

JILID 4

Inventori Projek Akhir Pelajar JKE

Penulis:

Wan Mohd Zamri Bin Wan Ab Rahman
Nur Suriya binti Mohamad
Zabidah binti Haron
Noranizah Binti Sarbani
Wan Norhidayah Binti Mohamed Noor

INVENTORI

PROJEK AKHIR PELAJARAN

Jilid 4

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Hak cipta terpelihara. Tiada bahagian daripada terbitan ini boleh diterbitkan semula, disimpan untuk pengeluaran atau ditukarkan ke dalam sebarang bentuk atau dengan sebarang alat, sama ada dengan cara elektronik, gambar dan rakaman serta sebagainya tanpa kebenaran bertulis daripada Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) terlebih dahulu.

INVENTORI

Projek Akhir Pelajar JKE

Jilid 4

Authors:

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KATA ALUAN KETUA JABATAN KEJURUTERAAN ELEKTRIK

Assalamualaikum dan Salam Sejahtera.

Pertama sekali marilah kita memanjatkan kesyukuran kepada Allah s.w.t. kerana dengan izinNya Jabatan Kejuruteraan Elektrik PSA telah berjaya menerbitkan satu penulisan ilmiah dalam bentuk e-book yang dikenali sebagai buku INVENTORI PROJEK AKHIR PELAJAR JKE. Buku ini mengumpulkan projek akhir pelajar yang telah dihasilkan oleh pelajar program Diploma Kejuruteraan Elektronik Kawalan (DJK), Diploma Kejuruteraan Elektronik Komunikasi (DEP) dan Diploma Kejuruteraan Elektronik Perubatan (DEU), PSA pada Sesi I 2024/2025 dan Sesi II 2024/2025.

Buku ini diterbitkan bertujuan untuk memberi ruang dan peluang kepada pelajar JKE berkongsi penyelidikan ilmiah masing-masing dengan pihak lain dalam usaha mengembangkan lagi ilmu pengetahuan. Ilmu memainkan peranan penting dalam perkembangan teknologi masa kini seterusnya dapat meningkatkan kemajuan negara. Proses pencarian dan pemindahan ilmu baru terutamanya di dalam bidang TVET perlu terus berlaku di kalangan seluruh warga politeknik.

Saya amat berharap agar setiap tahun semua pelajar JKE, PSA akan tampil merebut peluang bagi menyumbangkan hasil penyelidikan ilmiah masing-masing. Tidak lupa juga ucapan syabas dan tahniah yang tidak terhingga kepada penulis-penulis kerana telah memberikan komitmen tinggi dalam menjayakan penerbitan e-book ini.



PRAKATA

E-book hasil projek akhir pelajar ini turut berfungsi sebagai platform untuk pelajar mengembangkan potensi, mempamerkan keupayaan dan mempraktikkan ilmu yang telah dipelajari melalui percambahan fikiran dan penyelesaian masalah secara inovatif bagi menghasilkan projek yang bermutu. Diharapkan ianya dapat dimanfaatkan sebaiknya dalam memperkasakan pelaksanaan projek pelajar di Politeknik Malaysia di samping menjadi pendorong untuk melahirkan graduan TVET yang berkualiti dan holistik, selaras dengan hasrat Pelan Pembangunan Pendidikan Malaysia 2015-2025 (Pendidikan Tinggi) dan mesra industri. Kursus Projek 1 (DEE40082) memberi pengetahuan berkenaan kaedah pelaksanaan dan pembangunan projek berdasarkan perkakasan atau perisian atau gabungan perkakasan dan perisian. Kursus ini memberi pendedahan kepada pengurusan projek dan kewangan, teknik untuk membangunkan projek dan penyediaan cadangan. Manakala Projek 2 (DEE50102) adalah kesinambungan kursus projek 1. Kursus ini memberi tumpuan kepada kaedah pembinaan litar, ujian, penyelesaian masalah, penyahpepijatan, pembaikan dan juga penyiapan projek yang telah dirancang pada semester sebelumnya. Kursus ini juga memerlukan pelajar untuk menguruskan projek berasaskan kejuruteraan ekonomi, menyediakan laporan projek dalam format tertentu dan menyampaikan pembentangan projek pada akhir semester.

Tentang Penulis

Inventori Projek Akhir Pelajar JKE



**WAN MOHD ZAMRI
BIN WAN AB RAHMAN**

Pensyarah Diploma
Kejuruteraan
Elektronik Kawalan



NUR SURIYA BINTI MOHAMAD

Pensyarah Diploma
Kejuruteraan
Elektronik Komunikasi



**WAN NORHIDAYAH
BINTI WAN MOHAMED NOOR**

Pensyarah Diploma
Kejuruteraan
Elektronik Kawalan



NORANIZAH BINTI SARBANI

Pensyarah Diploma
Kejuruteraan
Elektronik Kawalan



ZABIDAH BINTI HARON

Pensyarah Diploma
Kejuruteraan
Elektronik Komunikasi

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IOT TECHNOLOGY INSULIN PEN

SUPERVISOR NAME: PN. FA'IZAH BINTI YA'ACOB
STUDENT NAME: NURUL AWATIF BINTI ZAKARIA
(08DEU22F2009)

INNOVATION DESCRIPTION

IoT Technology Insulin Pen designed to solve the problem of patients having difficulty managing their insulin injection, which often leads to missed doses by detecting the amount of insulin remaining in the cartridge and providing alert, the project aims to simplify the process for user and improve insulin management the device will connect to a Blynk IoT platform to monitor insulin usage and send notification to the user.

PROBLEM STATEMENT

- **Schedule:** Many individual with diabetes struggle to stick to their insulin injection schedules.
- **Replacement:** User often find it difficult to know when to replacement insulin cartridge due to the lack of reliable measurements.
- **Solution:** This situation underscores the need for solutions that provide real time monitoring and alert.

OBJECTIVE

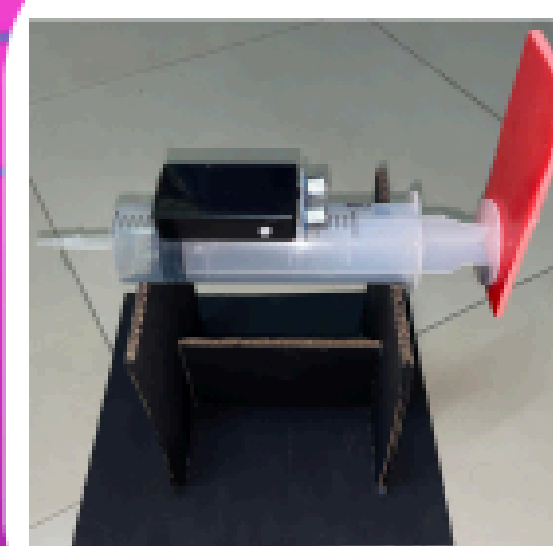
- To monitoring the remaining amount insulin units and how many days they will last.
- To notify when insulin is running out for replacement using Blynk IoT.

RESULT & IMPACT OF PROJECT

Unit Insulin Level For Patient Diabetes

Time	Unit	Milileter
Morning	10 unit	0.1 ml
Evening	10 unit	0.1 ml
Total	20 Unit (1 day)	0.2 ml
Total usage for 1 month	600 unit	6ml

- **Advantages:** Easy to use, portable, and send alert to phone.
- **Market potential:** For all diabetic patients, helpful for caregiver, and can use at home.
- **Impact:** Reminds to take insulin, prevents missed doses, improves daily life



TI-PEN prototype



Data from Blynk



TAJUK : LED TV TRAINER

Nama Pelajar : MUHAMMAD DANISH BIN MOHAMAD HASRY
No. Pendaftaran : 08DJK22F1043
Nama Penyelia : WAN MOHD ZAMRI BIN WAN AB RAHMAN

Problem Statement:

With the increasing complexity of modern LED TV technology, training technicians and electronics students to diagnose, repair, and troubleshoot various TV issues has become more challenging. Most traditional training methods are theoretical and lack practical exposure to real-life problems that technicians encounter. There is a need for an effective and practical training tool that provides hands-on experience with the internal workings of LED TVs, allowing learners to understand circuits, components, and common issues in a safe, controlled environment.

1. **Result:** Provides hands-on training for LED TV diagnostics and repair, enhancing practical skills.
2. **Impact:** Improves learning outcomes, boosts employment prospects, and supports technical education.

3. **Advantage:** Affordable, safe for beginners, and ideal for repetitive practice without damaging real TVs.
4. **Market Potential:** Educational institutions, training centers, and hobbyists interested in electronics repair.
5. **Disseminate Innovation:** Use online platforms, industry workshops, and partnerships with educational institutions to promote adoption.

Objective:

Design and develop an LED TV Trainer that simulates the real functioning of an LED television. The trainer should include accessible modules that replicate the internal components of an LED TV, such as the power supply board, main board, and display unit, allowing trainees to diagnose and repair faults. The trainer should also allow for the intentional introduction of faults for troubleshooting practice, helping students gain hands-on experience in TV maintenance and repair.

1. **Innovation Explanation:** A tool for learning LED TV diagnostics and repair, designed for hands-on education.
2. **Innovation Background:** Addresses the need for accessible, practical training in LED TV repair as demand grows.
3. **Spark of Idea:** Inspired by the need to provide a safe, cost-effective way for students to learn without damaging real TVs.
4. **Methodology:** Develops a modular LED TV model for guided, interactive repair exercises to build real-world skills.

LIBRARY SECURITY SCANNER

Nama Pelajar : MUHAMMAD FARHAD BIN FIRDAUZ

No. Pendaftaran : 08DEP22F1121

Nama Penyelia : WAN MOHD ZAMRI BIN WAN AB RAHMAN

INTRODUCTION

There is a lot of book stolen from the library and this has been an issues for a decade. Library Security Scanner is a device that has been design and program to scan a individual ID if it's registered and scan the book that has an tagging. After that, this device will send the data to log and the librarian can see the user data and the book they borrow. The idea is to prevent book theft from happening and to help the librarian from any problem.

PROBLEM STATEMENT

1. Books and manuscript in library was being stolen and no one notice it was stolen because there were no device to detect it.
2. The access to some valuable information was too easy to get out from the library
3. The library still require worker to scan the book

OBJECTIVES

1. To design a device that can be use by library user
2. Save the library budget by reducing the amount of worker needed

PRODUCT



RESULT

created_at	entry_id	field1	field2	field3	field4	latitude
2025-04-0	1	Abu		Buku BM	Buku Matematik	
2025-04-0	2	Ali			Buku Matematik	
2025-04-0	3	Abu	Buku Sains			
2025-04-0	4	Ali			Buku Matematik	
2025-04-0	5	Ali	Buku Sains	Buku BM		

MARKET POTENTIAL

1. University and college that doesn't have a lot of employee
2. Public School or Private School
3. Public Library

ADVANTAGE

1. Improve Safety
2. Economical
3. Easy to use
4. Preserves knowledge and resources

IOT BASED VENTILATOR KIT

STUDENT FINAL PROJECT COMPETITION
SESSION II: 2024/2025

SUPERVISOR :
Dr. Baharuddin
Bin Mustapha



PRESENTER :
Nurul Farzana
Binti Jamil
(08DEU22F2017)

Innovation Description

This innovation is designed to provide temporary and emergency respiratory support to patients experiencing breathing difficulties. It uses an ambu bag compressed automatically by servo motors. The idea emerged from the need for an affordable, portable ventilator kit suitable for home use, especially during pandemics or in rural areas with limited medical infrastructure.

In addition to offering a one health requirement, the IoT-based ventilator kit integrates various sensors to track body temperature, heart rate, and SpO₂. Through the Blynk IoT platform, the data is sent to a smartphone app for remote monitoring after being shown on an LCD panel.

Problem Statement

Lack of IoT-based therapy respiratory kits for independent user

Innovation Objectives

The primary aim is to create a system that facilitates temporary respiration and real-time monitoring of vital signs, including body temperature, heart rate, and oxygen saturation levels of the patient.

Results & Impact



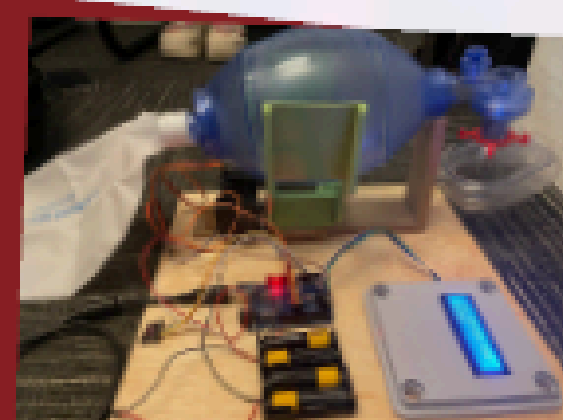
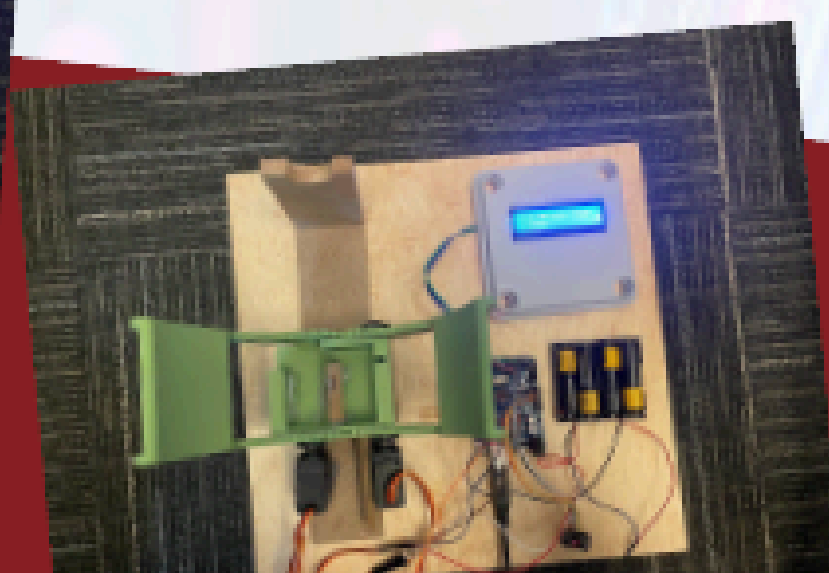
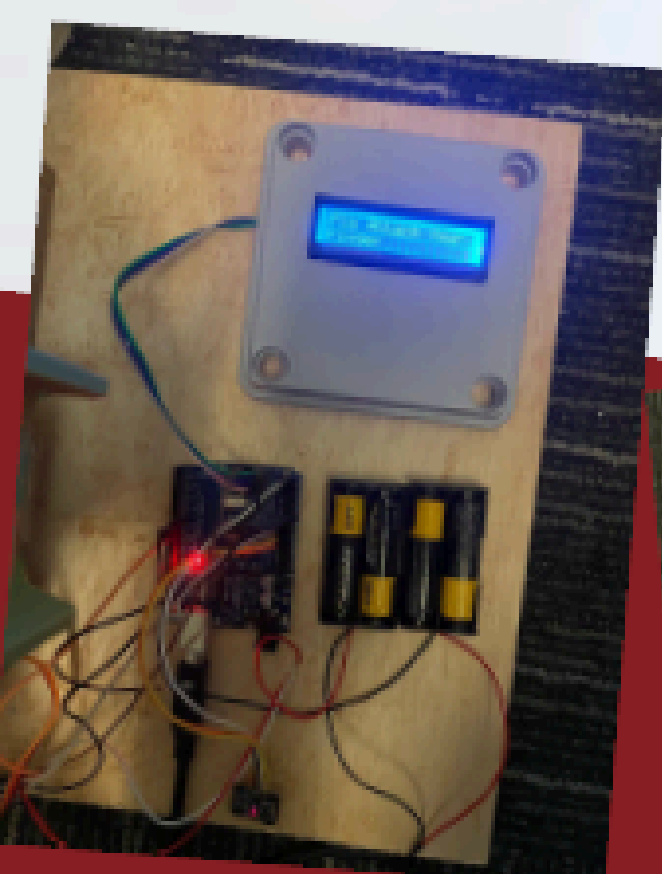
Enables real-time patient monitoring by doctors or caregivers



Provides immediate and affordable respiratory support at home



Low cost and scalable for widespread use in healthcare systems



IOT BASED REALTIME SMART KEY TRACKING SYSTEM



INNOVATION BACKGROUND

This project introduces an IoT-based real-time smart key tracking system designed to improve traditional key management methods. The system leverages RFID and cloud technology for secure key access, ensuring that only authorized personnel can retrieve or return keys. The project enables users to track key movements and status in real-time through a mobile app, improving transparency and accountability. The project utilizes an ESP32 microcontroller to handle communication between hardware components and the Firebase cloud database, providing real-time key tracking and remote monitoring.



