ltd
9th Floor, Amar Tech Park, Patil Nagar, Balewadi Hinjewadi Road,
Next to Mitcon School, Opp. Balewadi Stadium, Pune- 411045

ABSTRACT

The objective of the project is to develop a Detail Engineering Design Document (DEDD). To develop this DEDD it is necessary to understand different instrumentation engineering standards like ISA, ISO, API, ASME, IEC etc. To execute the above objective, we took the project from client, Worley, Pune as a case study. During this project, we learned functioning, roles & responsibilities of different engineering departments, project contracts, project stages and the entire project cycle along with the approval process of various deliverables and documents. This report includes Instrumentation Engineering Deliverables prepared on the basis of various inputs. P&ID is the first input document to all the disciplines to start the engineering in all phases of project. The deliverables include: Instrumentation Index, IO List, Instrument Data Sheets, Material Requisition, Instrument Installation Details (Hook Ups), Instrument Cable Schedule, Loop Drawings, etc.

Project Report

on

AUTOMATIC AYURVEDIC MEDICINE MAKER

Sanjana Sonavane	Roll No : 4542	C.No: C22019331549
Vaishnavi Bhagat	Roll No : 4552	C.No: C22020332502
Sushmita Gandhi	Roll No : 4555	C.No: C22020332505
Vaishnavi Sarode	Roll No : 4564	C.No: C22020332514

Under the Guidance

Of

Prof. H.T.Patil

MKSSS's
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COLLEGE OF ENGINEERING
FOR WOMEN

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

MKSSS's

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Instrumentation and Control

CERTIFICATE

This is to certify that the B-tech Project entitled

"Automatic Ayurvedic Medicine Maker"

is a bonafide record of B-tech Project presented in this institute

By

Sanjana Sonavane

Vaishnavi Bhagat

Sushmita Gandhi

Vaishnavi Sarode

In Department of

Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This B-Tech-Project is a record of her own carried out under our supervision and guidance.

Prof. A.T.Patil	**Dr. Mrs. Anagha Panditrao**	**Dr. Mrs. Madhuri Khambete**
Project Guide	HOD, Instrumental & Control	Principal

ABSTRACT

The Conventional method for the preparation of Ayurvedic medicine is the Manual method. Monitoring of the quantity of the ingredients, constant low temperature, Rate of production, Cost and reliability are some of the drawbacks of the manual method. Therefore to overcome these drawbacks an Automatic Ayurvedic Medicine Maker can be employed. It will overcome the above mentioned drawbacks with the implementation of mechanisms like automatic weight measurement, automatic temperature measurement and control, and an automatic stirrer The system developed is user friendly and cost effective.

Keywords : Arduino, weighing, mixing unit, medicines

TÜV INDIA
ISO 9001 : 2008 Certified
Cert. No. QM 03 01376

V S INSTRUMENTS

Regd. Off : Ganga-Prasad, Near S. B. Litho press, Mahaveer Nagar, SANGLI - 416 416. (M.S.)
Works : Plot No.77/78, C. S. No.4465, Industrial Estate, SANGLI - 416 416. (M.S.)
Phone : (0233) 2312656, E-mail : vsinstruments@yahoo.co.in Visit Us : www.vsinstrument.com

Date: 21/09/2022

To,

Dr. Anagha Panditrao (HoD)

Dept. of Instrumentation and Control

Cummins College of Engineering for Women

Karve nagar, Pune-411052

Subject: Letter for sponsorship

With reference to our discussion on the final year project, we are pleased to technically sponsor and help to implement the Proof of Concept (PoC) of the project. The details of the project are as follows:

Title: "Semi-automatic Ayurvedic Medicine Maker"

Year: 2022-23

Dept.: Instrumentation and Control

Students: Final Year B. Tech students

1. **C22020332505 Sushmita Gandhi**
2. **C22020332514 Vaishnavi Sarode**
3. **C22020332502 Vaishnavi Bhagat**
4. **C22019331549 Sanjana Sonavane**

Thank you

For V S Instruments

Vinod Gokhale

Managing Partner

Final Year-Project Report On

CELL INCUBATOR

by

Ms.Pratiksha Anarase _C22019331501

Ms.Vaishnavi Borade _C22019331507

Ms.Sakshi Ghugare _C22019331517

Ms.Anushkaa Govande _C22019331518

Ms.Akanksha Jagadale _C22019331519

Under the Guidance of

prof. Pratima Kulkarni And Dr. Dhananjay Bodas.

