

## Problem Solving Methodologies

It includes following ways of learning. Proofs of the same are attached below.

1. Prototype developed
2. Case studies
3. Industry supported/sponsored projects
4. Research paper publication
5. Patents

Industry supported/sponsored project

Sr.no.	Title	Industry	Year
1	Automating Lumping Breaker system in Chemical Industry using PLC	Ingale Entreprises,Pune	2023-2024
2	Advance Paper glass bottom cutting machine	Shiv paper works,Sangli	2023-2024

Dr. Vasantrodada Patil Shetkari Shikshan Mandal's  
**Padmabhooshan Vasantrodada Patil Institute of  
Technology, Budhgaon, Sangli 416-304.**  
■ DEGREE WING (6269) ■



**CERTIFICATE**

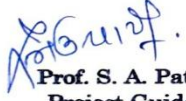
This is to certify the  
Project Phase II Report on  
**Automating Lump Breaker System In Chemical Industry  
Using PLC**  
Submitted by

(4005) Mr. Amey Vidyadhar Ingale. 2062691293003  
(4007) Miss. Sakshi Balu Jambhale. 2062691293008  
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in partial Fulfilment of the requirement of B-TECH in Electrical Engineering  
from Dr. B.A.T.U, Lonere. for Academic Year 2023-24 SEM -VIII


Date: 07 / 06 / 2024

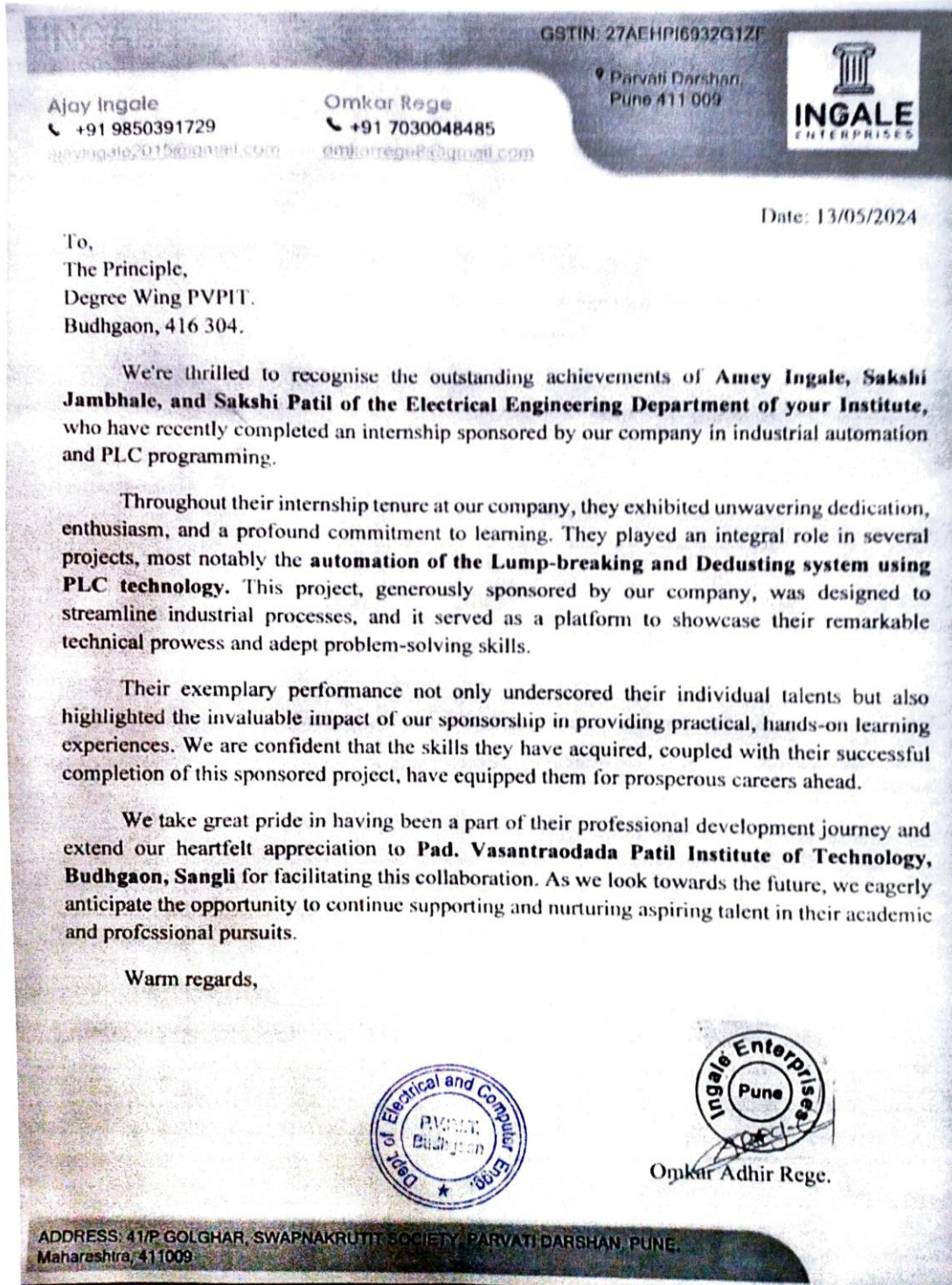
Place: PVPIT, Budhgaon.