PROBLEM STATEMENT

Traditional key management systems are prone to inefficiencies, such as key misplacement, theft, and unauthorized access. These issues often result in security breaches, increased operational costs, and a lack of accountability. This innovation addresses these challenges by integrating IoT technology, offering a more secure, efficient, and automated solution for key management.

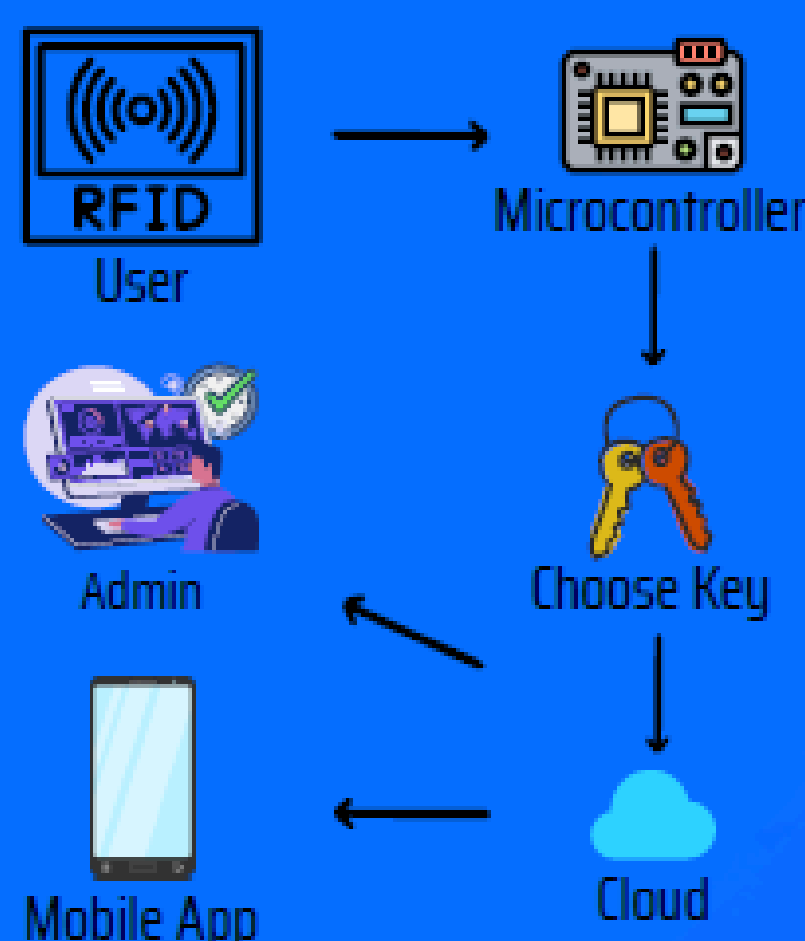
INNOVATION OBJECTIVES

- To develop a secure key management system using IoT and RFID technology for real-time tracking and access control.
- To automate key retrieval and return processes, eliminating manual errors and reducing operational time.
- To enable users to track key movements and status in real-time using a mobile app.



Link to
User Manual

FLOW OF PROJECT

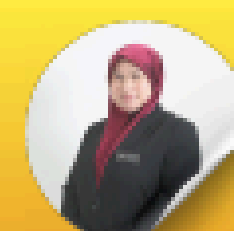


BENEFITS/MARKET POTENTIAL/SCALABILITY

- This system improves security and accountability in key management by ensuring only authorized personnel can access keys. It offers a **SCALABLE SOLUTIONS** that can be easily implemented in various sectors, such as education, corporate offices, and vehicle dealerships.
- The innovation promises significant **COST SAVINGS** by eliminating the need for manual tracking and reducing the risks associated with key mismanagement.
- The system's adaptability to multiple industries enhances its potential market reach, making it a valuable tool for businesses seeking efficient and secure key management solutions.



Nama Pelajar : MOHAMAD EZZAT EMIR BIN SILAIMAN
No. Pendaftaran : 08DEP22F2006



Penyelia Projek
NUR HADIANA BINTI NASRUDDIN



ServerGuard IoT

Innovation Project

ServerGuard IoT is a smart monitoring system designed to protect server rooms from fires and equipment damage using IoT and Industry 4.0 technology. By integrating sensors (DHT22, MQ135, MQ6) with an ESP32 microcontroller, it continuously tracks temperature, humidity, air quality (AQI/PPM), and gas leaks in real time. Data is sent to the Blynk cloud dashboard for remote monitoring, while instant Telegram alerts notify technicians of potential hazards—enabling quick action before disasters occur. This automated solution replaces unreliable manual checks, ensuring 24/7 protection for critical server infrastructure.

Problem Statement

- Fire Risk: Server rooms can overheat or catch fire, but most lack early smoke/heat detection.
- Costly Damage: High temps and gas leaks destroy servers, leading to expensive repairs and data loss. Manual checks are unreliable.
- Slow Alerts: Traditional systems delay warnings. ServerGuard IoT provides 24/7 monitoring with instant mobile alerts.

Objectives Project

- Prevent Disasters: Detect fire risks (smoke, heat, gas) early to avoid service outages.
- Automate Monitoring: Replace manual checks with IoT sensors for accuracy and efficiency.
- Reduce Costs: Protect expensive servers and avoid downtime losses.

Results & Impact

- Advantages: 24/7 protection with real-time alerts, user-friendly dashboards (Blynk/Telegram), and scalable design for server rooms of any size.
- Market Potential: High demand from government agencies, hospitals, and cloud services, with strong alignment to Industry 4.0 smart automation trends.
- Spread of Innovation: Expandable to monitor water leaks/power failures, with future potential for AI-driven predictive maintenance.



Pelajar:
MUHAMMAD SYAFIQ
NAJMI BIN SAPAR
(08DEP22F2010)



Penyelia:
AKMARYA
SYUKHAIRILNISAH BINTI
MOHD AKHIR



KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI



PERTANDINGAN PROJEK AKHIR PELAJAR SESI II: 2024/2025

FAN CONTROL VIA USING AI (GESTURE RECOGNITION)

PENYELIA : PUAN ZALEHA BINTI SALAMON
PELAJAR : MUHAMAD FARED AIMAN BIN MOHD HAKAM
(08DEP22F2050)

INNOVATION DESCRIPTION

This project develops a smart fan control system using AI-based hand gesture recognition technology. By simply performing hand movements, users can turn the fan on or off without touching any switches. The system uses a camera and Python software with the OpenCV library to detect hand gestures. The output from the recognition process is sent to a relay that controls the fan.

PROBLEM STATEMENT

- Manual fan switches are inconvenient in certain situations when hands are wet or dirty.
- Lack of affordable and user-friendly smart control systems.
- Remote controls are easily misplaced or may malfunction.

OBJECTIVE PROJECT

- To produce a fan that can be activated using AI based on gesture recognition
- To develop an AI system for detecting motion signals to activate a fan switch
- To produce a fan switch that can turn off after receiving a motion signal given by the user

RESULTS & IMPACT

Advantages:

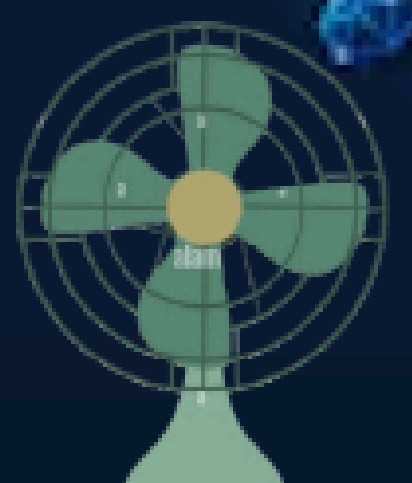
- Contactless control improves hygiene and convenience.
- Simple and user-friendly, especially for people with disabilities.
- Can be applied to other smart devices like lights, TVs, and air conditioners.

Market Potential:

- High relevance in the growing smart home industry.
- Ideal for homes, hotels, hospitals, and elderly care facilities.
- Attractive to tech-savvy users seeking modern, touch-free control.

Scalability & Future Use:

- Can be expanded for use in IoT/AI education and training.
- Suitable for innovation expos, competitions, and real-world applications.
- Potential to integrate with smart home ecosystems and mobile apps.

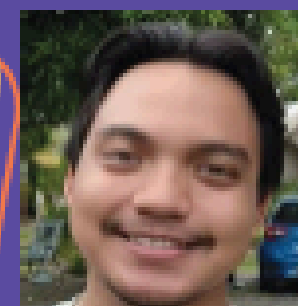


PERTANDINGAN PROJEK AKHIR PELAJAR SESI II : 2024/2025



HAFAZAN ASSISTANT
PENYELIA : ENCIK YAAKUB BIN OMAR

**PELAJAR : MUHAMMAD AFIQ HAIL
BIN MOHD AZIZI
08DEP22F1097**



INNOVATION DESCRIPTION

The Hafazan Assistant is a portable Quran memorization device that uses an Arduino Nano microcontroller and a voice sensor to detect and analyze a user's recitation. It gives instant feedback on tajweed and pronunciation, helping students correct mistakes immediately. The device also includes spaced repetition and progress tracking, ensuring users review the right verses at the right time. With a simple and intuitive interface, it's suitable for students of all ages. The device is designed to complement traditional methods, not replace them, making learning more efficient and engaging.

OBJECTIVE

1. To develop a portable and user-friendly Quran memorization device
2. To provide real-time feedback on tajweed and pronunciation
3. To support learners who lack regular teacher supervision

PROBLEM STATEMENT

Many students struggle to memorize the Quran due to the large number of verses, the complexity of tajweed, and the lack of consistent teacher guidance. This is especially challenging for learners in rural areas or those who study independently. Without real-time correction or personalized revision schedules, memorization can be slow, inaccurate, and frustrating.

RESULT & IMPACT

This device allows students to practice on their own, learn at their own pace, and receive consistent feedback. Early tests showed faster memorization, better retention, and increased motivation. It is especially helpful for students in remote areas or anyone looking to strengthen their Quran memorization outside of traditional classes.

ADVANTAGES

- Portable and beginner-friendly
- Real-time recitation feedback
- Supports independent and self-paced learning
- Tracks memorization progress clearly
- Encourages discipline through smart reminders

KEY RESULTS

- 55% improvement in memorization speed among users.
- 45% increase in recitation accuracy with real-time feedback.
- 60% better verse retention using spaced repetition system.
- Positive feedback from users on increased motivation and independence.
- Effective support for learners in areas with limited access to teachers.

MARKET POTENTIAL

Ideal for Tahfiz schools, Quran academies, home learners, and tech-savvy students looking to improve their hifz with minimal supervision.

COMMUNITY & EDUCATIONAL IMPACT

The Hafazan Assistant promotes a deeper connection with the Quran through technology. It empowers students to be more confident and independent in their memorization journey, making Islamic learning more accessible in the digital age.

IoT FALL DETECTION ALERT BRACELET



1 INTRODUCTION

"An IoT fall detection alert bracelet is a wearable device that detects falls using sensors like accelerometers and gyroscopes. It automatically sends alerts to emergency contacts or services via a connected smartphone. Designed for the elderly or those at risk of falling, it ensures quick assistance, enhancing safety and providing peace of mind for users and their families."



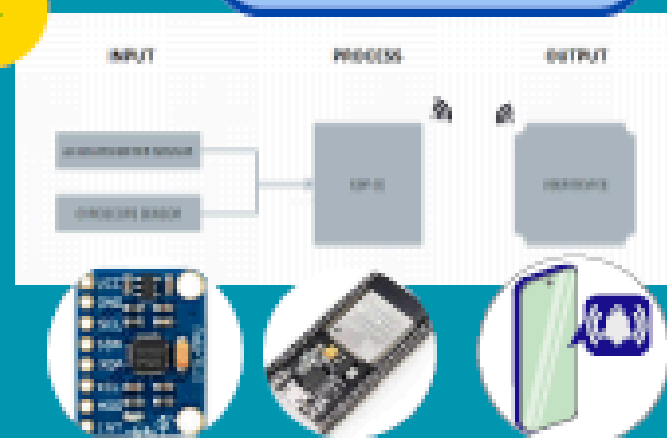
2 OBJECTIVE

- To design a fall detection bracelet that provides real-time alerts.
- To provide notification alert to the set emergency contact.

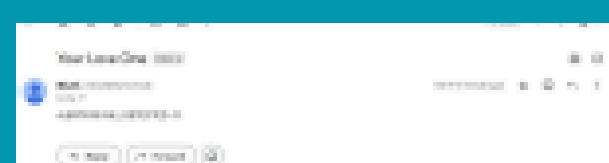
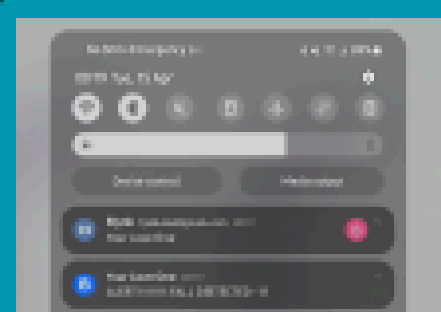
3 PROBLEM STATEMENT

- Elderly individuals with limited mobility risk injury from unnoticed falls, needing a reliable bracelet to automatically alert caregivers for help.
- There is a critical need for a fall detection bracelet ensuring timely assistance, reducing severe injury risks and prolonged immobilization for users.
- Current fall detection technology often triggers false alarms from sudden movements, causing anxiety and reducing user trust in the devices.

4 BLOCK DIAGRAM



5 RESULTS



6 FINAL PRODUCT



7 IMPACT

Real-time
Emergency Alerts

Prevention of
Severe Injury



8 TEAM PROJECT



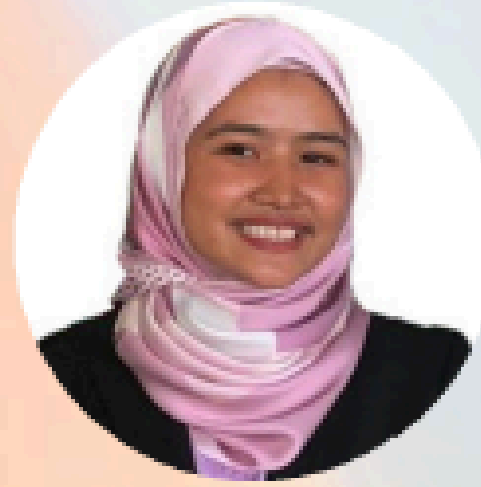
MUHAMMAD FARIS
JALALULLAIL BIN
MOHAMAD ISWANDI



Nur Suriya binti
Mohamad

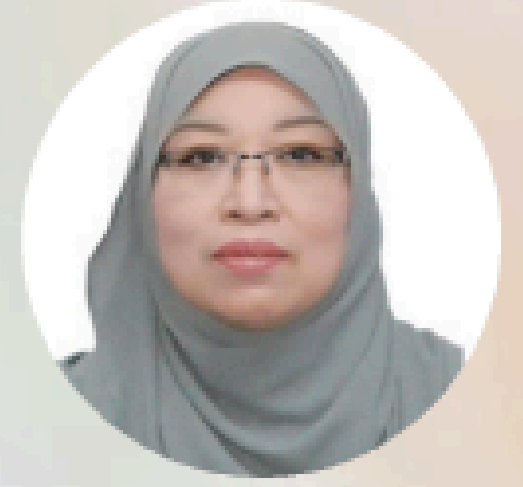


IOT-BASED WEARABLE STRESS DETECTOR



Student

Mai Layla Salikin binti Zakaria
Registration Number
08DEU22F2006



Supervisor

Puan Maslizah binti Munahdar



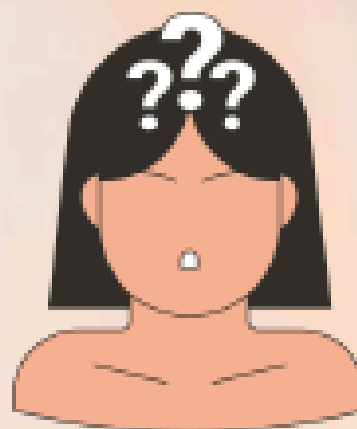
INNOVATION DESCRIPTION

This project addresses the growing need for effective stress management tools by developing a wearable stress detector. The innovation lies in its practical, wearable solution that uses a Galvanic Skin Response (GSR) sensor to measure changes in skin conductivity, providing continuous and objective stress assessment, overcoming the limitations of traditional, often inaccurate, stress assessment methods. The Arduino microcontroller processes the sensor data to determine stress levels, and this information is transmitted via Wi-Fi for visualization on the Blynk IoT platform, enabling real-time stress monitoring for the user.