Department of Instrumentation and Control

Cummins College of Engineering for Women,

Pune-411052

(2022-2023)

CERTIFICATE

MKSSS's Cummins College of Engineering for Women, Pune

Department of Instrumentation & Control

This is to certify that the project entitled "DESIGN OF CELL INCUBATOR" is a bonafide record of project presented in this institute

by

Ms.Pratiksha Anarase

Ms.Vaishnavi Borade

Ms.Sakshi Ghugare

Ms.Anushkaa Govande

Ms.Akanksha Jagadale

In partial completion of project for the final year

In

Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This project is a record of their own work carried out under our supervision and guidance.

Prof.Pratima Kulkarni	**Dr.Dhananjay Bodas**	**Dr.Anagha Panditrao**	**Dr.Madhuri Khambete**
Guide	Guide	HOD (IN)	Principal

Abstract

We are creating and testing a cell culture incubator that will maintain a specific internal environment while being compatible with an inverted microscope. The internal environment must be 37°C, 95%+ humidity, 5ul/min flow and contain 5% CO2 in the box. There are current designs on the market that meet this criteria, but the inverted microscope is encapsulated into the incubator making it bulky and inconvenient to disassemble. We are going to design a cell incubator that will be portable and small enough to fit on the inverted microscope stage, allowing the user to view live cells inside of the incubator. The incubator will include a heated water pump and CO2 pump in order to reach the required environment for the cell. Transparency, heating, and insulation testing will be conducted on various materials to find the optimal combination for the incubator.

महाराष्ट्र विज्ञान वर्धिनी
आगारकर अनुसंधान संस्था
Maharashtra Association for the Cultivation of Science
AGHARKAR RESEARCH INSTITUTE
(An Autonomous Grant-in-aid Institute under the Department of Science and Technology, Govt. Of India)

21 September 2022,

SPONSORSHIP CERTIFICATE

To,

Dr. Anagha Panditrao

HoD, Instrumentation and Control Department

Cummins College of Engineering for Women Pune

Subject: Sponsorship letter for Final Year Project

We would like to inform you that we are interested in providing technical sponsorship to the project entitled 'Design of Cell Incubator' for the following Final Year BTech students of your department for the AY 2022-2023.

1. **Anushka Govande**
2. **Sakshi Ghugare**
3. **Pratiksha Anarse**
4. **Vaishnavi Borade**
5. **Akanksha Jagdale**

Thank you. exceed the expectations. Please feel free to contact me for any further information.

Dr. Dhananjay Bodas
Scientist
Nanobioscience group,
Agharkar Research Institute
GG Agarkar road, Pune 411 004 India
dsbodas@aripune.org

Project Report Entitled

"DESIGN OF SMART SHOE"

AKSHATA BODHALE	C22019331506
SHRUSHTI RAUT	C22019331541
ANUSHKA SAWAI	C22019331543
SHARVARY VAIDYA	C22019331553

Under the Guidance of

Prof.Pratima Kulkarni

Dr. Dhananjay Bodas

MKSSS's Cummins COLLEGE OF ENGINEERING FOR WOMEN

Department of Instrumentation and Control

MKSSS's Cummins College of Engineering for Women, Pune

(An Autonomous Institute Affiliated to Savitribai Phule Pune University)

MKSSS's

Cummins College of Engineering for Women, Pune

Department of Instrumentation and Control

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

CERTIFICATE

This is to certify that the Final Year-Project-Seminar entitled

"SMART SHOE"

is a bonafide record Project presented in this institute

By

Akshata Bodhale

Shrushti Raut

Anushka Sawai

Sharvary Vaidya

In completion of term work for the final year in

Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This Project is work of her own carried out under our supervision and guidance.