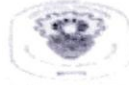
  
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External Examiner

  
Prof. Dr. L. S. Patil  
Head Of Department

  
Prof. Dr. B. S. Patil  
Principal





**P. ADMABHOOSHAN VASANTRAGADADA PATIL INSTITUTE  
OF TECHNOLOGY, BUDHGAON**

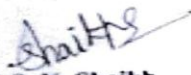
**Department of Electrical Engineering**


**CERTIFICATE**

This is to certify that the seminar report entitled "Advance Paper Glass Bottom  
Cutting Machine"  
submitted by

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Of **B.Tech Electrical Engineering** to Dr. BABASAHEB AMBEDKAR  
TECHNOLOGICAL UNIVERSITY, LONERE, is a project work carried out by  
him.

  
**Prof. S. K. Shaikh.**  
Guide

  
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## SHIV PAPER WORKS

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Date: -

### Sponsorship Letter

To,  
The Head of Department,  
Electrical Engineering.  
PVPIT Budhgaon.

This is to certify that, following students from Padmabhooshan Vasantraodada Patil Institute of Technology, Budhgaon Tal - Miraj, Dist - Sangli. are working under the guidance of **Prof. S.K. Shaikh.** On project titled (**Advanced paper glass bottom cutting machine**).

Hereby we have provided all technical and financial (Approximately Rs. 43000/-) sponsorship and guidance to them.

#### STUDENT NAME

Mr. Mayur Sanjay Sankpal.  
Mr. Omkar Nandkumar Hajare.  
Mr. Balaji Bhaskar Yadav.  
Ms. Tejal Laxman Suryawanshi.  
Ms. Sandhya Shailendra Sawant.

Place: - Sangli

Date: - April, 2024.

Thanking you,



Yours faithfully

**Shiv Paper Works**  
Vasantnagar, Sangli.  
9021893008,7588445554

### Research Paper

Sr.n o.	Title	Publication	Year
1	Design of Prototyping Food Dehydration Model	International Journal of Research and publication reviews	2023-2024
2	Transforming Industrial Control :Evolution and future Trends of PLC System	International Journal of Humanities Social Science and Management	2023-2024



## Design of Prototyping Food Dehydration Model

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### ABSTRACT

The project aims to design a Prototyping Food Dehydration Machine, utilizing innovative techniques for efficient and rapid dehydration of various food items. The machine integrates controlled temperature and airflow systems to optimize the dehydration process, ensuring preservation of nutritional value while extending shelf life. The prototype emphasizes user-friendly operation and cost-effectiveness, catering to small-scale food processing needs. Additionally, sustainability is considered in material selection and energy consumption. The outcome is expected to contribute to food preservation technologies, particularly in regions with limited access to traditional drying methods. The Prototyping Food Dehydration Machine project finds practical application in diverse scenarios such as home food preservation, small-scale food businesses, and community-based initiatives. Its user-friendly design caters to individuals with limited technical expertise, making it accessible for widespread use. The machine's efficiency and preservation of nutritional quality make it valuable in regions with limited access to conventional drying methods, contributing to food security and sustainability efforts. Additionally, its cost-effectiveness enhances its potential adoption in various settings, promoting local food processing and reducing dependency on external preservation methods. The Prototyping Food Dehydration Machine project abstract focuses on developing an advanced system for food dehydration. This innovative design incorporates precise temperature and airflow controls to enhance efficiency and preserve nutritional quality.

**Keywords:** Reducing moisture of food to low level, improved shelf life. To reduce wastage of foods and vegetables.

### INTRODUCTION

India ranks first in the world in production of fruits and second in vegetables, accounting roughly 10 and 15 per cent, respectively, of total global production. India have a strong and dynamic food processing sector playing a vital role in diversifying the agricultural sector, improving value addition opportunities and creating surplus food for agro-food products. Presently, 2.2 per cent of fruits and vegetables are processed, even as the country ranks second in the world in terms of production. Sometimes moisture degradation in the quality of fruits and vegetables also starts immediately after the harvest leading to drying and shriveling. Fruits and vegetables absorb environment gasses such as oxygen and produce carbon dioxide and ethylene. They also get infested easily with microorganisms like fungi, bacteria & insects affecting food safety. In villages where fruits and vegetables are grown in plenty, facilities for processing are not in existence and lot of them are wasted. In the country the whole food processing industry is still in nascent stage and presently less than 4% of horticultural produce is being processed industrially. Though needs of preservation by drying and dehydration of fruits and vegetables are important to enhance the value of the crops.