PROBLEM STATEMENT

There are far too many health problems concerning mental health difficulties in this modern day. Mental illness is a problem that affects adults as well as teenagers.

Current stress detection systems frequently interfere with or depend on self-reports, which might not yield accurate and timely results. The goal is to create a wearable, non-invasive technology that can precisely identify pressure patterns. Furthermore, each person experiences pressure in a different way based on their age, gender, and way of life. Accurate monitoring requires pressure sensor designs that adjust to individual variances.

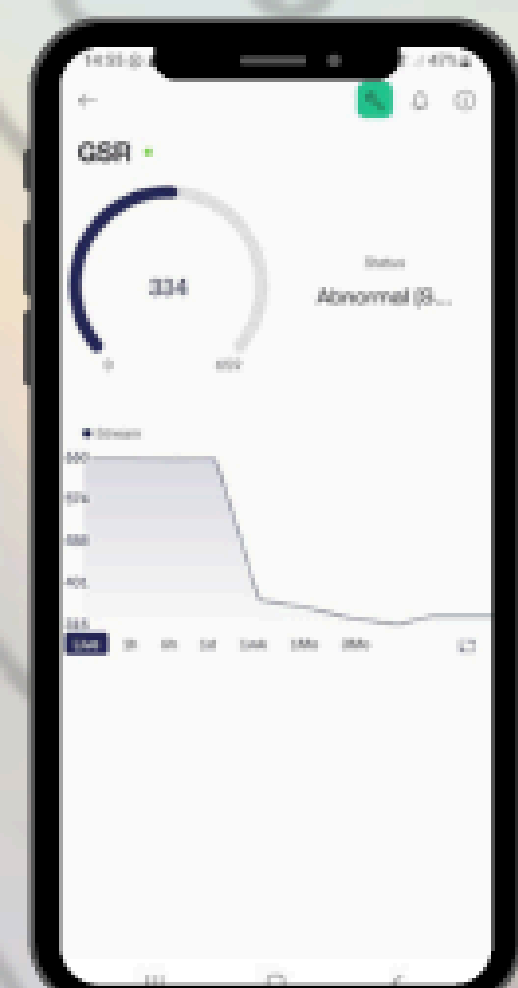


OBJECTIVES

- Develop a user-friendly IoT-enabled wearable device with integrated sensors to accurately monitor stress levels in real-time.
- Create a user-friendly mobile app interface that syncs with the wearable stress detector and offers personalized stress level notifications and recommendations.
- Evaluate the accuracy and reliability of the stress monitoring system based on data collected from the GSR sensor and IoT notifications.

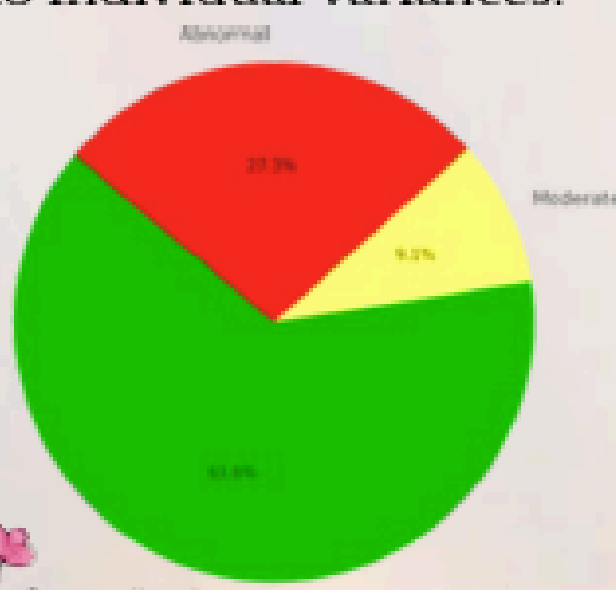
RESULTS & IMPACT

- Real-time Stress Monitoring. Provides users with objective, immediate data on their stress levels.
- Accessible Stress Assessment. Offers a user-friendly, non-invasive alternative to traditional stress evaluations.
- Potential for Broad Impact. Can improve personal wellness, healthcare, and workplace stress management.



Student Stress Levels

GREEN - NORMAL
YELLOW - MODERATE
RED - ABNORMAL



TAJUK :OKU PARKING SENSOR

Nama Pelajar :MUHAMMAD FAKHRUL HAKIMIE BIN KAMARUL AZNIN
No. Pendaftaran :08DEP22F1133

Nama Penyelia : WAN MOHD ZAMRI BIN WAN AB RAHMAN

METHODOLOGY

This project is to create a smart OKU (Orang Kurang Upaya) parking sensor system. It uses a Telegram bot to monitor OKU parking spots and send real-time alerts if someone parks without permission.

MARKET POTENTIAL

Can be implemented in public parking areas, hospitals, shopping malls, and government buildings that provide OKU facilities.

PROBLEM STATEMENT

1. Many healthy individuals misuse OKU (disabled) parking spaces
2. This causes difficulties for actual OKU individuals who need those facilities.
3. Traditional enforcement methods are ineffective.

OBJECTIVE

This project aims to stop the public from misusing OKU parking, ensure access for disabled users, and promote respectful parking through alerts and awareness messages.

PRODUCT





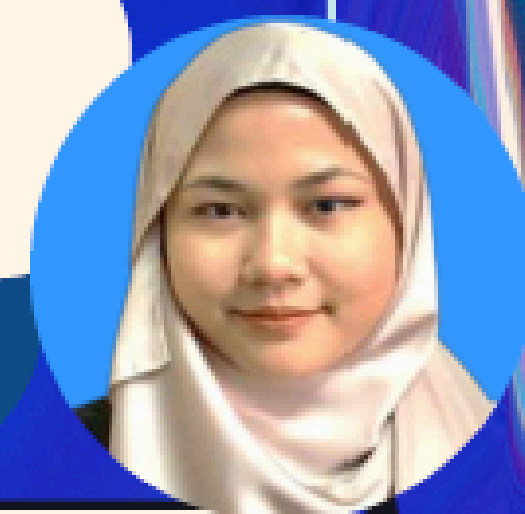
PERTANDINGAN PROJEK AKHIR PELAJAR SESI II : 2024/2025



ELECTRO SOCKS MASSAGE

PENYELIA : ENCIK YAAKUB BIN OMAR

PELAJAR : NOR FARISHA AMANI BINTI YUSRI
(08DEU22F1045)



INNOVATION DESCRIPTION

Electro Socks Massage is a wearable foot therapy device designed specifically for athletes, particularly Sepak Takraw players. This device integrates microcurrent stimulation technology with IoT-based control via the Blynk app, using an ESP32 microcontroller, relay, and portable battery. It helps reduce pain, improve blood circulation, and speed up recovery. The innovation is developed to be user-friendly, cost-effective, and suitable for anytime use without needing a clinic visit.

PROBLEM STATEMENT

Athletes often suffer from foot injuries that affect performance and well-being. Traditional treatments are inflexible, time-consuming, and not tailored to individual needs. The lack of portable and data-driven therapy solutions makes effective recovery challenging. For that reason, this project aims to develop a wearable electrotherapy system that offers customizable, app-controlled foot massage, enabling athletes to manage their recovery conveniently and effectively.



OBJECTIVE

- To develop a portable and user-friendly foot therapy device.
- To deliver consistent, customizable therapy via a mobile app.
- To reduce pain, accelerate healing, and enhance athletic performance.

RESULT & IMPACT OF PROJECT

The findings are based on a study involving 10 athletes with foot injuries. Each athlete underwent three 15-minute therapy sessions, using voltage levels ranging from 1V to 20V.

KEY RESULTS :

- 80% of participants reported a noticeable reduction in foot pain after the third session.
- Voltage levels between 14V and 20V showed the highest effectiveness.
- An average heart rate reduction of 5–8 bpm was observed post-session, indicating a physiological relaxation effect.
- User feedback highlighted improved comfort, relief from tension, and a lighter foot sensation after each session.

ADVANTAGES :

- Portable and easy to carry anywhere.
- App-controlled, allowing users to adjust therapy intensity, duration, and pattern.
- Self-operable, eliminating the need for constant assistance from medical professionals.

MARKET POTENTIAL :

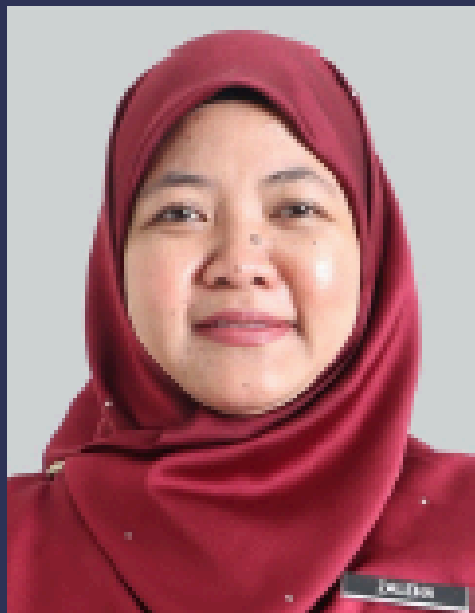
- Suitable for professional athletes, physiotherapy centers, and individuals with chronic foot pain or fatigue.

COMMUNITY & HEALTH IMPACT :

- Helps reduce recurring foot injuries.
- Supports continuous recovery without clinical dependency.
- Potential to extend athletes' careers by promoting consistent and personalized therapy.

PERTANDINGAN PROJEK AKHIR
PELAJAR
SESI II : 2024/2025

SUPERVISOR : PUAN
ZALEHA BINTI SALAMON



STUDENT : MUHAMMAD
SUHAIL WIDAD BIN ABDUL
MURAD (08DEP22F2012)



VOICE ACTIVATED LIGHTS

INNOVATION DESCRIPTION

THIS PROJECT INTRODUCES A SIMPLE AND AFFORDABLE VOICE-ACTIVATED LIGHT SYSTEM DESIGNED FOR SMART HOMES. IT AIMS TO MAKE CONTROLLING LIGHTS EASIER AND MORE CONVENIENT, ESPECIALLY FOR THE ELDERLY OR PEOPLE WITH DISABILITIES. THE SYSTEM USES AN ESP32 MICROCONTROLLER CONNECTED TO A RELAY MODULE THAT CONTROLS AN LED LIGHT. A BUZZER PROVIDES FEEDBACK WHEN THE COMMAND IS RECEIVED. VOICE COMMANDS ARE SENT THROUGH THE BLYNK MOBILE APP, ALLOWING USERS TO TURN THE LIGHT ON OR OFF WITHOUT TOUCHING A SWITCH. THIS SETUP COMBINES IOT TECHNOLOGY WITH VOICE CONTROL TO CREATE A PRACTICAL SMART HOME SOLUTION.

OBJECTIVE

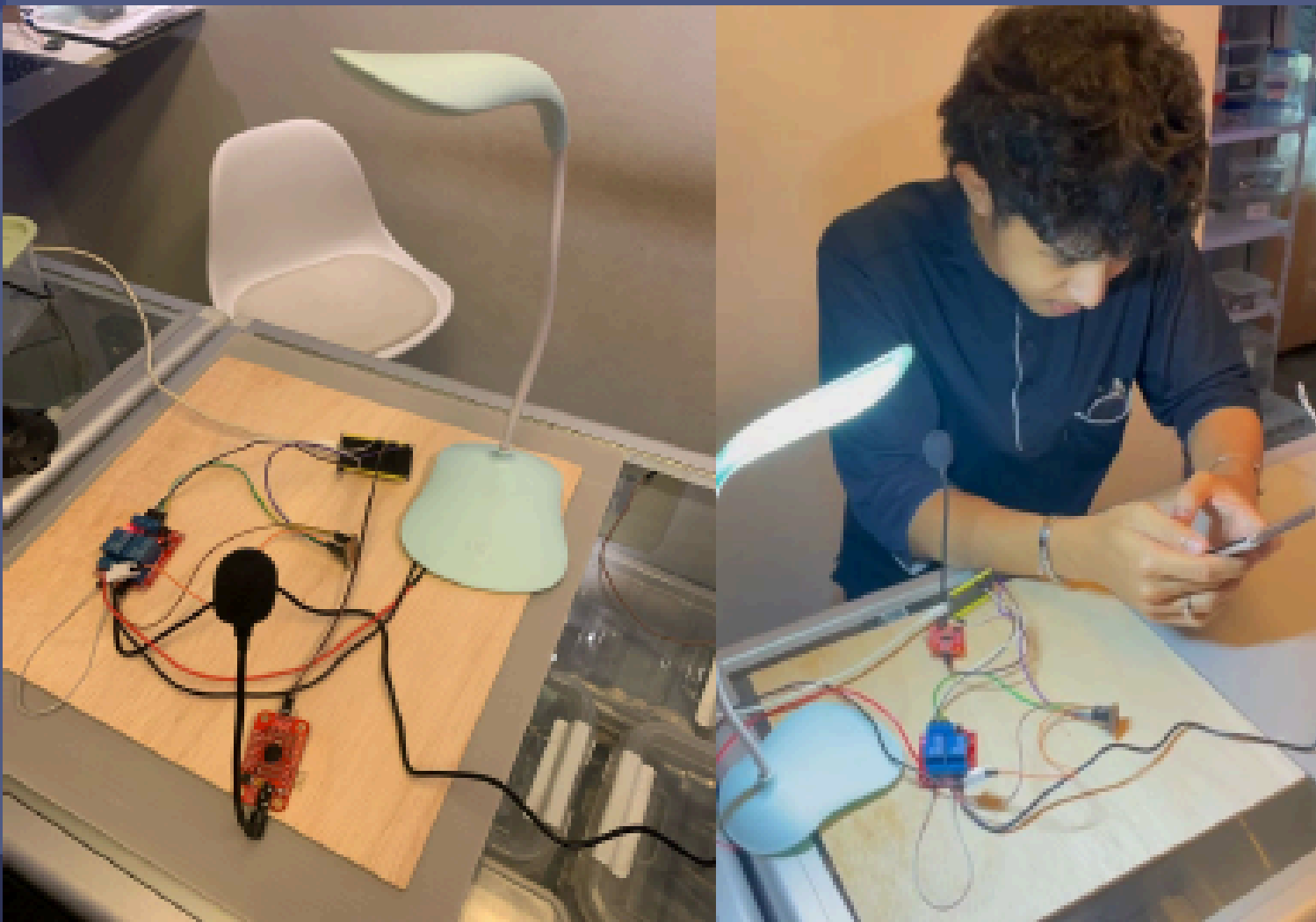
- To develop a light control system that responds to voice commands.
- To implement real-time IoT control using the ESP32 microcontroller and Blynk app.
- To create an affordable and user-friendly smart lighting solution for home use.

PROBLEM STATEMENT

Traditional lighting systems rely on manual switches, which can be inconvenient or inaccessible for some users, especially the elderly or people with disabilities. Additionally, low-cost systems often lack modern smart features like voice or wireless control. This project addresses the need for an affordable, voice-controlled lighting system suitable for smart homes.

RESULTS AND IMPACT OF THE PROJECT

- ✓ Advantages:
 - Hands-free light control for improved accessibility.
 - Cost-effective using common electronic components.
 - Simple to use and integrate into existing systems.
 - Enables remote access through smartphone.
- 📢 Innovation Outreach:
 - Can be implemented in schools, offices, or small buildings.
 - Potential for integration with smart assistants like Alexa or Google Home in future upgrades.



