

Institute of Business Management (IoBM)

College of Engineering & Sciences (CES)

Electrical Engineering Department



ABSTRACTS OF SENIOR DESIGN PROJECTS

BATCH -2019

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Students List

S.No	Student Name	Student ID	Project Title
1.	Kelash	20192-25180	Smart Waste-Water Treatment Plant System
2.	Farhan Ahmed Khushik	20192-25187	
3.	Muhammad Rashid	20192-25179	
4.	Mahesh Kumar	20192-25189	Image Processing Size Verification Parcel Sorting Conveyor
5.	Gobind Ram	20192-25186	
6.	Dhanesh Kumar	20192-25191	IoT-Based Smart Management of Poultry Farm
7.	Abdul Ghaffar	20192-25183	RFID Based Smart Parking and Payment Charging System
8.	Dheeraj	20192-25192	Motor Health Monitoring Using Internet of Things
9.	Hareesh Kumar	20192-25184	
10.	Jitesh Kumar	20192-25190	
11.	Farman Ali	20192-25185	IoT Based Monitoring and Dual Axis Tracking of Solar Panel
12.	Abdul Wahab	20192-25181	
13.	Muhammad Huzefa	20192-25186	

Project Title	Smart Waste-Water Treatment Plant System
Students	Kelash (20192-25180) Farhan Ahmed Khushik (20192-25187) Muhammad Rashid (20192-25179)
Supervisor	Mr. Osama Mahfooz
Email	mahfooz.osama@iobm.edu.pk

ABSTRACT

The demand for safe drinking water was exacerbated by the spread of water-borne diseases and the reduced clean water during 2022 Pakistani floods. The existing water treatment plants are not maintained on a periodic basis resulting in worsening Total Dissolved Solid (TDS) levels of water especially in rural cities of Pakistan where TDS of water is very high. Here we design and implement an IoT based smart waste-water treatment plant system that relies on TDS rather than time to monitor the health of the system. The proposed shows real time TDS of water at each stage of filtration process, pH level, flow rate for multiple sources in the IoT based mobile application that helps identify the health of each component in the system so that water quality is not compromised and avoid lead time for production of pure water. The results reveal drinkable range and help in proactive maintenance implementation

Project Title	Image Processing Size Verification Parcel Sorting Conveyor
Students	Mahesh Kumar (20192-25189) Gobind Ram (20192-25186)
Supervisor	Mr. Rashid Qutub
Email	rashid.qutub@iobm.edu.pk

ABSTRACT

Conveyor Belt Sorting using Image Processing technique is modern tool in industry to work fast and efficiently. Object Detection, Image Processing are a growing field of technology either in Artificial Intelligence or Machine Learning. Our project uses computer vision algorithms to analyze images of materials on a conveyor belt, identify the materials, and sort them into appropriate categories. This technology has the potential to increase sorting speed, accuracy, and reduce manual labor. Overpopulation has besieged demand of everything with diminishing resources, so, to tackle these problems it is taken into consideration to install higher efficient and lesser man-power consuming techniques. Our project is tasked to reduce man-power, fewer errors and efficient sorting of boxes and parcels. We considered the recommendations and hypothesis observed after visiting a few industries using such technology and few wanted to shift sorting department to this technology. Three different sized boxes took as samples and put into exercise. Smooth sorting of defined boxes observed at the end. Project was completed and successfully secured the objectives defined.

The challenges industries facing to implement this is that the said technology is imported. Local production will be highly productive and demanding for industries and economy of the country. We put forth the efforts to gain all the objectives to make it a sustainable, feasible and efficient project.

Project Title	IoT-Based Smart Management of Poultry Farm
Students	Shanker Singh (20182-23342) Dhanesh Kumar (20192-25191)
Supervisor	Ms. Tahniyat Aslam
Email	tahniyat.aslam@iobm.edu.pk

ABSTRACT

One of the agricultural sector's fastest-growing economic areas in our nation is poultry. Over the past few decades, the global production of chickens has gradually increased due to standardized farming management and efficient manufacturing techniques. Automation is a key factor in the modern world. Because it transforms manual processes into automated ones, the Internet of Things (IoT) idea is gaining popularity quickly. Our project aims to automate a chicken farm by employing IoT technology to carry out various management-related activities. A feedback mechanism is used to control the water supply and air-providing system while environmental elements that affect the health of the chickens, such as humidity, temperature, and unwanted gases are analyzed. We have monitored the temperature ($^{\circ}\text{C}$), humidity (%), and gas status (%) of three classes of objects (A, B, and C). The temperature and humidity sensor (DHT11) is placed in the chicken's coop and monitored the temperature and humidity at different intervals of time. The threshold temperature level is fixed at 33°C and humidity is fixed at 65 %. A gas sensor (MQ135) is placed inside the chicken's coop to detect the different harmful gases inside the coop. The expected weight of the broiler is also predicted using a digital image processing technique. We have measured the estimated weight of different chickens (A, B, and C) through image processing using the Tensor Flow algorithm. The proposed project is beneficial to poultry farm workers who use traditional farming methods. Instead of manual checking, this project will allow them to manage the chickens on the farm remotely using their cellular phones. If all of these parameters are fulfilled, the quality of the chickens will improve and production will increase. Our project framework is a combination of the concept of IoT and an image processing technique. The IoT-based system is used for observing real-time parameters such as temperature, humidity, and unwanted gas. The estimated weight of the chickens is constantly monitored using image processing technology. The proposed project is an affordable and efficient, IoT-based smart system for monitoring and maintaining a healthy environment for chickens on the farm.