Dehydrating foods until there isn't enough moisture to enable microbial growth is known as drying. Drying eliminates the water that bacteria, yeasts, and molds require to thrive. If properly dried and kept, it can last a long time (safe for storage at room temperature). The drying food preservation process is simple to use, safe, and suitable for a wide range of foods. Oven drying and dehydrating using an electric dehydrator are two of the simplest and most frequent methods that may be utilized in any environment. Air drying (in the shade during hot weather), sun drying (limited to desert conditions), solar drying (needs specially constructed dryer), and pit oven drying (helpful when other methods are unsuitable) are the other options.

### 2. RELATED WORK

The machine has a heating element, a fan, a temperature sensor. The heating element heats the air, which is then circulated by the fan. The temperature sensor measures the temperature of the aThe machine also has a control system that monitors the temperature and adjusts the heating element and fan as needed to maintain the desired conditions. The machine also has a loading tray for the material to be dehydrated.

The material to be dehydrated is placed on the loading tray and the machine is turned on. The heating element heats the air, which circulates around the material and removes moisture. The temperature of the air are monitored by the sensors and the control system adjusts the heating





## Transforming Industrial Control: The Evolution and Future Trends of PLC Systems

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Date of Submission: 00-00-0000

Date of Acceptance:00-00-0000

### ABSTRACT:

This paper presents an in-depth exploration of Programmable Logic Controllers (PLCs), covering their hardware and software components, programming languages, advanced techniques, and applications across industries. It begins with an overview of PLC technology, discussing its historical background and fundamental principles. The paper examines PLC hardware, including architecture and I/O modules, and software aspects, such as programming languages like Ladder Logic and Structured Text.

Additionally, advanced PLC programming concepts are explored, including modular programming, error handling, and integration with other systems. Recent trends like IoT integration, edge computing, and enhanced HMIs are discussed, along with challenges such as cybersecurity threats and skill shortages. The paper concludes with insights into the future directions of PLC technology, emphasizing the importance of addressing current challenges and embracing emerging trends.

This paper serves as a valuable resource for researchers, practitioners, and students in the field of industrial automation and control systems, offering comprehensive insights into the evolving landscape of PLC technology.

### I. INTRODUCTION

Programmable Logic Controllers (PLCs) have become indispensable in the realm of industrial automation and control systems since their inception in the late 1960s. Initially developed to replace relay-based control systems, PLCs have evolved significantly, offering enhanced functionality, flexibility, and reliability. These robust and versatile devices are used to automate complex processes in various industries, including manufacturing,

automotive, energy, and building management systems.

The primary objective of this review paper is to provide a comprehensive overview of PLC programming, focusing on its historical development, key programming languages, advanced techniques, and contemporary applications. By examining the progression of PLC technology and the methodologies employed in their programming, this paper aims to highlight the current state of the art and explore future directions in the field.

This review is structured to cover the fundamental aspects of PLC hardware and software, delve into the specifics of various programming languages such as Ladder Logic, Structured Text, Function Block Diagram, and Sequential Function Chart, and discuss advanced concepts like modular programming, error handling, and system integration. Furthermore, it will explore the applications of PLCs across different industries, recent trends influenced by IoT and Industry 4.0, and the challenges and opportunities that lie ahead.

Through this comprehensive examination, readers will gain a thorough understanding of PLC programming, its significance in modern industrial applications, and the innovations driving its continuous evolution.

### II. LITERATURE REVIEW

The integration of Programmable Logic Controllers (PLCs) with advanced technologies such as Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) is revolutionizing industrial automation. This literature review examines the current state of PLC systems, their emerging trends, and future directions as discussed in recent scholarly and industry publications. The beginning of Industry 4.0 has significantly impacted PLC systems, pushing the boundaries of traditional automation. Kagermann et al. [1] highlight that Industry 4.0 focuses on the