PULSE ELEGANCE IOT HEART MONITOR



PELAJAR : FELYNA ANAK FEDRICK
NO.MATRIC: 08DEU22F2015



PENYELIA :
WAN MOHD ZAMRI BIN WAN AB RAHMAN

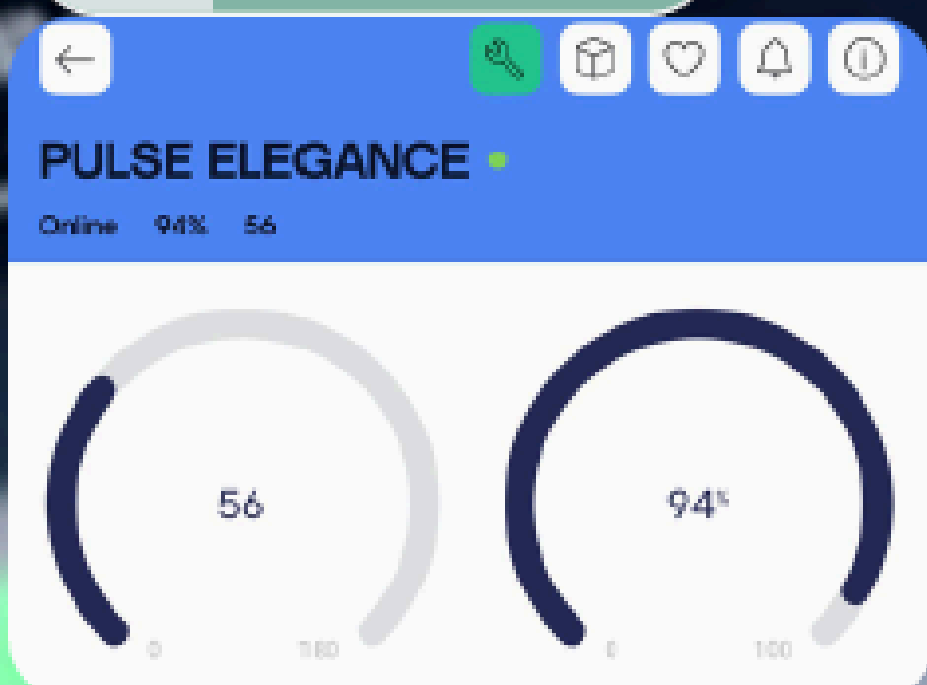
★ BACKGROUND

- AIMED TO ADDRESS THE RISING NUMBER OF HEART DISEASE CASES DUE TO LACK OF EARLY MONITORING.
- DESIGNED A SMART HEART RATE MONITORING SYSTEM THAT PROVIDES REAL-TIME READINGS VIA SMARTPHONE.
- HELPS REDUCE THE BURDEN ON PATIENTS BY OFFERING EASY, CONTINUOUS HEART RATE TRACKING.
- ENHANCES COMFORT AND SAFETY IN DAILY LIFE BY ALLOWING EARLY DETECTION OF IRREGULAR HEART ACTIVITY.
- ENCOURAGES REMOTE, PREVENTIVE CARE—ESPECIALLY USEFUL FOR THOSE IN RURAL OR UNDERSERVED AREAS.

★ PROBLEM STATEMENT

1. TRADITIONAL MONITORS OFTEN FAIL TO GIVE REAL-TIME ALERTS FOR CRITICAL CHANGES IN VITAL SIGNS. THIS CAN DELAY NEEDED INTERVENTIONS, ESPECIALLY IN EMERGENCIES.
2. MANY HEALTHCARE FACILITIES FACE STAFFING AND RESOURCE CONSTRAINTS, MAKING CONSTANT PATIENT MONITORING DIFFICULT. PATIENTS ALSO STRUGGLE TO GET REGULAR CHECKUPS DUE TO LIMITED CLINIC ACCESS SUCH AS AT CLINIC THAT FAR FROM CITY THAT HAVE LIMITED FACILITIES.

★ DATA ANALYSIS



★ PRODUCT

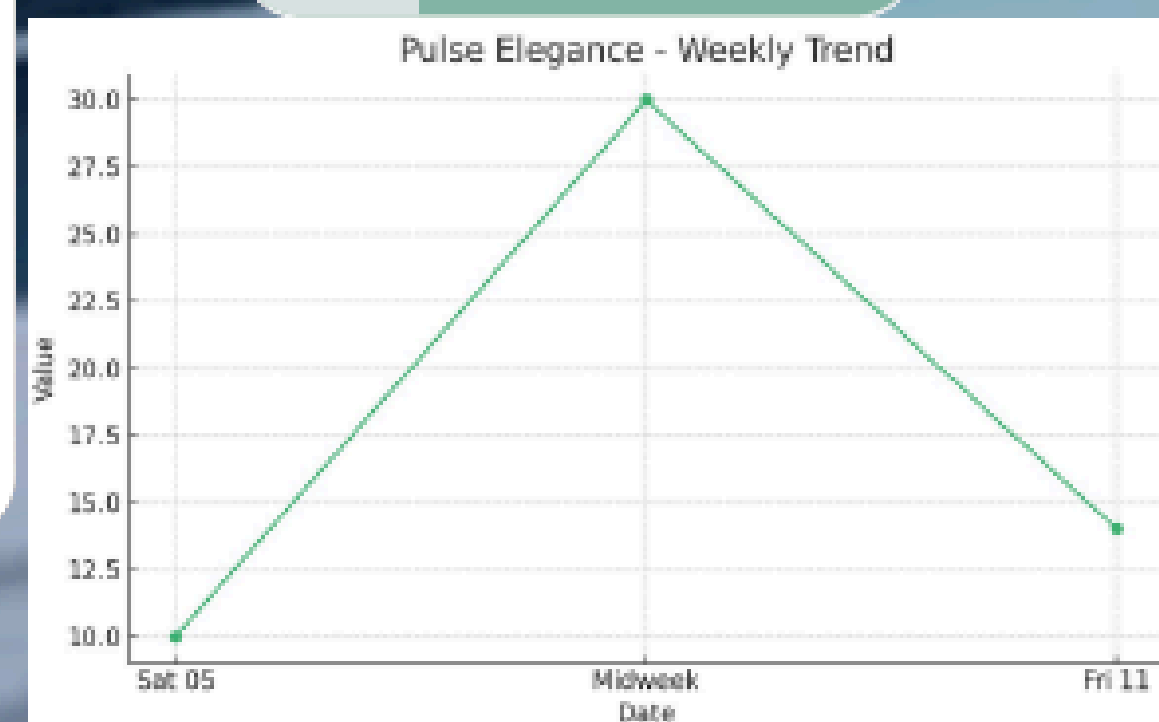
★ OBJECTIVE

1. TO ALERTS NOTIFY STAFF WHEN HEART RATE IS OUTSIDE NORMAL RANGE, ALLOWING QUICK ACTION.
2. TO DESIGN MAKE SURE PATIENTS, STAFF, AND FAMILY CAN CHECK HEART RATE DATA REMOTELY ON MOBILE DEVICES.
3. TO MAKE SURE A SIMPLE INTERFACE AND MAKES IT EASY FOR BOTH PROFESSIONALS AND PATIENTS TO ACCESS DATA.

★ POTENTIAL OUTCOME

- FASTER EMERGENCY RESPONSE
REAL-TIME ALERTS HELP MEDICAL STAFF ACT QUICKLY WHEN HEART RATE GOES ABNORMAL — IMPROVING PATIENT SAFETY AND OUTCOMES.
- PATIENTS IN RURAL OR UNDERSERVED AREAS CAN MONITOR THEIR HEART RATE FROM ANYWHERE USING JUST A SMARTPHONE.

★ CHART



TAJUK : GESTURE-TO-TEXT SYSTEM

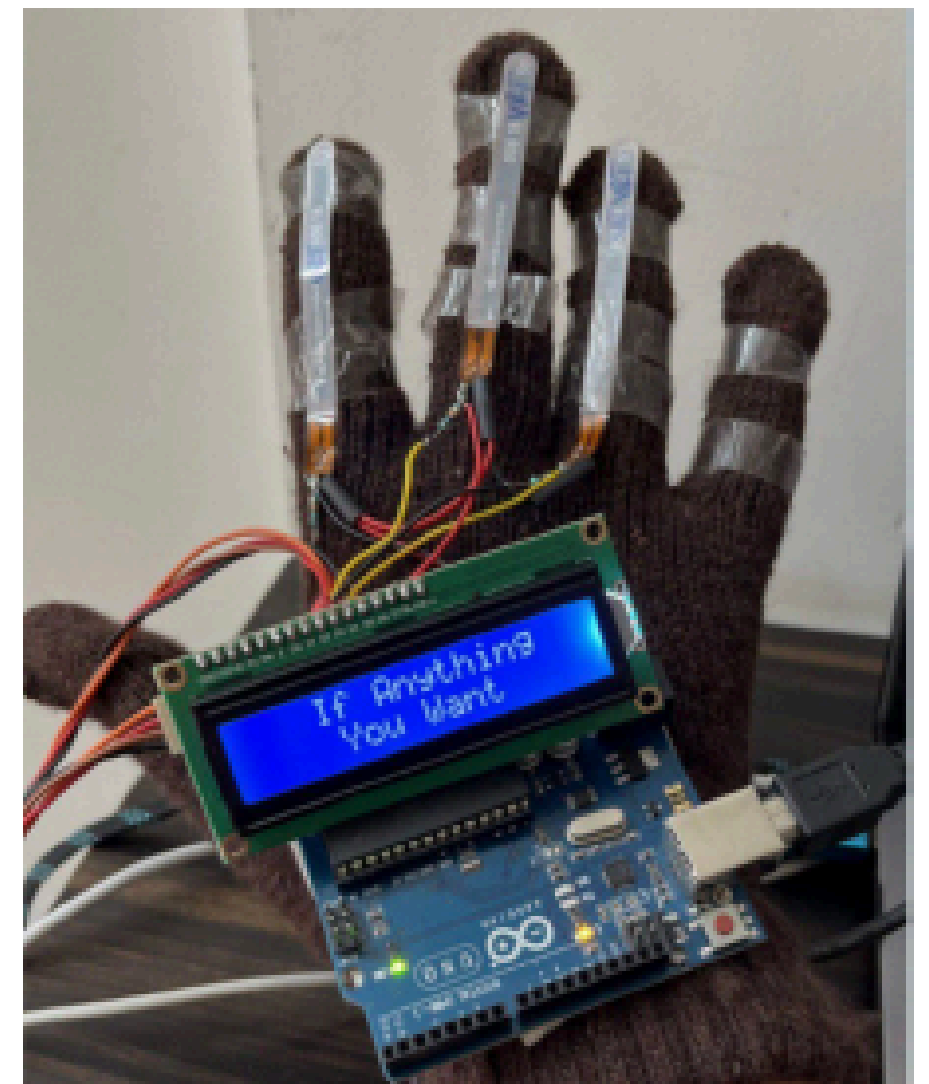
Nama Pelajar : RACKKEYSH A/ SURESH JESUS

No. Pendaftaran : 08DU21F2049

Nama Penyelia : PUAN MAZLIZA

INNOVATION DESCRIPTION

The Gesture-to-Text System is a smart solution designed to help people with speech or hearing difficulties communicate more easily. By using hand gestures, the system detects and converts them into readable text in real-time. Built with Arduino and sensors, this project aims to improve accessibility and bridge communication gaps between individuals with disabilities and the wider community.



PROBLEM STATEMENT

Some people cannot speak or hear, which makes it hard for them to communicate with others. There are not many easy tools to help them talk. This project tries to solve that problem using hand gestures that change into text.

PROJECT OBJECTIVE

To create a system that can change hand gestures into text, making it easier for people with speech or hearing problems to communicate.

RESULT AND IMPACT

- **The system successfully changes hand gestures into text in real-time.**
- **Helps people with speech or hearing disabilities communicate better.**
- **Easy to use and low-cost, making it suitable for schools, hospitals, and public places.**
- **Has the potential to be improved and used in many fields like education, healthcare, and smart devices.**

PERTANDINGAN PROJEK AKHIR PELAJAR

SESI II : 2024/2025

SMART HEALTH PILL DISPENSER WITH IOT APPS

PENYELIA: ENCIK IDRIS BIN KAMARUDDIN

PELAJAR: AFIQAH NURAINI BINTI ZAINAL ABIDIN (08DEU22F2013)

INNOVATION DESCRIPTION

The Smart Health Pill Dispenser with IoT Apps is designed to help patients and the elderly take their medication on time. It uses a microcontroller (NodeMCU/ESP32), an automated dispensing system, and an IoT-based mobile app to provide reminders and enable monitoring by caregivers. This project involves 3D design, control system development, and app integration.

PROBLEM STATEMENT

- Patients often forget to take their medication on time.
- Lack of automated monitoring by caregivers or family members.
- Limited availability of smart medication management systems.

OBJECTIVE OF THE INNOVATION

- To develop an automatic pill dispenser with notification alerts
- To ensure timely medication intake .
- To provide remote monitoring for caregivers via iot app

RESULT & IMPACT

Advantages:

- Reduces missed medication doses.
- Enables caregivers to monitor from a distance.
- Improves medication adherence and health outcomes.

Market Potential:

- Elderly, Alzheimer's patients, home healthcare users.
- Private clinics and government hospitals.

Dissemination Potential:

- Commercialization through pharmacies and care centers.
- Integration with digital health record systems.



**PERTANDINGAN PROJEK
AKHIR PELAJAR
SESI II 2024/2025**

SOLAR POWERED AUTOMATIC WATERING SYSTEM

NAMA PELAJAR: NUR AIN SYAHILA BINTI AHMAD NAZARUDIN
NO. PENDAFTARAN: 08DEP22F1058
NAMA PENYELIA: NAAGAJOO THI A/P ADIN NARAINA



INNOVATION PROJECT

This project proposes the development of an innovative, sustainable, and automated irrigation system that uses solar energy to power an ESP32 microcontroller. The system leverages a soil moisture sensor to assess the water content of soil in real time and activates a solenoid valve to supply water only when necessary. Monitoring and manual override capabilities are available through the Blynk mobile application.

PROBLEM STATEMENT

- The increasing demand for sustainable and efficient water management solutions in agriculture and landscaping presents a significant challenge.
- Traditional irrigation systems often rely on conventional energy sources, leading to high operational costs and inefficiencies such as overwatering or inadequate watering, which can negatively impact plant health and water resources.
- These systems typically require manual intervention and do not always adapt well to varying environmental conditions.

OBJECTIVE PROJECT

- To design and integrate a solar power setup, including solar panels to ensure a reliable and renewable energy source for the irrigation system.
- To lower the overall costs of irrigation by utilizing solar energy instead of conventional electricity, making the system economically viable and reducing long-term operational expenses.
- To create a system that minimizes water waste by delivering precise amounts of water according to plant needs, thereby promoting water conservation and reducing overwatering.

RESULTS AND IMPACTS OF PROJECT

KEY RESULTS:

- The system automatically activates the water valve only when soil moisture drops below a set threshold, reducing water wastage and ensuring plants receive just the right amount of water.
- Powered by solar energy, the system operates independently without relying on the electrical grid, making it sustainable and suitable for remote or off-grid agricultural areas.
- With the ESP32, real-time data from the soil moisture sensor can be processed and displayed on the LCD, allowing automatic and timely watering without manual intervention.

ADVANTAGES:

- **Water Conservation:** Reduces unnecessary water usage by watering only when needed, helping conserve a vital resource.
- **Low Operational Cost:** Utilizes solar energy and automation, minimizing electricity bills and human labor costs.
- **Scalability & Flexibility:** Can be scaled from small gardens to large farms and easily customized for different crop types.