Prof. Pratima Kulkarni

Guide

Dr. Mrs. Anagha Panditrao

HOD, Instrument & Control

Dr. Dhananjay Bodas

Guide

Dr. Mrs. Madhuri Khambete

Principal

आघारकर अनुसंधान संस्था
Maharashtra Association for the Cultivation of Science
AGHARKAR RESEARCH INSTITUTE
(An Autonomous Grant-in-aid Institute under the Department of Science and Technology, Govt. Of India)

27 September 2022

SPONSORSHIP CERTIFICATE

To,

Dr. Anagha Panditrao

HoD, Instrumentation and Control Department

Cummins College of Engineering for Women Pune

Subject: Sponsorship letter for Final Year Project

We would like to inform you that we are interested in providing technical sponsorship to the project entitled 'Design of Smart Shoe' for the following Final Year BTech students of your department for the AY 2022-2023.

1. Shrushti Raut
2. Sharvary Vaidya
3. Anushka Sawai
4. Akshata Bodhale

Thank you. exceed the expectations. Please feel free to contact me for any further information.

Dr. Dhananjay Bodas
Scientist
Nanobioscience group,
Agharkar Research Institute
GG Agarkar road, Pune 411 004 India
dsbodas@aripune.org

ABSTRACT

Technology only advances as years go by. One of the most outstanding devices that have been benefiting mankind for years now is "sensors".

The design of the Smart Shoe project is focused on the development of prototype footwear that can track and analyze various aspects of an individual's gait pattern.

The Smart Shoe is equipped with advanced sensors and technologies, including pressure sensors, accelerometers, heart rate sensors, and GPS.

The Smart Shoe can provide real-time feedback on an individual's gait pattern, allowing for immediate adjustments and improvements. Additionally, the Smart Shoe is wearable and non-invasive, making it a convenient option for gait analysis.

The purpose of this project is to design and develop a Smart Shoe prototype that offers features such as activity tracking, GPS navigation, and health monitoring.

As per the research, there are a total of 18 pressure points from which there are 3 points where the pressure is maximum, where pressure sensors are to be placed.
The three positions are: (1) at the toe (2) in the middle of the feet (3) at the heel. The device also uses an accelerometer which will help record trips/falls while carrying out any activity.
LED-based pulse sensors will give data about the heartbeat.

GPS sensor is used to record the location and this location can be sent to our close ones for security purposes and also give us the speed, time, and distance covered.
The smart shoe is connected to the phone via a Bluetooth module.

The Smart Shoe is a device that will help individuals track their physical activities, monitor their health, and provide location-based services.

Project Report on

IoT ENABLED ASSITIVE TOOL FOR SAFETY IN MOUNTAINEERING

by

Deeksha Sharma CNUM: C22019331545
Rohini Raghuwanshi CNUM: C22019331540
Tanvi Chandak CNUM: C22019331509

under the guidance

of

Dr. Dipali Ramdasi

MKSSS's Cummins COLLEGE OF ENGINEERING FOR WOMEN

MKSSS's Cummins College of Engineering for

Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

MKSSS's

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Instrumentation and Control

CERTIFICATE

This is to certify that the Project report entitled

"IoT ENABLED ASSISTIVE TOOL FOR *SAFETY IN MOUNTAINEERING*"

is a bonafide record of Project Report presented in this institute

by

Deeksha Sharma
Rohini Raghuwanshi
Tanvi Chandak

in

Instrumentation and Control Engineering

in the academic year 2022-2023 as prescribed by Savitribai Phule Pune University.
This Project report is a record of their own carried out under our supervision and guidance.

Dr. Dipali Ramdasi	*Dr. Anagha Panditrao*	*Dr. Madhuri Khambete*
Guide	HoD, Instrumentation and Control	Director

Date: 18th Apr 2023

To,

Dr. Anugha Penditrao (HoD)

Dept. of Instrumentation and Control

Cummins College of Engineering for Women

Karve nagar, Pune-411052

Subject: Support and Consultancy in the Scientific Project

With reference to our discussion on the final year project, GGIM is pleased to provide technical support and consultancy in our best capacities for the implementation of the Proof of Concept (PoC) of the project. The details of the project are as follows:

Title: **"IoT enabled Assistive tool for safety in Mountaineering"**

Year: **2022-23**

Dept.: **Instrumentation and Control**

Students: **Final Year B. Tech students**

1. **C22019331509 Tanvi Chandak**
2. **C22019331540 Rohini Raghuwanshi**
3. **C22019331545 Deeksha Sharma**

Thank you.