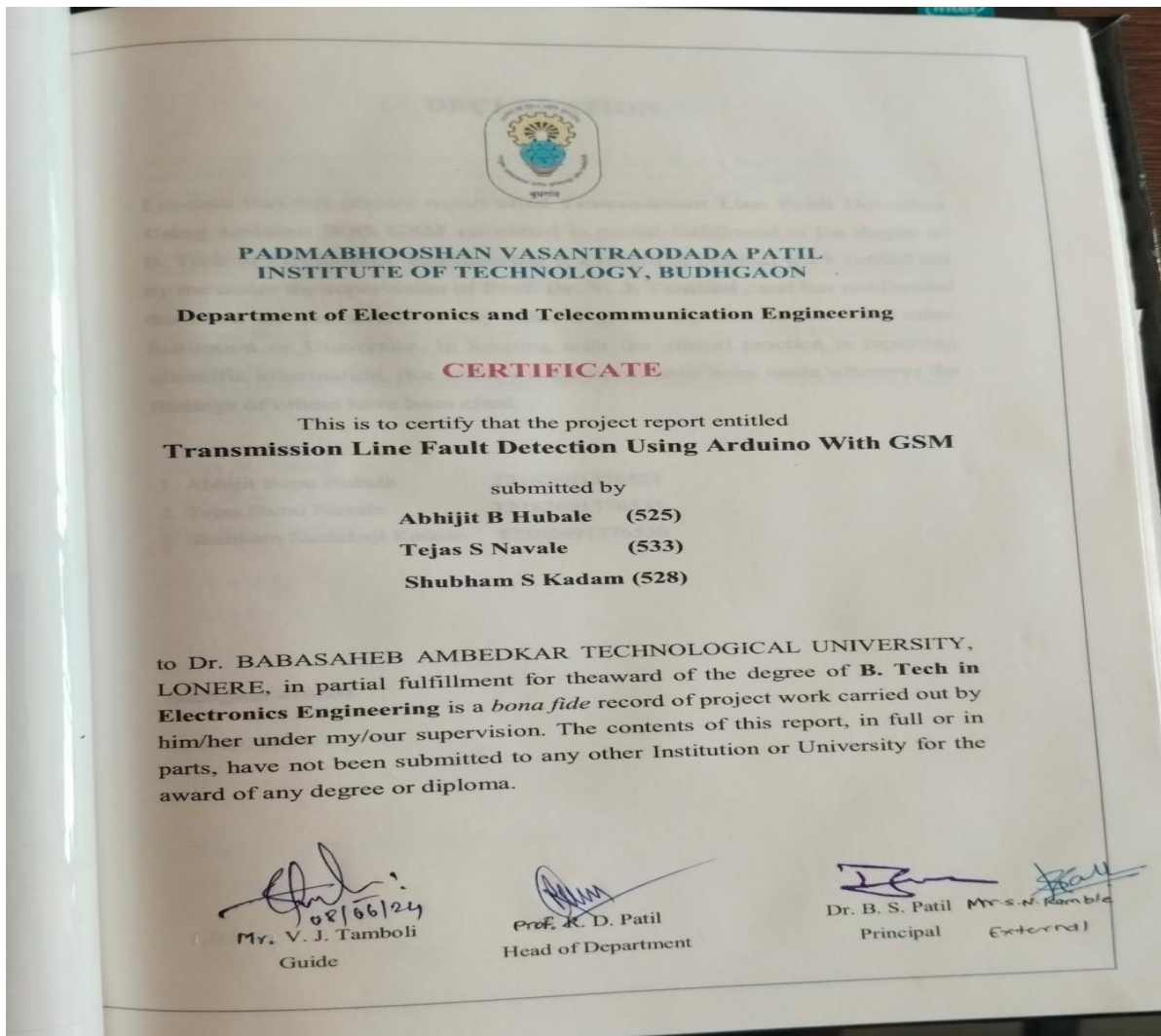
## Problem Solving Methodologies

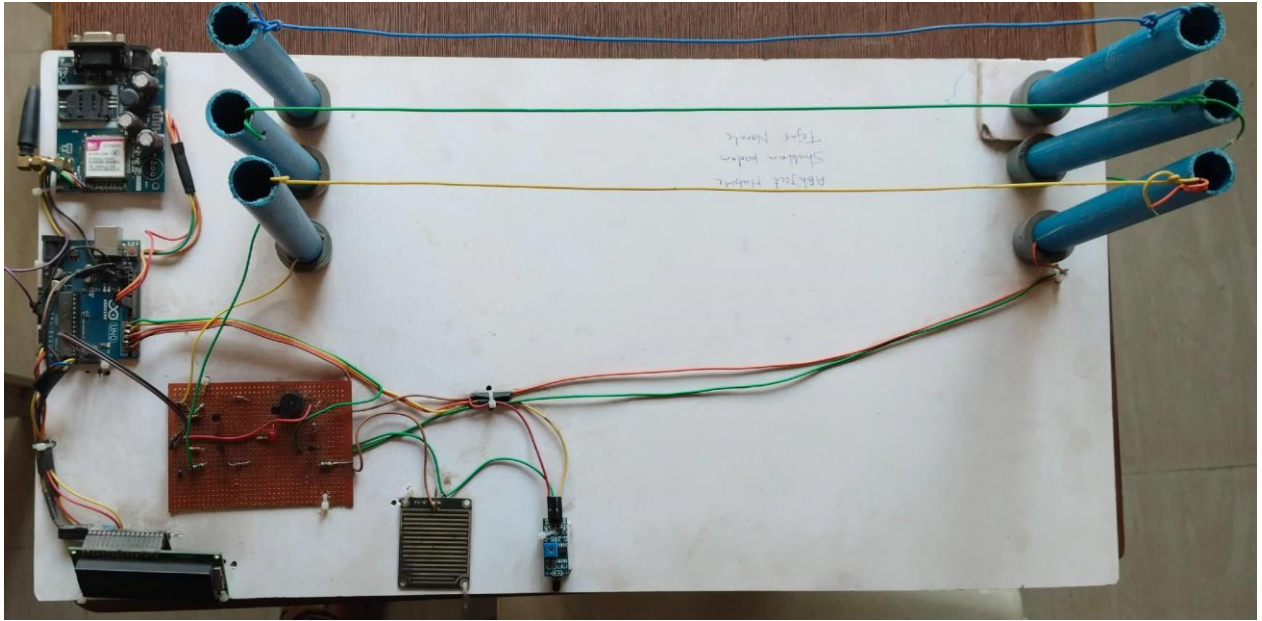
It includes following ways of learning. Proofs of the same are attached below.

### 1. Prototype developed

#### *Transmission Line Fault Detection Using Arduino with GSM*

As we can see in our physical vicinity, a malfunction in the transmission network is very frequent, and it is extremely hazardous for us. In all sectors of the electrical network, such as generation, and transmission, the complexity of the electricity network is increasing. As a result, complex network failures occur, resulting in numerous economic losses and reducing reliability. We should take precautions to fix this defect as soon as possible; if we fail to do so, it may result in a complete grid failure. Generally, 70% to 90 % of faults on overhead lines arise as a result of lightning strikes, storms, and flashovers, all of which are highly dangerous to society.





2. Case studies

3. Industry-supported/sponsored projects

#### 4. Research paper publication

1.



**International Research Journal Of Modernization  
in Engineering Technology and Science**  
(Peer-Reviewed, Open Access, Fully Refereed International Journal)

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*Certificate of Publication*

*This is to certify that author "Archana Bhandare" with paper ID "IRJMETS60600030264" has published a paper entitled "RAISIN SORTING USING MACHINE LEARNING ALGORITHM" in International Research Journal Of Modernization In Engineering Technology And Science (IRJMETS), Volume 06, Issue 06, June 2024*

*A. Desai*  
Editor in Chief



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# RAISIN SORTING USING MACHINE LEARNING ALGORITHM

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## ABSTRACT