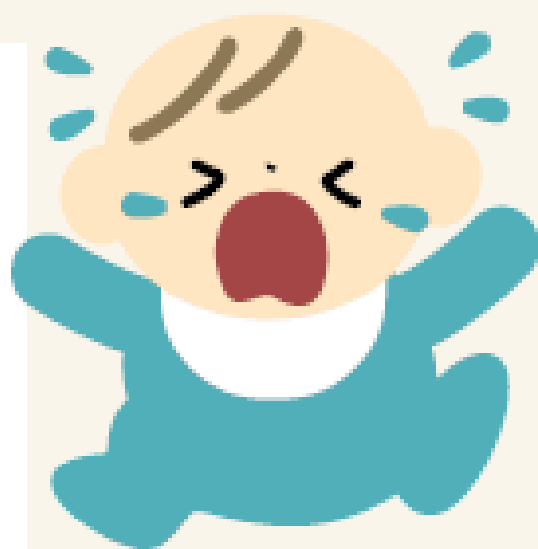
MARKET POTENTIAL:

- **Rising Demand for Smart Agriculture:** With the global push for sustainable farming, there's growing interest in automated and eco-friendly solutions.
- **Home Gardening & Urban Farming:** Increasing interest in home gardening and urban farming opens up a strong consumer market segment.

SPREAD OF INNOVATION:

- **Encourages Tech Adoption in Agriculture:** Demonstrates how accessible microcontrollers (like ESP32) and sensors can modernize traditional farming.
- **Promotes Renewable Energy Integration:** Highlights the practical use of solar power in daily applications, encouraging wider renewable energy adoption.

SMART INFANT CRY DETECTION SYSTEM



Description of the project

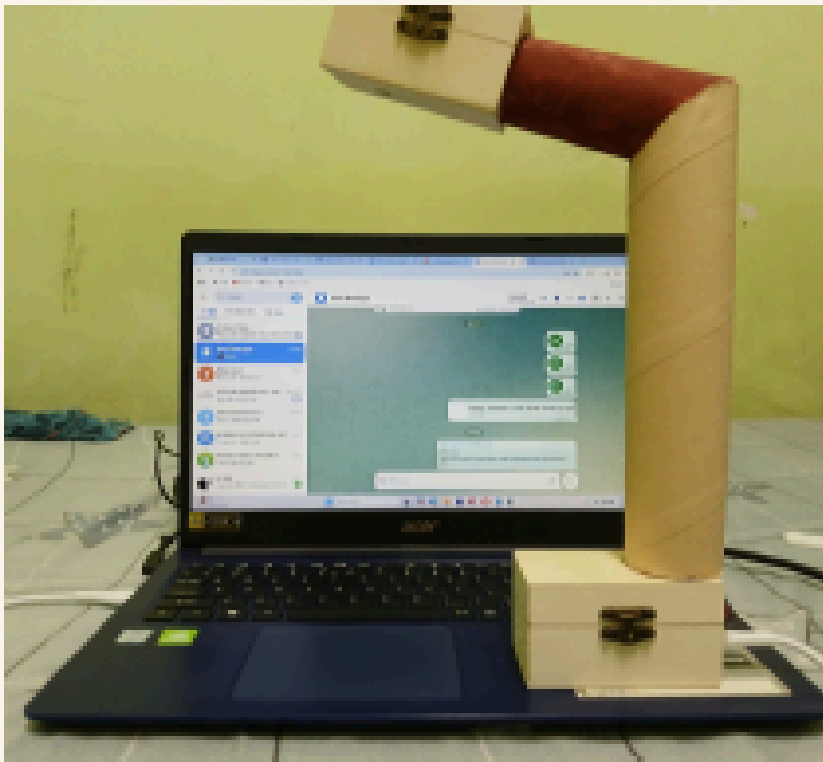
This project was aim for the need to improve how nurses respond to a crying baby, especially when the baby is out of sight. The idea came from observing how difficult it can be to immediately understand or even notice when a baby is crying, especially in neonatal intensive care units (NICUs). The innovation combines a high-sensitivity INMP441 microphone to detect cry sounds with the ESP32 microcontroller, which processes the audio data and triggers a real-time camera feed using the ESP32-CAM. The system uses basic machine learning logic (Fast Fourier Transform) to distinguish cries from other sounds, and sends alerts via Wi-Fi to a mobile app or web interface. This setup ensures timely alerts and the nurses visually monitor the baby remotely.



EMMALDA KEITH
MAGDELYN ANAK KENCHA
08DEU22F2004



IRMA BAIZURI BINTI MOHD
AKHIR



Problem statement

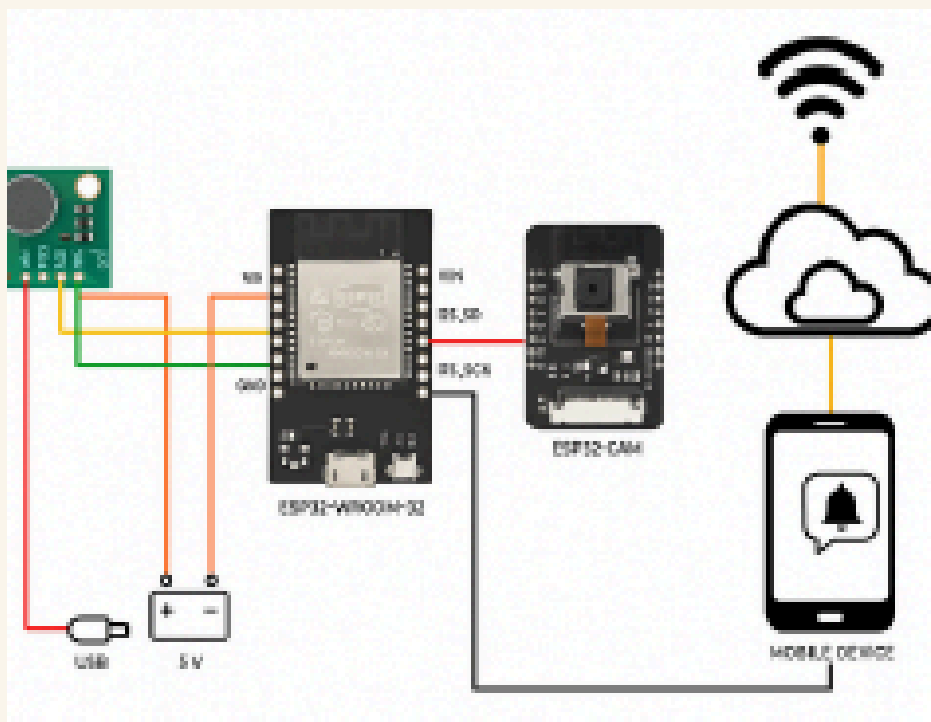
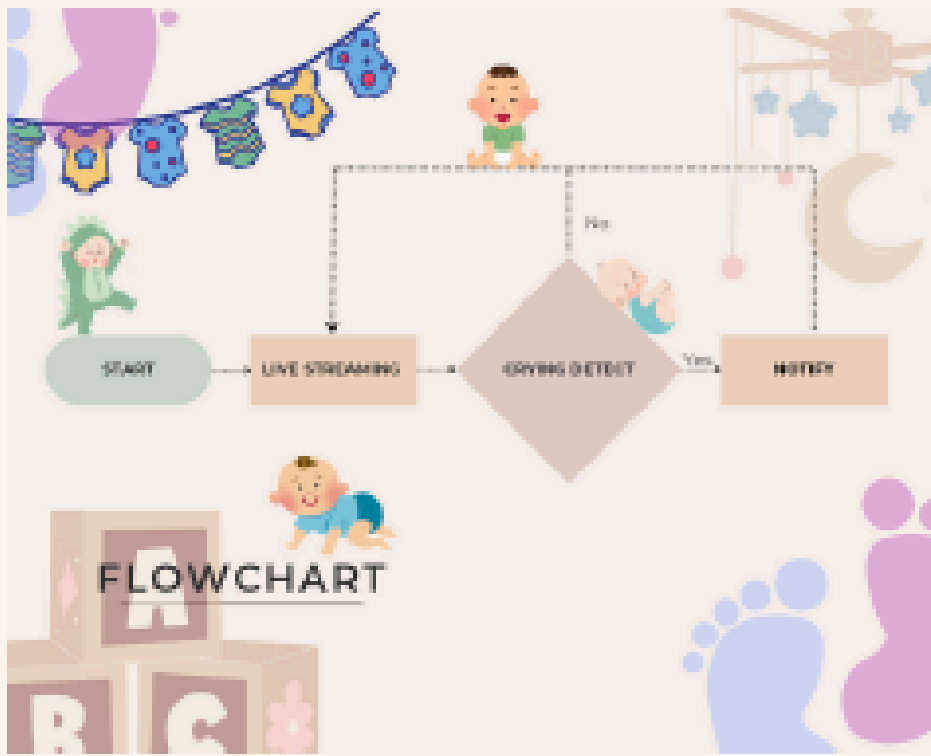
In hospitals—especially neonatal wards and maternity units—nurses and medical staff are often responsible for monitoring multiple infants at once. Due to high workloads or physical distance between rooms, it can be difficult to notice a baby crying immediately. Delayed response to a baby’s cry may cause stress, discomfort, or even go unnoticed during critical moments. A reliable, real-time cry detection and monitoring system can support healthcare providers by improving response times and ensuring no baby is left unattended during distress.

Objectives

- Detect infant cries in a hospital environment using the INMP441 microphone.
- Activate the ESP32-CAM to provide real-time visual monitoring of the infant.
- Send immediate alerts and video streams to nurses’ stations or mobile devices.
- Assist healthcare staff in providing timely care, improving overall patient safety and comfort.

Result and impact

- Ensures quicker response to infant distress in busy hospital wards.
- Supports nurses by acting as a real-time monitoring assistant.
- Enhances patient safety, especially NICUs
- Valuable tool in both public and private healthcare systems.



MEDI-BOX WITH PROGRAMMABLE REMINDER

1

PROJECT BACKGROUND

The project aims to improve patient compliance with medical prescriptions by providing a reminder system that allows individuals to set alarms based on their own schedule. Additionally, the system can notify caretakers if the patient has taken their medication, reducing the likelihood of dishonest responses. The use of ESP32 and Arduino UNO for processing, along with the integration of an LCD display and sensors, provides a user-friendly interface for setting alarms and interacting with the system. The end goal is to ensure proper medication adherence and promote honesty in reporting medication intake.

2

PROJECT OBJECTIVES

- To construct a device that will help patients to take medicine on time.
- To develop a system that will be able to set a reminder, also send a message to caretaker when patient take a medicine.

3

PROBLEM STATEMENT

The problem that we encounter is there are a patient that forgot to take their medicine within medicine prescribe time and there are no other people to remind them nearby them when they forget. Some of the medicine these days have a prescribe time when to take it. If the patient didn't take it at the exact same as prescribe time they are exposed to risk and the side effect because of the disease they had.

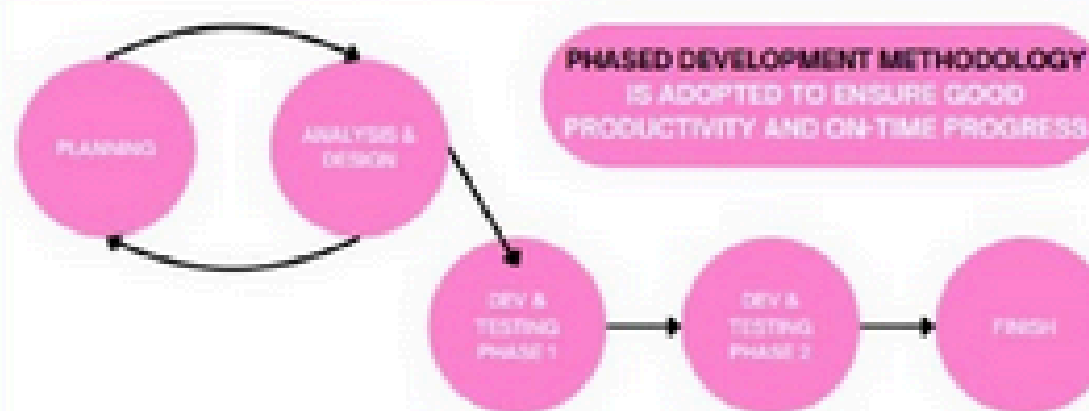
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PROJECT SIGNIFICANT

The project has been designed to assist individuals who are ill and tend to forget to take their medication, whether they are at home or in a hospital. This device aims to simplify medicine intake by reminding patients of their designated medication times. By setting up the alarm time, users can easily learn to control the device, and the alarm will prompt them to take their medicine. Furthermore, the device can notify caretakers or others who are attending to the sick patient, and it can monitor whether or not the patient has taken their medication, providing valuable information and support.

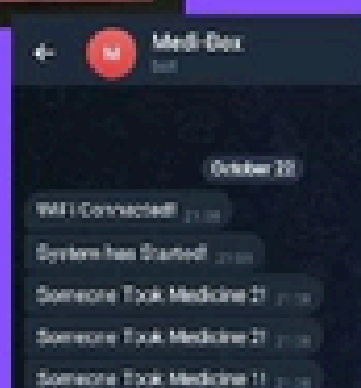
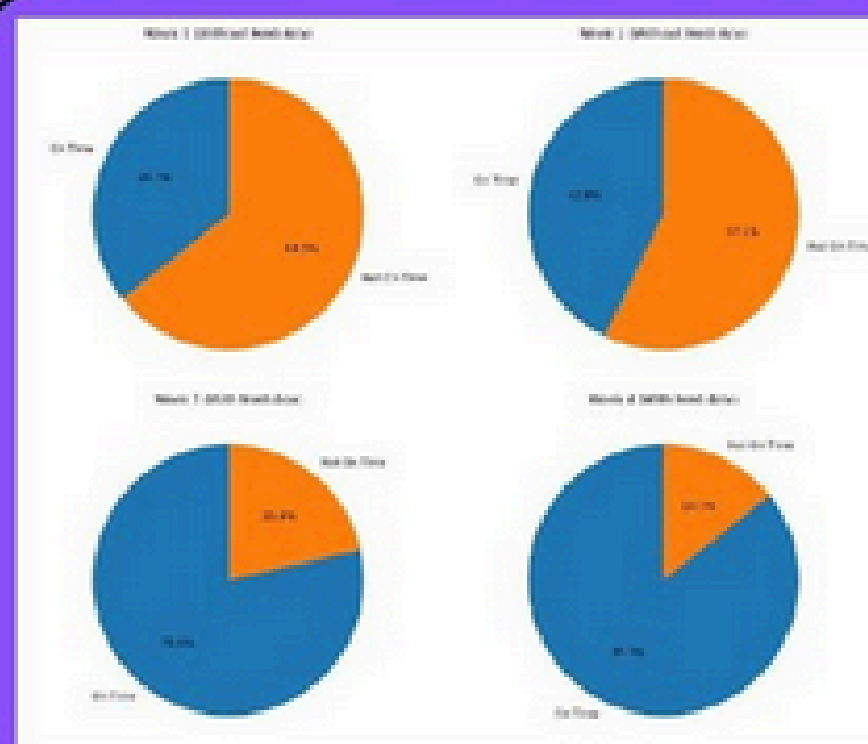
5

PROJECT METHODOLOGY



6

PROJECT FINDINGS



7

PROJECT CONCLUSION

In summary, the Medi-Box with programmable reminder has achieved its goal by effectively reminding patients to take their medication. The project utilizes Arduino UNO and ESP32 as microcontrollers, ultrasonic sensors, LCD display, buzzer, LED, and buttons to create a device that reminds patients and monitors their medication intake. Testing and evaluation have proven that the system functions as intended, featuring sensor detection, notification reception, alarm time setting, and triggering the buzzer. The system has potential for further improvements and advanced features.



SPINESYNC: AN IOT- BASED WEARABLE POSTURE MONITORING DEVICE



PROJECT BACKGROUND

A wearable device equipped with sensors that tracks and analyzes an individual's posture in real-time. It provides vibration alerts for poor posture and audible reminders when time limits are exceeded. The data is transmitted to an IoT platform, delivering insights on posture degree, device usage duration, and reminders to enhance posture habits and overall well-being.