Bhushan Harshe

Head Operations, GGIM

9822323147

IoT Enabled Assistive Tool for Safety in Mountaineering

Abstract

Mountaineering and trekking are outdoor activities that attract thousands of enthusiasts each year. These activities often take place in remote and isolated areas, where medical assistance is scarce, and rescue operations are challenging. When trekkers are injured in such areas, they face significant challenges in accessing help due to the harsh terrain, limited resources and most notably due to lack of communication infrastructure. There is a need for an efficient, flexible, and economical solution for safety in mountaineering and other long-distance remote use cases where cellular networks prove ineffective. One of the promising technologies suitable for this application is the LoRa (long range) Network, which is used for communication in isolated areas such as wooded areas (forests) with more minor power consumption. Fast and low-effort localization can potentially increase the chances of saving injured individuals' lives. The proposed system aims to develop an IoT based system to ensure safety in mountaineers

Keywords

IoT, mountaineering, wireless communication, peer-to-peer network

Date: 18th Apr 2023

To,

Dr. Anagha Panditrao (HoD)

Dept. of Instrumentation and Control

Cummins College of Engineering for Women

Karve nagar, Pune-411052

Subject: Support and Consultancy in the Scientific Project

With reference to our discussion on the final year project, GGIM is pleased to provide technical support and consultancy in our best capacities for the implementation of the Proof of Concept (PoC) of the project. The details of the project are as follows

Title: "IoT enabled Assistive tool for safety in Mountaineering"

Year: 2022-23

Dept.: Instrumentation and Control

Students: Final Year B. Tech students

1. **C22019331509 Tanvi Chandak**
2. **C22019331540 Rohini Raghuwanshi**
3. **C22019331545 Deeksha Sharma**

Thank you.

Bhushan Harshe

Head Operations, GGIM

9822323147

Office Address: 1233/A Saichhaya Apt. Behind IDBI bank, Apte Road, Deccan Gymkhana, Pune 04
Phone – 9769302934/9822323147 | email – ggimpune@gmail.com, info@ggim.in | www.ggim.in

Final Year Project Report

on

LPG LEAKAGE DETECTION AND ALERT INDICATION SYSTEM

BY

Vaishnavi P. Shinde Roll No: 4540 C. No. C22019331546

Pratiksha P. Taru Roll No: 4545 C. No. C22019331552

Vaishnavi G. Jadhav Roll No: 4556 C. No. C22020332506

Vaishnavi R. Shinde Roll No: 4565 C. No. C22020332515

Under the Guidance of

Dr. Revathi Shriram

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

CERTIFICATE

MKSSS's
Department of Instrumentation and Control
Cummins College of Engineering for Women, Pune
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

This is to certify that the Final Year Project entitled

"LPG LEAKAGE DETECTION AND ALERT INDICATION SYSTEM"

is bonafide record of project presented in this institute

By

Vaishnavi P. Shinde

Pratiksha Taru

Vaishnavi Jadhav

Vaishnavi R. Shinde

In

Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This final-year-Project is a record of her own carried out under our supervision and guidance.

Dr. Revathi Shriram	**Dr. Mrs. Anagha Panditrao**	**Dr. Mrs. Madhuri Khambete**
Guide	HOD, Instrumental Control	Director

Final Year Project Report

on

"A Multi-Functional Agricultural Robot"

Vaishnavi Dhakne - 4513, C22019331513

Elishma Gadkar - 4554, C22020332504

Ashlesha Kadam - 4558, C22020332508

Vashishti Magar – 4559, C22020332509

Under the Guidance

of

Prof. Yashwant Adhav

MKSSS's Cummins COLLEGE OF ENGINEERING FOR WOMEN

Cummins College of Engineering for Women, Pune.