This project ensures that raisins meet the good & high quality standards for maintaining consumer satisfaction. Sorting helps eliminate defective raisins, ensuring only the best quality reaches the market. Manual sorting process takes a lot of time and also have a possibility that sorting between good and bad raisin is not properly done. Automated sorting ensures uniformity in size, color, and texture, making sure each batch meets consumer expectations. Proper sorting is essential for adhering to food safety. This project aims to determine the quality of raisins through analysis and evaluation. This project seeks to establish a strong methodology for assessing raisin quality, addressing key factors such as color, shape, sizes, texture, and visual appearance. In this project we used convolutional neural network (CNN) model for raisin sorting. As we know CNN model require data set, so we have taken both good and bad quality raisin images for our learning model.

**Keywords:** Dataset, Raisin Sorting, Convolution Neutral Networks(CNN).

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## I. INTRODUCTION

Ensuring high-quality raisins is crucial for maintaining customer satisfaction and brand reputation. Sorting out bad or poorly dried raisins ensures only the best reach the market, fostering consistent quality and customer trust. Automated sorting systems achieve uniform size, color, and texture, meeting customer expectations and enhancing food safety by removing potentially harmful raisins. The efficient sorting of agricultural produce, such as raisins, is vital in modern food processing, ensuring product quality, operational efficiency, and consumer satisfaction. Manual sorting, though effective, is labor-intensive and inconsistent, driving the need for automated solutions powered by machine learning. High-quality sorting commands premium prices, enhances market value, and boosts profitability. Machine learning-based sorting improves efficiency, reduces manual labor, speeds up processing, and increases accuracy, leading to higher throughput and cost savings.