PROBLEM STATEMENT

Sitting too long

Weak Muscle

Bad Desk Setup

Posture Issues

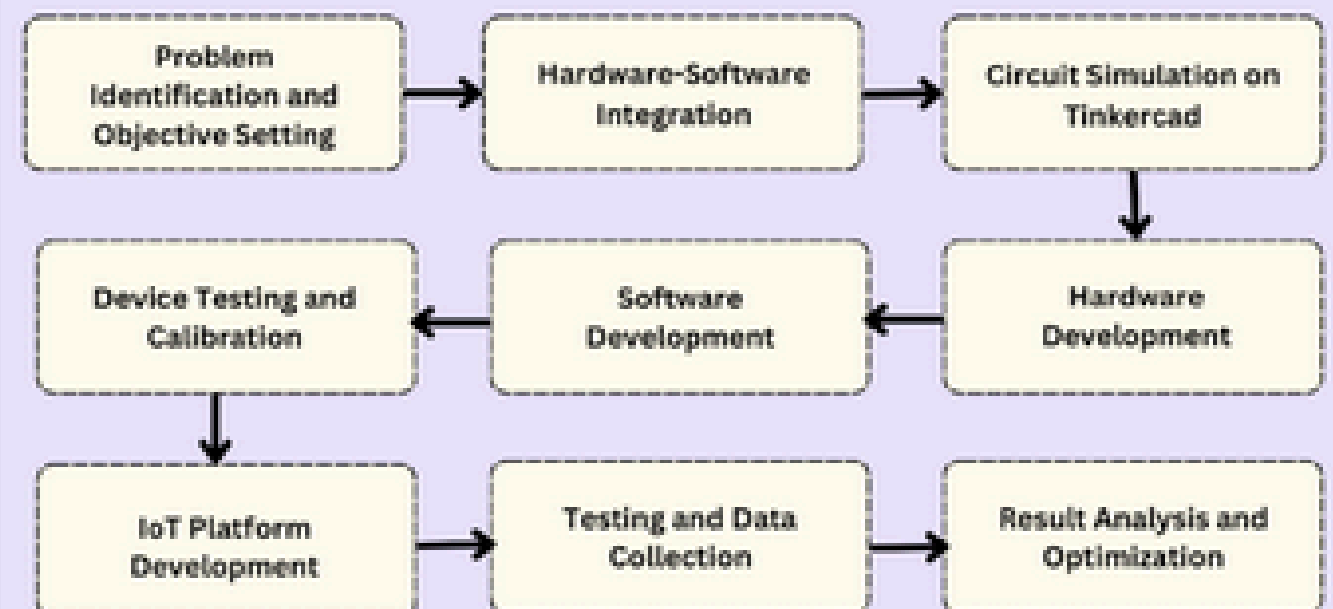
OBJECTIVES

- To design a posture monitoring device that vibrates when poor posture is detected.
- To provide a time limit feature with audible alerts using a buzzer.
- To develop a web-based IoT platform to display reminders, show posture degree, and track device usage duration.

CONCLUSION

- This posture monitoring device combines wearable technology, real-time feedback, and an IoT platform to help users improve posture, reduce discomfort, and support musculoskeletal health.
- The project promotes ergonomic awareness and encourages healthier habits for long-term well-being.

METHODOLOGY



FINDINGS



PROJECT SIGNIFICANCE

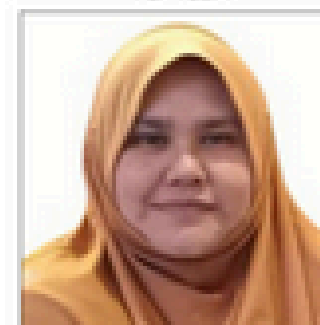
Health and Well-being

- Reduces Back Pain and Discomfort
- Boosts Focus and Productivity
- Promotes Long-term Musculoskeletal Health

Technological and Societal Impact

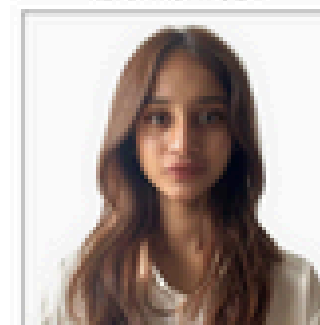
- Advances Wearable Health Technology
- Encourages Ergonomic Practices in Daily Life

PENYELIA



DR FAZIDA BINTI ADLAN

KETUA KUMPULAN



MIROSHA A/P VEETHASALAM
0806022F1070

ANGGOTA KUMPULAN 1

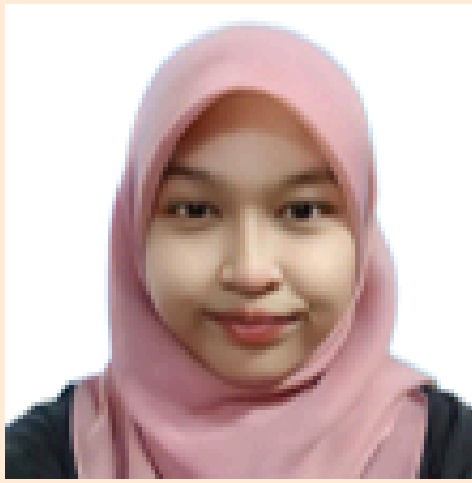


NUR FARAH SHAKIRAH BINTI
SHAHRUS AMIN
0806022F1150



NAMA PENYELIA:

EMY SATIRA
AZRIN BT
MOHAMED
HAKKE



KETUA
KUMPULAN:

NUR SYUHADA
BINTI ABDUL
RAFAR



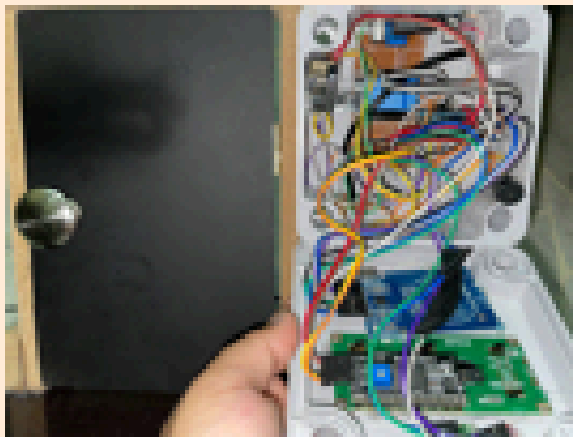
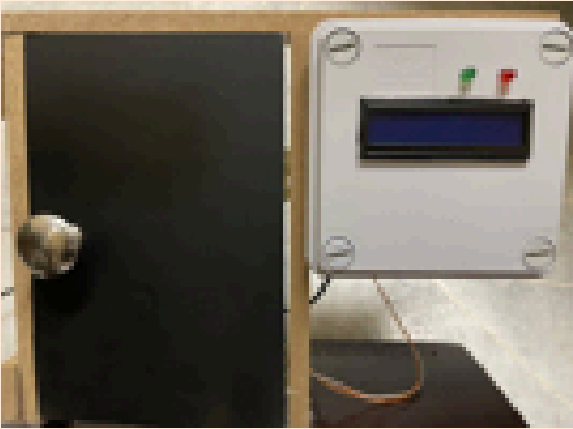
AHLI
KUMPULAN:

NUR AMIRAH
BINTI AZMI

SMART RFID DOOR ACCESS WITH NOTIFY

1 BACKGROUND OF PROJECT

SMART RFID DOOR ACCESS WITH NOTIFY is Utilizing Radio Frequency Identification (RFID) technology, provides a reliable and approachable substitute. It makes use of an RFID reader placed close to the door and RFID tags carried by authorized users and users can control history data access door lock by using the smartphone since it is (Internet of Thing) IOT based project. Plus, card's unique code is recognized by the reader and limiting access to only authorized individuals. In this extend, it is counting five sections of the full model. First, the sections are the RFID section, display section, alarm section using buzzer, ignition system section using LED, and the history data module section which is by application.



2 PROBLEM STATEMENT

When it comes to physical security, conventional lock and key systems are becoming less and less effective at meeting the changing needs of both individuals and businesses. It is obvious that an access control system that is more technologically advanced, secure, and efficient is needed.

- 1. To overcome security vulnerabilities which is lost or stolen keys and key copying. These situations pose a significant security risk.
- 2. To design a limited flexibility because conventional access methods offer limited flexibility in adjusting access privileges dynamically.
- 3. To decrease a Lack of Real-Time Monitoring and Response because Traditional access control systems do not provide real-time alerts or notifications when unauthorized access is attempted

5 FINDINGS

- Real-Time Monitoring and Notifications
- Effective Access Logging and Data Analysis
- User Convenience and Scalability

4 METHODOLOGY

- Setup Key Components: Install the RFID reader, Arduino Nano, buzzer, LED, and relay to control door access.
- Configure System: Set up the RFID reader to detect authorized tags and send access data to the Arduino, which controls door lock and notifications.
- Connect to Blynk App: Link the system with the Blynk app so users can monitor door access and get instant alerts on their phones.
- Test System: Check the RFID reader's range and test notification accuracy to ensure everything works smoothly.
- Optimize Security: Review access logs to improve security, making the system easy to use, reliable, and secure.

3 OBJECTIVE PROJECT

- 1) To develop a project that can monitor and review access history, enabling a proactive approach to security management.
- 2) To design a project that can bolster security measures by replacing conventional keys with RFID cards or tags
- 3) To implement the feasibility of integrating the RFID system with existing security infrastructure.

7 CONCLUSION

The RFID door lock access control system with email and phone notifications offers improved security and convenience compared to traditional RFID systems. It sends real-time alerts whenever someone tries to access the door, allowing users to monitor entry attempts remotely. This added feature enhances security by keeping users informed of any authorized or unauthorized access. The system also provides better control and traceability, making it ideal for homes or offices that need reliable access monitoring. Overall, it significantly upgrades older RFID systems by adding smart, connected features for modern

6 SIGNIFICANCE PROJECT

DATA COLLECTION AND ANALYSIS:	ENHANCED SECURITY	COMMERCIAL VALUE
1) Enables tracking of access patterns to identify potential security risks and improve response strategies.	1) Replaces vulnerable key-based systems with RFID technology, reducing risks from lost or duplicated keys.	1) Reduces maintenance costs by eliminating the need for rekeying.
2) Provides valuable insights into usage trends, supporting proactive security management.	2) Sends real-time notifications for any access attempt, improving response to unauthorized entries.	2) Enhances security for large institutions, preventing unauthorized access and reducing potential losses.

IOT EMPOWERED PARALYSIS CARE

01

PROJECT BACKGROUND

IoT Empowered Paralysis Care is a device designed to help disabled individuals communicate their needs through simple body movements. It displays messages on an LCD screen, and if no caregiver is present, it can send messages through the Blynk app. Using motion sensors, it allows patients to request help from healthcare providers, making it easier for them to assist paralyzed individuals. While the goal is to promote independence for people with paralysis, the current devices are often too large and expensive, limiting their use to hospitals instead of being conveniently available in patients' homes.



02

PROBLEM STATEMENTS

Hospitals that treat paralyzed patients whose paralysis attack has incapacitated all or part of their body are common. Most of the time, people who are paralyzed are unable to express what they need because they are either unable to speak normally or are unable to use sign language because their brains have lost control. Allowing a paralyzed patient to be left alone in an emergency situation such as a stroke or other medical crisis carries a significant risk as well.

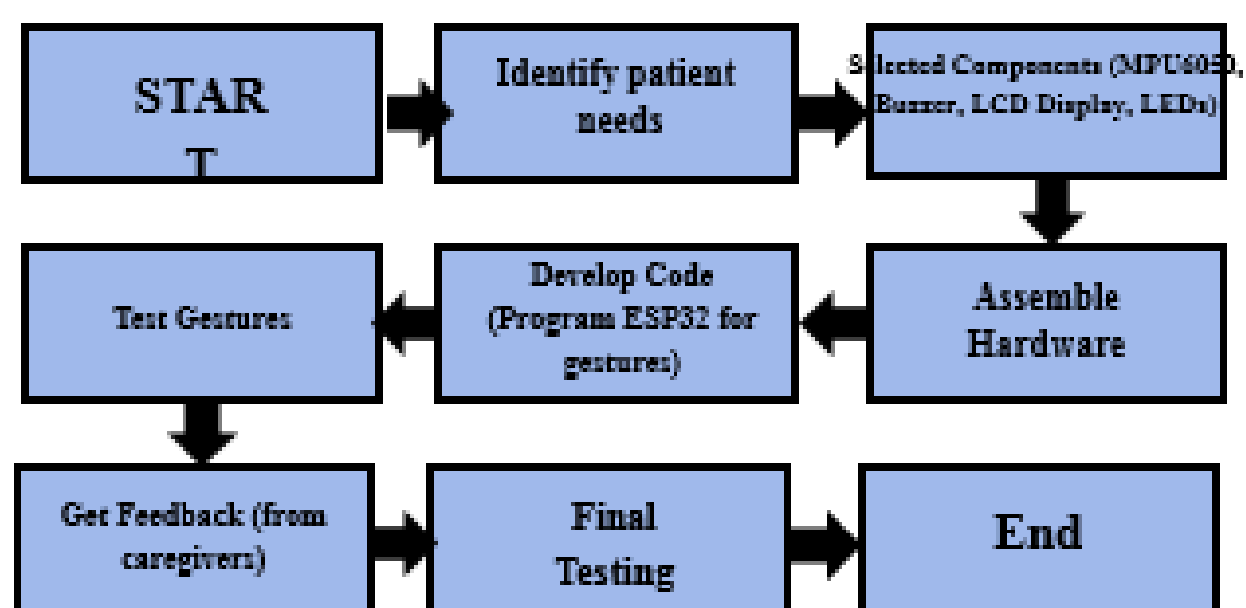
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OBJECTIVES

1. Help Patient Communicate Needs Using Hand Gestures.
2. Send Instant Alerts to Caregivers Through IoT.
3. Give Patients Independence and Dignity.

04

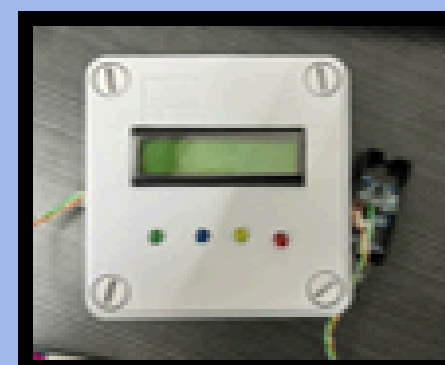
METHODOLOGY



05

FINDINGS

1. Effectiveness of Gesture Detection
2. Feedback from Users
3. Reliability of Notifications
4. Future Improvements



BLYNK APP

06

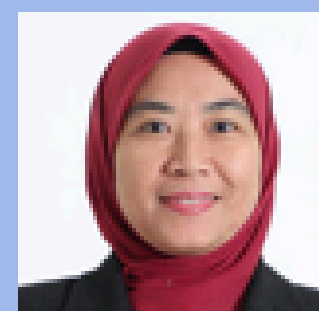
SIGNIFICANCE OF PROJECT

1. Improving Quality of Life
2. Supporting Caregivers
3. Potential for Future Development
4. Inspiration from Global Advances

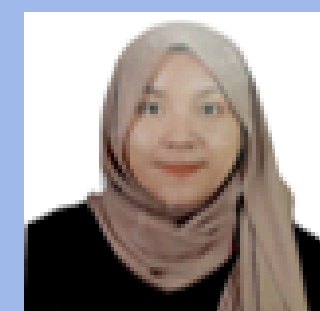
07

CONCLUSION

In conclusion, this project offers a practical solution to support caregivers in attending to paralysis patients' needs. By utilizing a smart glove with gesture recognition, it allows patients to communicate essential needs through simple hand movements. This system provides instant alerts using the LCD, LEDs, and a buzzer, ensuring caregivers are notified even if a smartphone notification is missed. Although the current design isn't wireless, feedback has shown interest in adding this feature in the future to enhance convenience. This project represents a step forward in improving quality of care and responsiveness for paralysis patients.