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022- 2023)

MKSSS's

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Instrumentation and Control

CERTIFICATE

This is to Certify that the Final Project Seminar entitled

"A Multi- Functional Agricultural Robot"

Is Bonafide record of project presented in this institute

By

Vaishnavi Dhakne

Elishma Gadkar

Ashlesha Kadam

Vashishti Magar

In

Instrumentation and Control Engineering

In the Academic year 2022- 2023 as prescribed by Savitribai Phule Pune University.

This Final Project is a record of her own carried out under our supervision and guidance.

Prof. Yashwant Adhav	**Dr. Anagha Panditrao**	**Dr. Madhuri Khambete**
Guide	HOD, Instrumentation & Control Dept.	Director

A Project seminar report

On

Secure Wireless Controller of traffic signals in peak hours

By

1) Pranita Galande C22019331516

2) Namrata Jagdale C22019331520

3) Prachi Mahajan C22019331529

4) Sakshi Pohekar C22019331534

Under the guidance of

Prof. Megha S Galphade

MKSSS's Cummins COLLEGE OF ENGINEERING FOR WOMEN

Cummins College of Engineering for Women, Pune

Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

MKSSS's
Cummins
COLLEGE OF ENGINEERING
FOR WOMEN

CERTIFICATE

This is to certify that project titled "**Secure Wireless Controller of traffic signals in peak hours**" is a Bonafide record of Project carried out by the following students of Final year of Instrumentation and Control Engineering.

Sr.No.	Name	Roll no.
1)	Pranita Galande	(4516)
2)	Namrata Jagdale	(4520)
3)	Prachi Mahajan	(4527)
4)	Sakshi Pohekar	(4534)

Prof. Megha S Galphade	Dr.Mrs.Anagha Panditrao	Dr.Mrs.Madhuri Khambate
Project Guide	Head of Department (Instrumentation and Control)	Director

Abstract

Traffic congestion is the biggest problem faced by densely populated countries like India, China etc. So,our project focuses on three areas-Ambulance, Priority vehicles like VIP cars, police jeeps and Traffic density Control.

In the world of Innovative and automotive world everything is getting computerized. Each data is in effect effortlessly available. Yet, the movement signals checking is as yet done physically. The activity signals are observed physically from the control room by the executives or a predictable time is settled for signals evolving. Rather than this a computerized controller-based activity checking framework will be useful for controlling the movement. This plan of movement foundation will be useful in decreasing the activity clog issue in urban communities. This paper depicts a framework where IR sensors are incorporated with an Arduino to work the paths which measure the movement thickness. This incorporated arrangement of movement is Internet of Things (IoT) based which likewise empowers to clear the activity for emergency vehicle by giving a catch in rescue vehicle so the activity gets cleared on that side. It additionally empowers the vehicles tally that move over the sensor.

This project is a replica of a four way lane crossing of real time scenario. In the first part, concentrated on problems faced by Ambulances, RFID concept is used to make the Ambulance's lane Green and thus providing a stoppage free way for the Ambulance. In the second part, concentrated on problems faced by Priority vehicles, IR transmitter and receiver are used to make the vehicles' lane Green and thus preventing traffic congestion. In the third part, concentrated on Traffic density control, IR transmitter and receiver are used to provide dynamic traffic control and thus increasing the duration of the Green light of the lane in which traffic density is high and hence, regulating traffic

FINAL YEAR PROJECT REPORT

ON

MOOD DISORDER DETECTION SYSTEM

SUBMITTED BY

SALONI BADAVE(C.No:C22019331502)

BHAGYASHREE DHAMANE (C.No:C22019331514)

ANUSREE MANDAL (C.No:C22019331530)

UNDER THE GUIDANCE

OF

DR. NIVEDITA DAIMIWAL

COLLEGE OF ENGINEERING FOR WOMEN

DEPARTMENT OF

INSTRUMENTATION AND CONTROL

Cummins College of Engineering for Women, Pune

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

CERTIFICATE

MKSSS Cummins College of Engineering for Women, Pune

Department Of Instrumentation and Control

This is to certify that the Final year Project-Seminar entitled

"MOOD DISORDER DETECTION SYSTEM"

is bonafide record of Final year Project-Seminar presented in this institute

By

Saloni Badave

Bhagyashree Dhamane

Anushree Mandal

In

Instrumentation & Control Engineering

In partial completion of team work for final year in Instrumentation and Control

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University. This seminar is a record of her own work carried out under our supervision.