Advanced sorting minimizes waste by accurately classifying raisins, ensuring only defective ones are discarded, optimizing resource use. Investing in machine learning technology gives companies a competitive edge,

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# Health Monitoring using Raspberry Pi as Fog device and IOT Sensors as Edge Devices

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## ABSTRACT

In this paper a health monitoring system that supports edge, fog, and cloud computing architecture is implemented. Edge, fog computing is all about bringing the power of the cloud closer to where the data is being generated. It combines edge computing, fog computing and cloud computing to create a distributed network that can handle data processing, storage and analysis at the stage of edge and fog level of the network. This means that instead of sending all the data to a centralized cloud server, it can be processed and analyzed right where it's being generated, reducing latency and improving response times. The system utilizes IoT sensors as edge devices to collect real-time health data from individuals. This data is collected by the edge device, then processed and analyzed by fog devices and cloud computing is indeed used in health monitoring system for storage.

In this health monitoring system, the IoT sensors act as the "eyes and ears" of the system, collecting health data such as heartbeat and temperature. Therefore, combination of cloud computing and IoT can provide the best performance for users. Cloud Computing nowadays provides life-saving healthcare applications by collecting data from bedside devices viewing patient information and diagnosis in real time. There may be some concerns about security and other issues with the patient's data, but utilization of IoT and cloud technologies in the healthcare industry would open a new era in the field of healthcare.

## General Terms

In this project, we work on the computing methods of edge computing, Fog Computing, Cloud Computing, Internet of Things (IoT), Health Monitoring, Data Processing, Real-Time Monitoring, Sensor Networks.

## Keywords

Edge Computing, Fog Computing, and Cloud Computing, Arduino UNO, Raspberry Pi, IoT Sensors.

## 1. INTRODUCTION

Internet of Things is one of the fastest growing industries bringing social and economic benefits to emerging and developing economies. The Internet of Things (IoT) is a collection of interconnected computing devices, physical devices and sensors with unique identifiers and the ability to

carry data over a network without human or computer intervention. IoT enables remote control of systems over the Internet. IoT is gaining traction in many sectors such as medicine, transportation and agriculture. These sensors act as vanguards for data collection and capturing real-time health measurements with high accuracy and reliability information. The collected data is then transmitted to nearby fog nodes, where Raspberry Pi devices are used to perform initial data preprocessing. The fog layer acts as an intermediate computing bridge. Offering proximity to edge devices and reducing communication overhead between edge and cloud components. Raspberry Pi collects data from sensors and then transfers it to the cloud. Cloud computing is a general expression for any technical service provided over the Internet. Using sensors in our project has many advantages. Which is real-time monitoring, cost effectiveness, scalability, accessibility. Basically, we focus on the idea of integration between IoT sensors, Arduino UNO, Raspberry Pi and cloud computing. Health sensors attached to the patient's body provide services such as receiving, storing and processing data after collecting the data and sending it to the cloud.

## 2. RELATED WORK

2.1 Muhammad S. Jassas et al. [1]. The cloud-based system focuses on body temperature monitoring using a Raspberry Pi board. In this paper, Raspberry monitors body temperature and then these parameters are transferred through a wireless sensor network (WSN). This data is then added to a cloud-based website. Using this website, one can monitor body temperature.

2.2 Deepika Agarwal et al. [2]. An IoT-based healthcare monitoring system is proposed that integrates all medically relevant data on patients including heart rate, blood pressure and ECG and sends alerts to the patient's doctor regarding the patient's entire medical context, providing informed, fast and reliable healthcare services.

2.3 Ravi Kishore Kadali etc. [3]. Proposed healthcare monitoring, which is implemented to check the patient's temperature. Hospital records are stored in the cloud. IoT-enabled devices here at the same time regularly enrich the quality of care actively monitor and collect data and control the cost of care and analytics.

2.4 Jasmot Chhabra and others. [4]. Propose a plan and emergency medical service-based implementation on an IoT

## 5. Patents

**Dr. Vasantrodada Patil Shetkari Shikshan Mandal's**  
**PADMABHOOSHAN VASANTRODADA PATIL INSTITUTE OF TECHNOLOGY, BUDHGAON-416304**  
**Civil Engineering Department**  
**(A.Y.2023-24)**