ENY SATIRA AZRIN
BINTI MOHAMED
HAKKE
[SUPERVISOR]



NUR SYAHIRAH BINTI
SHAMSUL BAHARI
08DEU21F1062
[KETUA KUMPULAN]

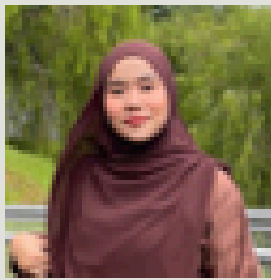


MAGDELYN JODEN
MAJIHIL
08DEU21F1020
[STUDENT 2]



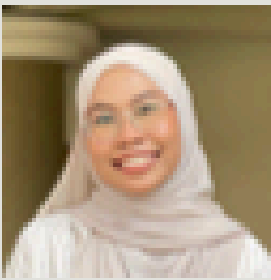
MUHAMMAD AIMAN
IZZUDDIN BIN MOHD
ROZI
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[STUDENT 3]

BREATHAWARE : LUNG BREATH RESPIRATORY MONITORING OVER IOT



STUDENT 1

HANNAN UMAIRAH BINTI
MUHAMAD ZAINUDIN
(08DEU22F1049)



STUDENT 1

HUDA BINTI MOHAMAD
RIZAL
(08DEU22F1016)

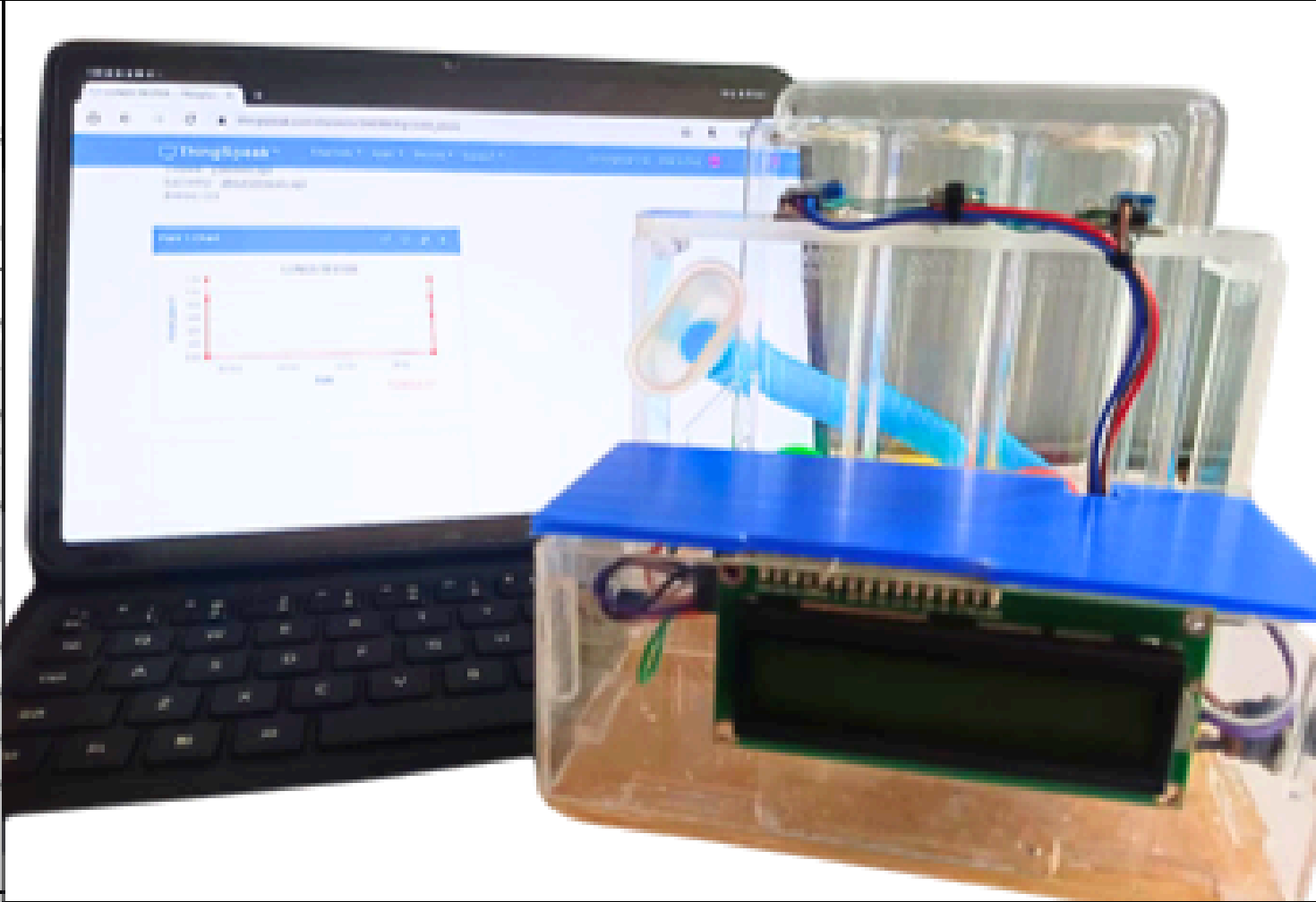


SUPERVISOR

PN.ASLINDA BINTI ZAMAH
SHARI

BACKGROUND PROJECT

Respiratory health is a critical aspect of overall well-being, yet it often goes unnoticed until symptoms become severe. With the increasing prevalence of respiratory diseases and the recent global health crisis highlighting the importance of monitoring lung function. There is a growing need for accessible and efficient respiratory health devices especially when conventional lung diagnostic cost and limited access for many, especially in remote areas. The pandemic highlighted the need for remote respiratory monitoring. There's an urgent demand for affordable, portable, and easy-to-use analyzers for real-time tracking and early intervention. Therefore, BreathAware aims to develop an affordable spirometer integrated with IOT capabilities using ESP 32 for monitoring data, provide a simple measurement and display data for breathing rate to gather and present databased for medical checkup proposal.The project offers a comprehensive solution for assessing and monitoring respiratory health. By using the capabilities of ESP 32 that have IoT connectivity, the system provides real-time monitoring of lung function parameters. With the help of IR sensors, data can be collected as a patient starts blowing, and data will transfer to ESP 32 and will be displayed on the LCD through the IoT communication. This project is expected to help breathing rate, show sensor data, and send notifications to patients for alertness.



PROBLEM STATEMENT

- Increasing Demand for Accessible Respiratory Health Devices
- Pandemic Highlighted Need for Remote Monitoring
- Urgent Need for Affordable, Portable, and User-Friendly Devices

OBJECTIVE

- To develop an affordable spirometer integrated with IOT capabilities using ESP 32 for monitoring data
- To provide a simple measurement and display data
- for breathing rate
- To gather and present databased for medical checkup proposal

METHODOLOGY

The methodology for BreathAware involves designing a compact, IoT-enabled spirometer using the ESP32 microcontroller for data processing and transmission. The device uses infrared (IR) sensors to detect airflow as the user exhales, capturing real-time breathing data. When airflow is detected, the IR sensors measure the exhalation rate and transfer the data to the ESP32, which processes and sends it through IoT connectivity to an LCD display for immediate viewing. Additionally, data is stored for future analysis and shared with connected devices for remote monitoring. The system provides notifications to alert patients when specific respiratory thresholds are reached, supporting timely intervention and continuous respiratory health management.

PROJECT SIGNIFICANT

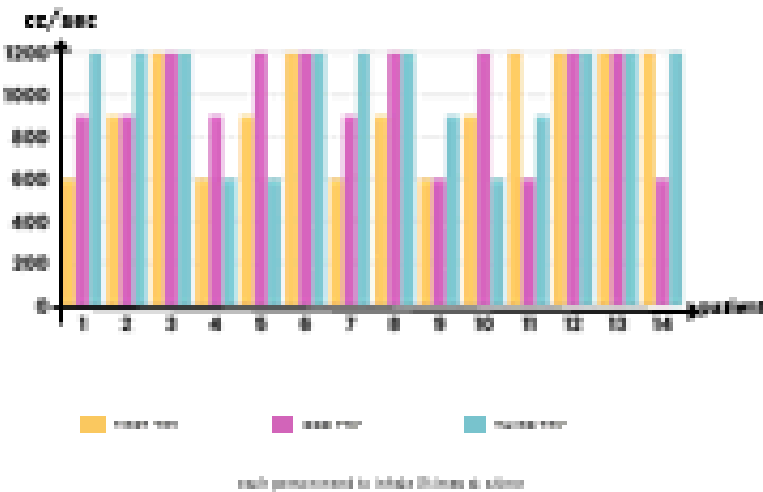
The significance of the BreathAware project lies in its potential to make respiratory health monitoring more accessible, affordable, and effective. By combining IoT technology with a low-cost spirometer, BreathAware addresses the limitations of conventional lung diagnostic tools, which can be costly and difficult to access, especially in remote or underserved areas. The project provides a user-friendly solution for tracking respiratory health in real time, enabling patients and healthcare providers to monitor lung function conveniently. Additionally, the alert system for inhalation thresholds supports timely intervention, which is crucial for managing respiratory conditions. Overall, BreathAware contributes to proactive healthcare by facilitating early detection and regular respiratory monitoring for broader patient accessibility.

RESULTS/FINDINGS

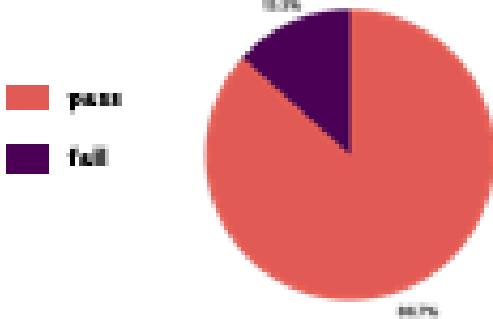
The BreathAware project found that the developed spirometer effectively monitors breathing in real time and provides accurate data at a low cost. The IR sensors accurately measured inhalation rates, and the ESP32 successfully processed and displayed the data on the LCD. Through IoT connectivity, the device allowed remote monitoring, making respiratory data easily accessible for both patients and healthcare providers. The system's alert feature worked well, helping prompt timely responses when breathing thresholds were reached. Overall, BreathAware proved to be a reliable, affordable tool for respiratory health monitoring, especially in remote or underserved areas.

DATA ANALYSIS:

INHALE MEASUREMENT VS PATIENT

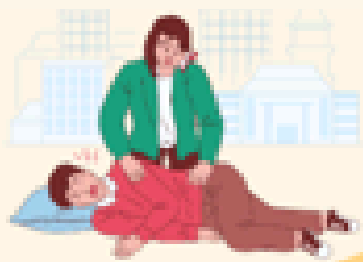


PASS VS FAIL PROJECT TESTING



CONCLUSION

- The project successfully developed an affordable IoT-integrated spirometer using ESP32 for real-time breathing rate monitoring
- Provides accurate measurements, displays data clearly, and organizes it for medical checkups.
- Making the device practical for ongoing respiratory health management.



EPILEPSY MONITORING SYSTEM



01 BACKGROUND OF PROJECT

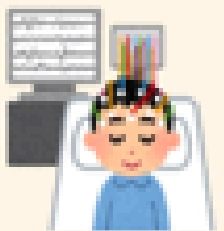
Epilepsy is a neurological disorder caused by abnormal electrical activity in the brain, leading to recurrent seizures that affect sensations, behaviors, and muscle movements. Monitoring seizures accurately is critical for effective epilepsy management, as it allows caregivers and medical professionals to respond quickly and appropriately. This project leverages IoT technology to improve epilepsy care by enabling real-time monitoring and alerts, offering a more reliable and immediate response during seizure events.

02 PROBLEM STATEMENT

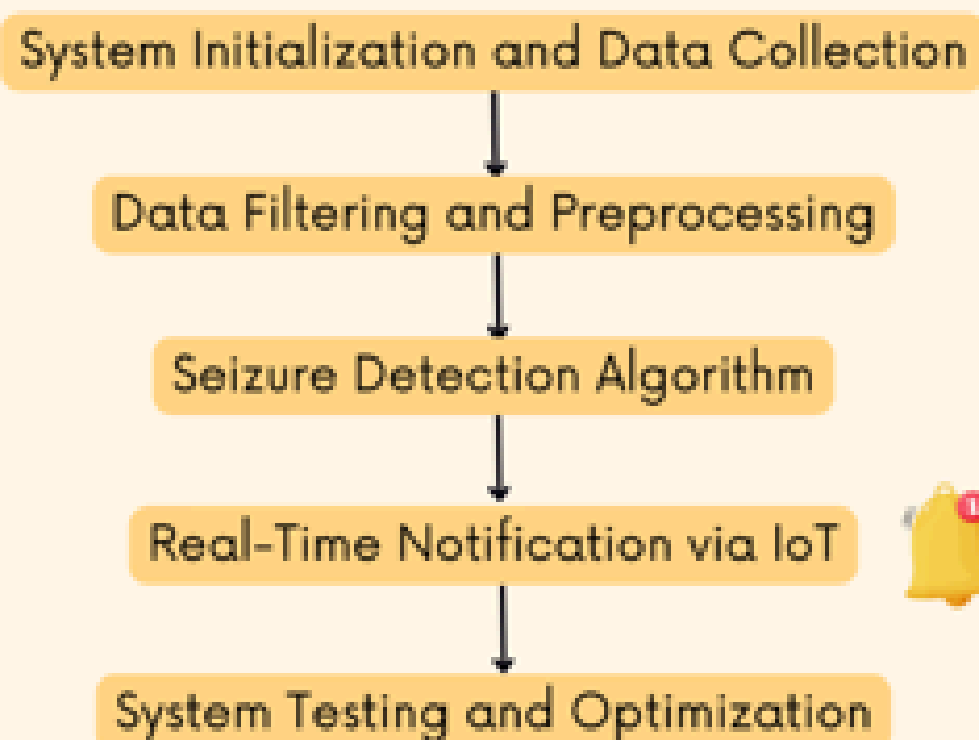
- Current epilepsy monitoring systems lack accuracy, leading to frequent false alarms or missed seizures.
- The absence of IoT connectivity restricts real-time monitoring and immediate alerts.
- Devices are bulky and uncomfortable.

03 OBJECTIVE

- Improve device accuracy and reliability using IoT to reduce false alarms.
- Enhance the comfort for longer wearability to enable continuous monitoring data.
- Develop a comprehensive IoT-enabled epilepsy monitoring system that provides real-time seizure detection.



04 METHODOLOGY

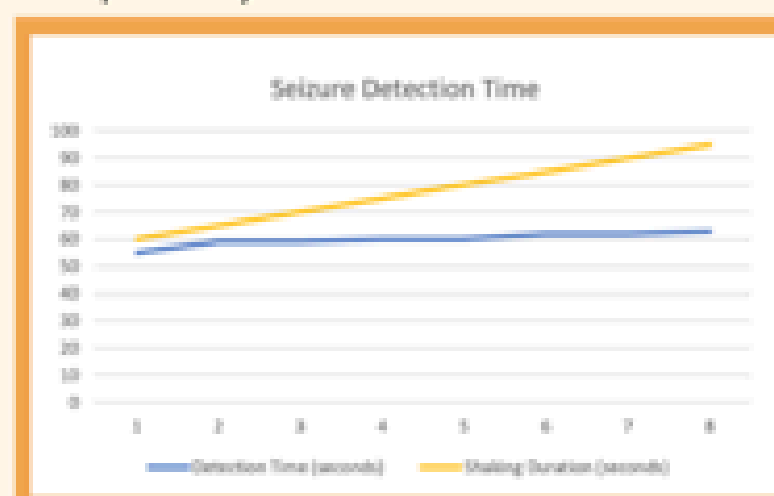


06 SIGNIFICANCE OF PROJECT

- Enhances epilepsy care with improved seizure detection accuracy.
- Offers a comfortable, wearable device, improving patient quality of life.
- Generates valuable data on seizure patterns for research.

05 FINDINGS

Graph Analysis of Seizure Detection Time.



Continuous contraction monitoring from app.



07 CONCLUSION

In conclusion, this project demonstrates the potential of IoT technology in healthcare by providing an accurate, wearable solution for epilepsy monitoring. The system's real-time capabilities and user-friendly design make it an effective tool for both patients and caregivers. Future improvements could focus on enhancing sensor accuracy, extending battery life, and adding additional features to further improve user experience.



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AZRIN BT MOHD HAKKE



Ketua Kumpulan : LAALITA A/P
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Ahli Kumpulan : AMNI NAJIAH
BINTI ROZANI (08DJK22F1017)

HYDROSOLAR

BACKGROUND

- Remote Monitoring: The system can be monitored and controlled in real-time via a mobile app, improving convenience and efficiency.
- Water Level Alerts: Automated water level sensors trigger alerts if water falls below or exceeds optimal levels, ensuring ideal conditions for plant growth.
- Solar Power Integration: Solar panels, batteries, and an inverter power the system, reducing dependence on non-renewable energy.