Dr. Nivedita Daimiwal	Dr.Mrs.Anagha Panditrao	Dr.Mrs.Madhuri Khambete
Guide	HOD	Director, Principal

ABSTRACT

Mood disorder is often overlooked and there are people who think that mood disorder is "all in your head". As per the record of World Health Organization (WHO), 5% of the adults are suffering from it.

If one has Mood disorder, the general emotional state or mood is distorted or inconsistent with your circumstances and interferes with one's ability to function. Mental illness is still a taboo. People hesitate to consult a health specialist; hence a system is required as an early detection.

The primary objective is to improve this situation by designing a user-friendly mobile application. In the proposed application, the condition of the people will be analysed with the help of standard Mood Disorder Questionnaire (MDQ), Emotion analysis using face detection with the help of image processing in Python, EEG signals and PPG signals.

The results received from above mentioned analysis will determine the severity level of mood disorder using machine learning algorithm. Depending on the severity several activities will be given.

These activities will include some yoga, games, meditation and exercise. Users are suggested to take the above four tests every week to check the progress. In case of high severity, according to the user's location, a suggested list of health specialists will be recommended.

A Project Report on

Crack Detection For Canal Inspection using Autonomous Underwater Vehicle (AUV)

By

Ms. Megha Karanje (C22019331523)

Ms. Kalyani Mahajan (C22019331528)

Ms. Indraja Patil (C22019331535)

Ms. Shruthi Shukla (C22019331547)

Under the Guidance of

Dr. Swati Madhe (Internal Guide)

Mr. Vishwajeet Gokhale (External Guide)

Department of Instrumentation and Control
MKSSS's Cummins College of Engineering for Women,
Pune - 411052

(2022-2023)

CERTIFICATE

MKSSS's Cummins College of Engineering for Women, Pune

Department of Instrumentation and Control

This is to certify that the Final Year-Project-Report entitled "Crack Detection for Canal Inspection using Autonomous Underwater Vehicle (AUV)" is bonafide record of Final Year-Project-Seminar presented in this institute

By

Megha Karanje

Kalyani Mahajan

Indraja Patil

Shruthi Shukla

In partial completion of term work for the Final Year in

Instrumentation & Control Engineering

In the academic year 2022-23 (Phase II) as prescribed by Savitribai Phule Pune University. This Final Year-Project Report is the record of her own carried out under us supervision and guidance.

Dr. Swati Madhe	Dr. Mrs. Anagha Panditrao	Dr. Mrs. Madhuri Khambete
Project Guide	HOD,Instrumentation & Control	Director

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Date : 3rd Oct 2022

To
MKSSSS'S Cummins College of Engg. for Women
Pune

Sub.: Sponsorship Letter

Ref : Problem Statement for Crack Detection for Canal Inspection by using Autonomous underwater Vehicle

Kind Attn.:- Dr. Anagha Panditrao – HOD , Instrumentation & Controls
Dr. Swati Modhe – Faculty Adviser.

Madam

With reference to the above we are pleased to sponsor the following team for the project "Crack Detection for Canal Inspection by using Autonomous Underwater Vehicle".

1. Ms. Megha Karanje
2. Ms. Kalyani Mahajan
3. Ms. Shruthi Shukla
4. Ms. Indraja Patil

Thanks & Regards

For Dimension

Dimension Pune

Vishwajeet Gokhale
Managing Director

MKSSS's Cummins College of Engg For Women	
Inward No	2169
Date	6-10-2022

To HOD Instr.