Project Title	RFID Based Smart Parking and Payment Charging System
Students	Abdul Ghaffar (20192-25183) Noufil Zahid (20202-27236)
Supervisor	Dr. Irfanullah Khan
Email	irfanullah.khan@iobm.edu.pk

ABSTRACT

The study shows the impact of the Internet of Things (IoT) on urban infrastructure, we specifically focus on addressing traffic congestion and parking challenges through the making of a smart parking system (SPS). In this report, we have used raspberry pi to make a prototype of the SPS. The proposed system has various innovative features enabled by IoT technology. It includes quick identifications of available parking spaces, and a mobile application will guide drivers to these parking spaces. Additionally, our SPS has cameras installed at the entrance of the parking lot, used for license plate scanning. Moreover, our parking area is divided into two areas authorized and unauthorized to make our system better organized and controlled. Our results of the study demonstrate the effectiveness of the SPS prototype in finding parking challenges. The SPS parking spot detection improves the efficiency of finding parking spaces, which reduces traffic congestion caused by vehicles searching for available spots. We have a mobile application that provides guidance and enhances the overall convenience and user experience for drivers. Our study shows the potential of IoT in transforming urban infrastructure and getting the better of urban challenges. Our SPS prototype development highlights the innovative capabilities of IoT technology in addressing traffic congestion and parking problems. Our research contributes to the growing body of knowledge on IoT applications in urban domains, highlighting the opportunities for creating smarter, more efficient, and sustainable cities.

Project Title	Motor Health Monitoring Using Internet of Things
Students	Dheeraj (20192-25192) Haresh Kumar (20192-25184) Jitesh Kumar (20192-25190)
Supervisor	Engr. Muhammad Asghar Khan
Email	muhammad.asghar@iobm.edu.pk

ABSTRACT

A cutting-edge solution that uses the Internet of Things (IoT) to revolutionize how motor health is monitored and maintained across many industries is called the Motor Health Monitoring System. In-depth study of the project is presented in this paper, with special emphasis on its significance, objectives, methods, findings, and implications. The goal of this project is to provide a sophisticated motor health monitoring system that allows for remote access to vital motor performance data as well as real-time monitoring and preventative maintenance. Utilizing IoT capabilities, the system gathers and analyses data from numerous sensors, giving businesses the ability to proactively identify possible problems, optimize energy use, decrease downtime, and boost operational efficiency. Key technologies, approaches, and case studies linked to motor health monitoring are examined through a thorough literature analysis. The research highlights the enormous potential of IoT-based monitoring systems for remote monitoring, enabling predictive maintenance, and enhancing energy efficiency. It also explores various sensor types and IoT gadgets used to keep an eye on motor health, highlighting how crucial it is to choose the right sensors to keep an eye on particular characteristics. The system's design, which makes use of a variety of sensors and controllers, is thoroughly explored, demonstrating how it can gather data in real-time and set thresholds for important motor performance metrics. The system's scalability and accessibility are improved by the incorporation of an ESP-32 controller and the use of cloud technology, which allow for seamless data transmission, storage, and remote access. The implementation of the motor health monitoring system is subject to critical engineering analyses that take into account potential hazards and obstacles. To achieve a solid and dependable solution, factors like data security, privacy, system scalability, and compatibility with existing IT infrastructure are carefully analyzed. A number of experiments and tests are conducted to validate the system's efficacy, examining its performance under various operational circumstances. The outcomes show the system's capacity to offer in-the-moment insights, spot anomalies, and enable prompt maintenance actions, thereby lowering equipment failure and related costs. The final section of the research discusses the broader effects and advantages of the motor health monitoring system across a range of sectors, including manufacturing, energy, and transportation. It emphasizes the system's capacity to improve motor efficiency.

Project Title	IoT Based Monitoring and Dual Axis Tracking of Solar Panel
Students	Farman Ali (20192-25185) Abdul Wahab (20192-25181) Muhammad Huzefa (20192-25186)
Supervisor	Ms. Fatima Maqbool
Email	fatima.maqbool@iobm.edu.pk

ABSTRACT

The Industrial revolution accelerated the demand of electricity hence the electricity was generated on a large scale throughout the globe which resulted the increase in climate crises. In the late 20th century the think tanks started discussing the importance of renewable energy which doesn't harm our planet. Along with the other types of renewable resources like wind and bio fuels the solar energy has also been used throughout the world. The solar energy is easily accessible and solar plants need less maintenance as compared to the other sources of energy. IoT based solar system has been designed which gives approximately 30% higher efficiency as compared to the existing conventional solar panels and 6% higher efficiency as compared to single axis tracking systems. Our system uses the dual axis tracking of sun which enables it to give the higher efficiency. It also monitors and keeps record of the temperature, output voltage and humidity. The project has a salient feature of portability which enhances the number of applications.