Sr. No	Name of Student	Title of Paper	Journal Name/Name of Conference
1	SUDHIR SURYAVANSHI	Flexural Strength Of Prediction Of RC Beams With Partial Replacement Of Cement With GGBS	Emerging Trends In Civil Engineering .ETCE 23-WCE Sangli
	.PRATHMESH PATIL		
	VAIBHAV SHERIKAR		
	VISHWARAJ PAWAR		
	RAVINDRA DHADAS		
2	VAISHNAVI SUTAR	Novel Approaches To Enhancing The Characteristics Of Concrete	Emerging Trends In Civil Engineering. ETCE 23-WCE Sangli
3	SANKET ATHAVALE	Prototype Modeling Of RCC Frame Structure And Load Bearing Structure	International Journals Of Research And Analytical Reviews
	NILESH KALKUTAGI		
	RUTUJA ALATEKAR		
4	Shritej Mukundraj Sadakale	Review on Construction of Hybrid wetland for Domestic Waste Water	Emerging Trends In Civil Engineering. ETCE 23-WCE Sangli
	Prakash Ashok Suryawanshi		
	Ashish Chandrakant Chavan		
	Samruddhi Sanjay Patil		
	Sonali Samir Satpute		
5	M. Mali	Comprehensive review of fresh concrete properties	Emerging Trends In Civil Engineering. ETCE 23-WCE Sangli
	Jaydeep L. Patil		
	Shreyas V. Gaikwad		
	Anant M. Mule		
	Sourabh A. Chavan		
	Prasad Desai		
6	Shritej Mukundraj Sadakale	Constructing Hybrid Wetland For Domestic Waste Water	International Journal for Research Trends and Innovation June 2024 Volume 9, Issue 6   ISSN: 2456-3315
	Prakash Ashok Suryawanshi		
	Ashish Chandrakant Chavan		
	Samruddhi Sanjay Patil		
	Sonali Samir Satpute		
7	Aditya Gondil	Review Assessment on Seismic and Wind Analysis of Steel Structures	Emerging Trends In Civil Engineering. ETCE 23-WCE Sangli
	Pritee Balu Gadade		
	Yash Bodke		
	Vijaya Chavan		
	Sakshi Patil		



## Forest Fire Detection Using IoT

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**Abstract** - India has 67.5 mHa of Forest cover, of which 44 mHa (65%) is prone to forest fires annually, causing a loss of approximately 105 million US dollars. The annual cost of fighting conventional forest fires with petrol is close to Rs 44 million. massive amount of fires that appear out of the blue. economic and ecological effects. The number of fires worldwide is rising. Wildfires are uncontrolled fires that seriously harm both natural and societal resources. Once the fire is started, it spreads quickly throughout the forest, causing enormous damage. Wildfires can occur for a variety of reasons, including lightning, extremely hot and dry weather, a severe drought, and human ignorance. Forests have suffered significant damage over the previous ten years, with the majority of those mishaps being brought on by forest fire. This IoT-based system uses a variety of sensors to rapidly identify wildfires. Using an Internet of Things NodeMcu module, it sends data to a server and notifies the system of the fire. This device will aid in the early detection of wildfires, making it easier to put them out or control them and preserving precious forest life.

**Key Words:** 44mHa (65%), 44 million, IoT, NodeMcu, Server, Notifies,

### 1. Introduction

The forest plays a very important role in any country and in mankind as a whole. They contribute to the environmental, economic, and social well-being of the country. The forests are very crucial for the survival of the wildlife and also play an important role in the food chain to maintain the ecological balance. All of us depend on the forest for our survival, which includes activities from the air we breathe to the wood we use. In addition to providing homes for animals and a means of subsistence for people, forests also protect watersheds, prevent soil erosion, and lessen the effects of climate change.

A wildfire is an uncontrolled fire that causes significant damage to natural and human resources. Once the fire starts to ignite, it rapidly spreads all over the forest and results in massive destruction. Some of the reasons for wildfires are lightning, extreme hot and arid weather, severe drought, and human unawareness. Over the past decade, there has been enormous destruction in the forest, in which the majority of those accidents were caused by forest fire.

This is an IoT based system that detects wildfire instantly through different sensors and using the Internet of Things, node

mcu module, it sends data to the server and warns the system about wildfire. This system will help detect wildfires at an early stage so that stopping or controlling them becomes easy, saving valuable forest life.

### 2. Literature Survey

This paper describes an IOT-based forest fire detection system. The only options to prevent significant losses and damage to the environment and cultural heritage are early warning and quick action in the event of a fire outbreak. So, the quickest and most accurate fire detection and localization are the main objectives of fire surveillance. It is much simpler to put out a fire in its early stages and when the originating point is recognized. For managing the fire throughout all of its stages, information concerning the fire's development is also quite helpful. based on these facts. Robots are used in the current system to put out fires, however they have their own benefits and drawbacks. Through a variety of sensors and the IOT cloud, this system attempts to detect and monitor forest fires. Continuous monitoring and value uploading to the cloud are both possible [1]

We are implementing the idea to rescue forests in our proposed system utilizing IOT as the foundation. It is well-known that it is a hot issue and is simple to obtain. We have used sensors like flame sensors and DHT sensors, which work with the Arduino Uno platform based on the given code. The sensor values are updated using a cloud platform called Firebase. When the predefined threshold value changes, the device automatically notifies the user via an app as to whether smoke or fire has been detected.[2]