2nd Floor, Ravi-Anand Building, Near Marathi School, Sillarwadi, Dhayari, Pune 411 041 India
Phone: +91-20-24390521 Cell: +91 98220 13226 Email: vishwajeet@dimensionpune.com

B-TECH Project-Seminar Report

on

"SOIL NUTRIENTS ANALYSIS"

By

Ms. Mayuri Lokade	Roll no.4550	C no. C22018331530
Ms. Jayashree Chepure	Roll no.4553	C no. C22020332503
Ms. Swarupa Phulari	Roll no.4561	C no. C22020332511

Under the Guidance

of

Prof. Sheetal katwe

Cummins College of Engineering for Women, Pune

(AnAutonomous Institute affiliated to Savitribai Phule Pune University)

(2022-2023)

MKSSS's

Cummins College of Engineering for Women, Pune

(AnAutonomous Institute affiliated to Savitribai Phule Pune University)

Department of Instrumentation and Control

CERTIFICATE

This is to certify that the B-TECH Project-Seminar entitled

"SOIL NUTRIENTS ANALYSIS"

is bonafide record of B-TECH Project-Seminar presented in this institute

By

Mayuri Lokade

Jayashree Chepure

Swarupa Phulari

in partial completion of term work for the third year in
Instrumentation & Control Engineering

In the academic year 2022-23 as prescribed by Savitribai Phule Pune University.
This B-TECH Project-Seminar is record of her own carried out under our supervision and guidance.

Prof. Sheetal katwe	**Dr. Mrs. Anagha Panditrao**	**Dr. Mrs. Madhuri Khambete**
Guide	HOD, Instrumental & Control	Director

Abstract

Project Title: SOIL NUTRIENTS ANALYSIS.

The project aimed to develop a method for estimating the NPK (Nitrogen, Phosphorus, and Potassium) percentages in soil using the TCS34725 color sensor and an RGB LED. The TCS34725 color sensor was utilized to measure the NPK values of the soil sample.

The experiment involved illuminating a soil sample with the RGB LED and capturing the reflected light using the TCS34725 color sensor. The RGB values obtained from the sensor were used to calculate the NPK percentages based on a proportional relationship. The calibration factors were applied to adjust the values and account for any variations.

The developed system provided real-time feedback by displaying the NPK percentages on the RGB LED. The NPK percentages were derived by converting the RGB values into respective nutrient percentages using the calibration factors. The RGB LED represented the NPK percentages, with the red LED indicating nitrogen, the green LED indicating phosphorus, and the blue LED indicating potassium.

The experimental results showed a strong correlation between the RGB values and the NPK percentages determined through laboratory soil testing. The system provided a quick and convenient method for estimating the NPK percentages in soil, eliminating the need for time-consuming and expensive laboratory analysis.

The proposed method offers advantages such as cost-effectiveness, portability, and real-time monitoring of soil nutrient levels. However, it should be noted that the accuracy and reliability of the NPK percentage estimation may vary depending on the calibration factors used and the soil composition.

In conclusion, the developed method using the TCS34725 color sensor and RGB LED provides a promising approach for estimating NPK percentages in soil. It offers potential applications in agriculture, allowing farmers and researchers to quickly assess soil fertility and make informed decisions regarding nutrient management strategies.

Keywords: Soil nutrients analysis, NPK percentage, TCS34725 color sensor, RGB LED, Calibration factors, Real-time monitoring.

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MKSSS's CUMMINS COLLEGE OF ENGINEERING FOR WOMEN, PUNE

for successfully completing the Virtual Internship Program in Cybersecurity

Marcella O' Shea
Regional Manager APJC,
Corporate Affairs, Cisco

Program Partners

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Student ID- STU645dfbd284cbf1683880914

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Marcella O' Shea
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Corporate Affairs, Cisco

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MKSSS's CUMMINS COLLEGE OF ENGINEERING FOR WOMEN, PUNE

for successfully completing the Virtual Internship Program in Cybersecurity

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Aboli Anil Giri

MKSSS's CUMMINS COLLEGE OF ENGINEERING FOR WOMEN, PUNE

for successfully completing the Virtual Internship Program in Cybersecurity

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for successfully completing the Virtual Internship Program in Cybersecurity

Marcella O' Shea
Regional Manager APJC,
Corporate Affairs, Cisco

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MINISTRY OF EDUCATION

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siddhi vijay Dhamdhere

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for successfully completing the Virtual Internship Program in Cybersecurity

Marcella O' Shea
Regional Manager APJC,
Corporate Affairs, Cisco

Program Partners

AMRITA · EF EdCreate Foundation · ICTACADEMY · NIIT FOUNDATION · TASK

Student ID- STU645fb552e5ab11683993938

EDGELYTICS
SOLUTIONS PVT. LTD.

Reference: Edgelytics Solutions Pvt. Ltd./HRD/2023/AUG/01 Date: 01 Aug 2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Sakshi Sachin Kulkarni a 2nd year Engineering student from Instrumentation Department of MKSSS Cummins College of Engineering for Women has completed summer internship at our company for the period 15 June 2023 to 30 Jul 2023.

Sakshi learnt Arduino programming and applied her knowledge and built firmware as a part of our new product development. She is enthusiastic, quick learner, and methodical in her approach. We would like her to keep the association with us for her upcoming internships.

With Best wishes,

Sincerely,

Rajendra Sapre,

Director,
Edgelytics Solutions Pvt. Ltd.

A201, Nakshatra Apts, S.No 14, Erandwane, Pune 411004. Maharashtra. INDIA
info@edgelytics.in | www.edgelytics.in |Contact No: +91 76662 79054
GSTIN: 27AAECE6937H1ZE

Date: 24-Aug-2023

TO WHOMSOVER IT MAY CONCERN

This is to certify that **Amolee Haldankar** has successfully completed her internship project with Cummins India Limited from period **06-Jun-2023** to **28-Jul-2023**.

Project Title – Automotive applications E&E Architecture and Vehicle Performance feature awareness.

Guide Name – Sanjaya K Behera

Her performance exceeded guide's expectation during this period.

We wish her the best for all her future endeavors.

For Cummins India Limited

Rupali Agashe

Digitally signed by Rupali Agashe
Date: 2023.08.24 09:40:56 +05'30'

Rupali Agashe
HR Lead EBU Custodial Functions

Cummins Technical Centre India
Division of Cummins Technologies India Private Limited
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CIN:U29113PN1994FTC139153

KPMG

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Gayatri Kulkarni

Data Analytics Consulting Virtual Internship

Certificate of Completion

August 13th, 2023

Over the period of August 2023, Gayatri Kulkarni has completed practical tasks in:

Data Quality Assessment
Data Insights
Data Insights and Presentation

Deborah Yates
National Managing Partner People Performance and Culture

Tom Brunskill
CEO, Co-Founder of Forage

Enrolment Verification Code yqfjkXmBGMBxYQBxt | User Verification Code xZaiNC4k7a6EbhsXD | Issued by Forage

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MKSSS's CUMMINS COLLEGE OF ENGINEERING FOR WOMEN, PUNE

for successfully completing the Virtual Internship Program in Cybersecurity

Marcella O' Shea
Regional Manager APJC,
Corporate Affairs, Cisco

Program Partners

AMRITA · EF EdCreate Foundation · ICTACADEMY · NIIT FOUNDATION · TASK

Student ID- STU645fb552e5ab11683993938

RamRatan, Plot No. 70,
Navketan Hsg. Soc, Nr. Ideal Colony,
Kothrud, Pune 411 038.
www.micromation.in
E - Mail : micromationsystemspune@gmail.com

MICROMATION
SYSTEMS

Date: 01/08/2023

To whomsoever it may concern

This is to certify that Ms. Janhavi Pendharkar has successfully completed her internship with Micromation Systems, from 04 July 2023 to 28 July 2023.

During the internship period she has gained good knowledge about microcontrollers, motors as well as motor drivers. Her grasp for the new information is appreciable.

We wish her all the best for her upcoming career.

For Micromation Systems,

Yogesh Walimbe.
Partner.

skolar

Certificate of Completion

This is to certify that **Radhika Patwe** has successfully completed the 3 month Artificial Intelligence course on 30 July 2023.

Nishan Bhanga

Nishan Bhanga

Course Instructor

Certificate number: CC22-2059

skolar

Certificate of Completion

This is to certify that **Nikita** has successfully completed the 3 month Artificial Intelligence course on 30 July 2023.

Nishan Bhanga

Nishan Bhanga

Course Instructor

Certificate number: CC22-2060