This system's foundation is a network of infrared sensors. This method, which is based on infrared image processing, instantly detects any fire in the forest to ascertain if it is present or not. Widespread usage of sensor networks makes it possible for humans to monitor vast forest tracts. This study describes a method for using IR sensors to automatically monitor forests. The paper solely discusses utilizing image processing to detect fires and relay photographs of such fires.[3]

The primary goal of the proposed system is to combat forest fires and identify them, which involves using the earliest fire detection techniques, correctly classifying fires, and having quick responses from forest officials. They thus employ various cutting-edge technologies, including as drones that continuously patrol the fire area and artificial intelligence (AI). In order to



## Smart Helmet For Making Motorcycle Ride Safer

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**Abstract** - Motorcycle safety is a critical concern, and the smart helmet project aims to address this by integrating advanced sensor technology and wireless communication systems. This smart helmet can prevent the motorcycle from starting if the rider isn't wearing the helmet or if the rider is intoxicated, ensuring safer riding practices. Additionally, the helmet is equipped with accident detection capabilities, sending real-time location alerts to designated contacts via SMS using GPS and GSM technology. The system consists of two modules: one embedded in the helmet and the other on the motorcycle. These modules communicate wirelessly using RF signals, managed by an Arduino microcontroller. The helmet module includes an alcohol sensor, IR sensor, and accelerometer, while the bike module contains the RF receiver, GPS, GSM, and a relay to control the engine. This innovative smart helmet system enhances rider safety by promoting responsible behaviour and providing immediate assistance in case of an accident, making motorcycle riding significantly safer.

**Key Words:** Smart Helmet, Motorcycle Safety, Sensor Technology, Wireless Communication, Accident Detection.

### 1. INTRODUCTION

Motorcycle riding can be dangerous, and safety is a big concern for riders. The smart helmet is a new and innovative solution designed to make riding safer. By using advanced sensors and wireless communication, this helmet can do a lot more than just protect your head. It can stop the motorcycle from starting if you're not wearing the helmet or if you've had too much to drink. This helps ensure that only safe and responsible riders are on the road.

The smart helmet also has features to detect accidents. If you crash, it can automatically send a message with your location to family members or emergency services, helping them reach you quickly. This is made possible through GPS and GSM technology.

Our project includes two main parts: a module in the helmet and a module on the bike. These parts talk to each other wirelessly using RF signals and are controlled by an Arduino microcontroller. The helmet module has sensors to detect alcohol, check if the helmet is worn, and measure sudden impacts. The bike module has a receiver for the RF signals, a GPS for location, a GSM for sending messages, and a relay to control the engine.

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This smart helmet system is designed to make motorcycle riding much safer. By encouraging responsible behavior and providing quick help in case of an accident, it offers peace of mind to riders and their loved ones.

### 2. LITERATURE REVIEW

Jennifer William, Kaustubh Padwal, Nexon Samuel, Akshay Bawkar, and Smita Rukhande [1] proposed a smart helmet system aimed at ensuring rider safety by enforcing helmet usage and checking for alcohol consumption before starting the bike. If either safety rule is violated, the system prevents the bike from starting. Additionally, in the event of an accident, the system automatically sends an SMS with the rider's location to the police station, facilitating prompt medical attention for the victims.

Manjesh N. Prof. Sudarshan Raj [2] provided insights into a similar system where the helmet detects wearing status and alcohol levels, alerting family members via SMS in case of an accident. They utilized GSM technology for transmitting accident information through SMS, employing a GSM module equipped with a SIM card slot for communication.

Manjesh N. Prof. Sudarshan Raju C H [3] explained the operation of a smart helmet equipped with vibration sensors strategically placed within the helmet to detect crashes. Upon impact detection, the sensors relay the information to a microcontroller board, which then extracts GPS data using an interfaced GPS module. If the stress exceeds a predefined threshold, the GSM module automatically sends a distress message to an ambulance or family members.

Mr. K. Nishanth Rao, Mr. S. V. S. Prasad, G. Veerababu, D. Akash, P. Udaychowdary, R. Naga Venkataramana [4] introduced a system focused on locating vehicle accidents by embedding a system within the vehicle. Their approach utilizes a basic microcontroller, AT89S52, for cost-effectiveness while aiming to enhance vehicle security.

Yash Pandav, Darshan Siroya, Keyur Gajera, Shweta Gaur [5] discussed a helmet system that prevents bike ignition if the rider isn't wearing the helmet or if alcohol consumption exceeds a set threshold. Their system prioritizes preventing head injuries and accidents by ensuring safe riding practices.

K. Rambabu, B. Premalatha, and C. Veeranjanyulu [6] implemented wireless communication between the helmet, bike, and traffic signals. They employed ZigBee and RF protocols with an Arm-7 Microcontroller for communication, aiming to