PROBLEM STATEMENT

- Not portable and difficult to change position.
- Power supply placement does not reach the system.
- Cant control remotely and dont know if the system is working or not remotely

OBJECTIVE

- Develop sustainable hydroponic system powered by solar energy.
- Increase food production efficiency.
- Reduce enviroment impact.

FINDINGS

- Accurate Water Monitoring: The system effectively monitored water levels, preventing plant dehydration or overflow.
- Reliable Alerts: Real-time notifications kept users informed, ensuring ideal conditions for plant growth.
- Efficient Solar Power Use: The system operated continuously on solar power for two days, showing good energy efficiency.

SIGNIFICANCE OF PROJECT

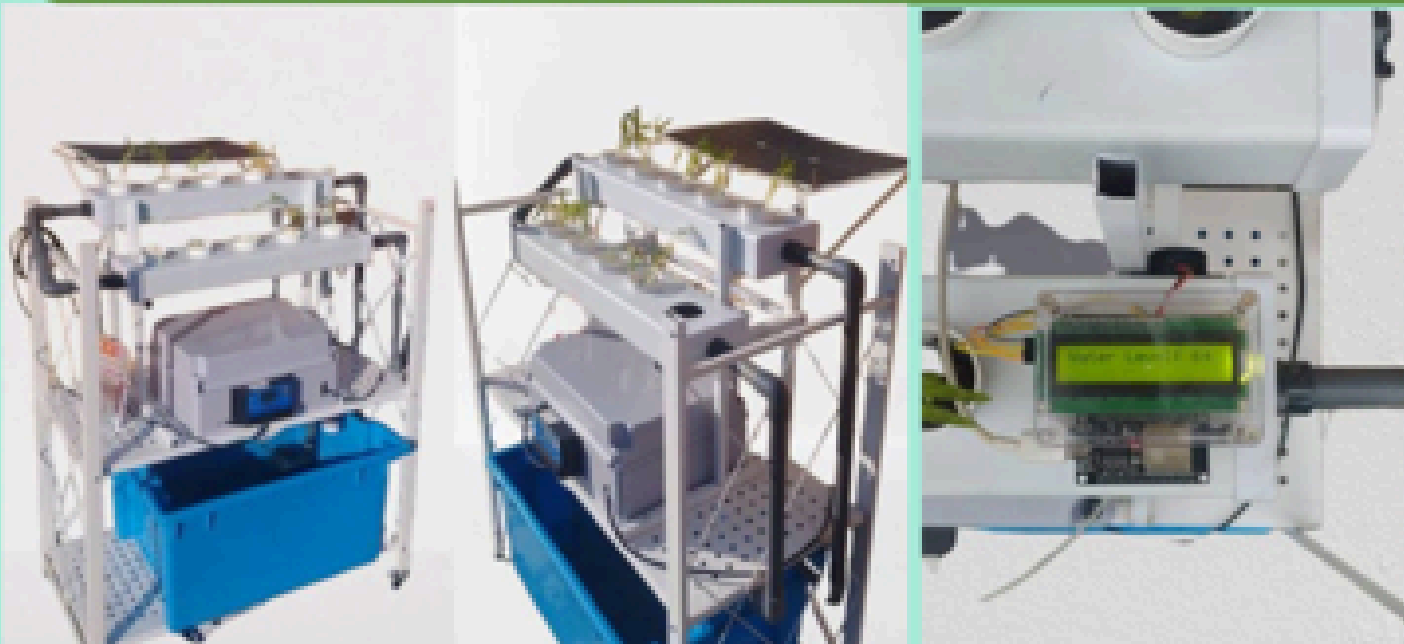
- Supports Sustainable Farming: Reduces environmental impact by using solar energy and conserving water.
- Cuts Farming Costs: Lowers energy and water expenses, making it affordable for various farming setups.
- Boosts Food Security: Allows efficient crop growth in areas with limited resources

CONCLUSION

- The Hidrosolar project demonstrates a sustainable, cost-effective approach to agriculture by combining solar energy with hydroponics. It reduces reliance on traditional energy sources, conserves water, and lowers operational costs, making it suitable for both urban and rural farming. The use of IoT for real-time monitoring ensures optimal growing conditions, enhancing efficiency and crop yield. Overall, Hidrosolar offers a scalable solution that addresses environmental and food security challenges, showing the potential of renewable energy and smart technology in modern

METHODOLOGY

ALERT SYSTEM



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BT LEMAN



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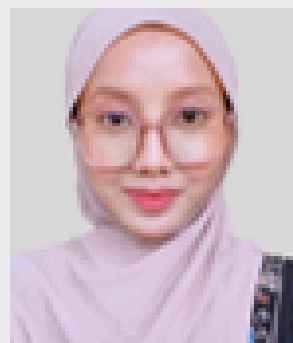
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DESIGN OF IOT BASED ON ELECTRIC MASSAGING DEVICE WITH HOT COMPRESSION

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STUDENT 2 ;



AIN HUMAIRAH
BINTI MOHD
HAMDAN
O8DEU22FIO40

SUPERVISOR ;



PUAN ASLINDA
BINTI ZAMAH SHARI

PROJECT'S BACKGROUND

MUSCLE SORENESS AND FATIGUE ARE COMMON PROBLEMS FROM DAILY ACTIVITIES OR EXERCISE, BUT REGULAR MASSAGE THERAPY IS OFTEN EXPENSIVE AND HARD TO ACCESS. WITH NEW TECHNOLOGY, WE CAN NOW CREATE A SIMPLE DEVICE THAT BRINGS MASSAGE AND HEAT THERAPY INTO THE HOME. THIS PROJECT USES AN ESP32 MICROCONTROLLER AND A TEMPERATURE SENSOR TO BUILD A MASSAGING DEVICE WITH SAFE, ADJUSTABLE HEAT, CONTROLLED REMOTELY THROUGH AN APP. THIS MAKES IT EASIER AND MORE AFFORDABLE FOR PEOPLE TO MANAGE MUSCLE PAIN, RELAX, AND IMPROVE BLOOD CIRCULATION ANYTIME THEY NEED.

OBJECTIVES

- TO DESIGN AN ELECTRIC MASSAGING DEVICE WITH HOT COMPRESSION.
- To implement an EFFICIENT HEAT DISTRIBUTION SYSTEM.
- TO DEVELOP SOFTWARE THAT CAN CONTROL THE MASSAGE AND HEAT LEVEL.

FINDINGS

THE FINDINGS OF THE "DESIGN OF IOT-BASED ELECTRIC MASSAGING DEVICE WITH HOT COMPRESSION" PROJECT DEMONSTRATE THAT THE DEVICE EFFECTIVELY REDUCES MUSCLE FATIGUE AND SORENESS THROUGH TARGETED MASSAGE AND HEAT THERAPY. THE ESP32 MICROCONTROLLER SUCCESSFULLY INTEGRATES WITH TEMPERATURE SENSORS TO PROVIDE SAFE, ADJUSTABLE HEAT LEVELS, AND WI-FI CONNECTIVITY ENABLES EASY REMOTE CONTROL VIA MOBILE APPS. TESTING SHOWS THE DEVICE MAINTAINS CONSISTENT HEATING WITHOUT OVERHEATING, ENSURING USER SAFETY. ADDITIONALLY, USERS REPORT IMPROVEMENTS IN RELAXATION, PAIN RELIEF, AND OVERALL COMFORT, MAKING THE DEVICE A PROMISING SOLUTION FOR PERSONALIZED AND AT-HOME MUSCLE CARE.

PROJECT SIGNIFICANT

THE SIGNIFICANCE OF THIS PROJECT LIES IN ITS POTENTIAL TO OFFER AN ACCESSIBLE, AFFORDABLE, AND EFFECTIVE SOLUTION FOR MUSCLE RELIEF AND RELAXATION, DIRECTLY ADDRESSING THE LIMITATIONS OF TRADITIONAL MASSAGE THERAPY. BY INTEGRATING IOT CAPABILITIES WITH AN ELECTRIC MASSAGING DEVICE, USERS CAN ENJOY PERSONALIZED MASSAGE AND HEAT COMPRESSION THERAPY FROM THE COMFORT OF THEIR OWN SPACE. THIS PROJECT ENABLES REAL-TIME REMOTE CONTROL, ADJUSTABLE SETTINGS FOR SAFETY AND COMFORT, AND EFFECTIVE HEAT DISTRIBUTION TO ALLEVIATE MUSCLE FATIGUE, REDUCE PAIN, AND IMPROVE BLOOD CIRCULATION. ULTIMATELY, IT PROMOTES OVERALL WELL-BEING AND CONVENIENCE FOR USERS, PARTICULARLY THOSE WITH LIMITED MOBILITY OR ACCESS TO IN-PERSON THERAPY.



PROBLEM STATEMENT

CONSTRICTION OF BLOOD VESSELS IS CAUSED BY EXCESSIVE ACCUMULATION OF LACTIC ACID AND TOXIC SUBSTANCES AND AT THE SAME TIME THE OXYGEN AND NUTRIENT CONTENT IN THE MUSCLE DECREASES. CONVENTIONAL MASSAGE THERAPY PROVIDES LIMITATIONS IN ACCESSIBILITY DUE TO COST AND SCHEDULING, INCONSISTENCY IN PRESSURE APPLICATION BY THERAPISTS, LACK OF PERSONALIZATION FOR INDIVIDUAL NEEDS, AND DIFFICULTY FOR THOSE WITH LIMITED MOBILITY.

METHODOLOGY

THE METHODOLOGY FOR THIS PROJECT INVOLVES DESIGNING, DEVELOPING, AND TESTING AN IOT-BASED MASSAGING DEVICE WITH HOT COMPRESSION. KEY COMPONENTS INCLUDE AN ESP32 MICROCONTROLLER FOR REMOTE CONTROL, TEMPERATURE SENSORS TO MONITOR HEAT LEVELS, AND MOTORS FOR MASSAGING FUNCTIONS. THE DEVICE IS ENCLOSED IN A HEAT-RESISTANT CASING, WITH THE ESP32 PROGRAMMED TO REGULATE TEMPERATURE AND MOTOR SPEED BASED ON USER PREFERENCES, WHICH ARE CONTROLLED VIA A MOBILE APP. AFTER ASSEMBLY, THE DEVICE UNDERGOES TEMPERATURE CALIBRATION, MOTOR TESTING, AND USABILITY TRIALS TO ENSURE SAFETY, EFFECTIVENESS, AND COMFORT. FEEDBACK AND PERFORMANCE DATA ARE COLLECTED TO MAKE ITERATIVE IMPROVEMENTS, RESULTING IN A RELIABLE, USER-FRIENDLY DEVICE FOR MUSCLE PAIN RELIEF.

CONCLUSION

- IOT BASED MESSAGE DEVICE HAS SUCCESSFULLY DESIGNED AND DEVELOPED.
- EFFICIENT HEAT DISTRIBUTION SYSTEM HAS BEEN APPLIED AND TESTED DURING PROJECT DEVELOPMENT.
- THE IOT ELEMENT MANAGED TO CONTROL THE MASSAGE AND HEAT LEVEL.

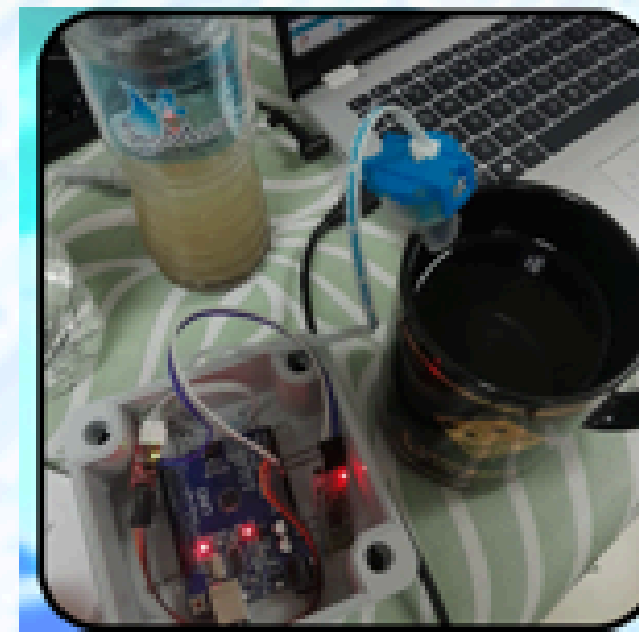
MONITORING INDICATOR FOR OUTDOOR WATER FILTER

BACKGROUND

- Outdoor water filters **lack indicators for water cleanliness**, leaving users unsure about filter maintenance needs.
- Without turbidity monitoring, filters are **often backwashed at random times**, potentially wasting water and reducing efficiency.
- Unmonitored water cleanliness raises **concerns about water safety** for drinking and household use.
- This project aims to **develop an IoT-based turbidity monitoring** solution to ensure timely maintenance and safer water quality.

PROBLEM STATEMENT

- Lack of Turbidity Awareness:** Users cannot determine if the filtered water is clean, resulting in inefficient filter maintenance and possible consumption of unsafe water.
- Inconsistent Water Quality Monitoring:** Without real-time data, users are unsure of the water's suitability for drinking or washing, posing health risks.
- Need for Efficient Filter Maintenance:** Ineffective backwashing practices lead to wasted resources and reduced filter effectiveness, requiring a monitoring system for optimal performance.



OBJECTIVE

- To **verify the water cleanliness** (NTU) according to Malaysia Water Standard (SMTU).
- To **design a sensor device** that will connect with outdoor water filter.
- To **build** the low cost turbidity **sensor with IOT information** application.

METHODOLOGY

- Review Malaysia's **NTU standards and similar IoT-based turbidity monitoring** systems.
- Select **turbidity sensor, Arduino Uno, Bluetooth module, and IoT platform** (Arduino Bluetooth Controller).
- Design** waterproof, durable housing for outdoor use.
- Test** in different water conditions to verify accuracy and reliability.
- Develop** Arduino Bluetooth Controller interface to display NTU levels and alert users on cleanliness status.
- Assess device for **cost-effectiveness and low-cost design**.
- Conduct outdoor trials and deploy device in real-world conditions.

SIGNIFICANCE OF PROJECT

- Provides a low-cost, **easy way to monitor water turbidity** (cloudiness) and ensure clean water.
- Helps users know **when to maintain their water filters**, improving filter efficiency and **reducing health risks**.
- User-friendly** and affordable, making it suitable for households, especially in rural or remote areas.
- Supports healthier lifestyles** by ensuring safe drinking water.

CONCLUSION

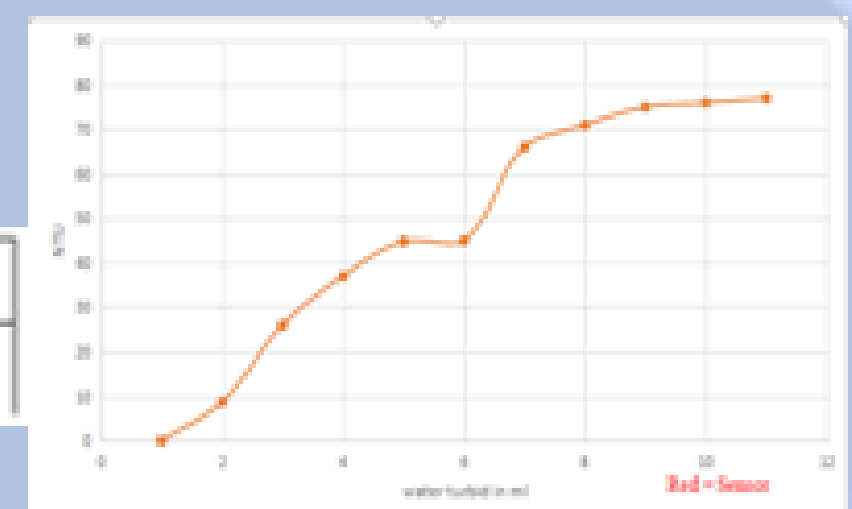
- Developed an IoT turbidity monitoring device** to address water cleanliness for outdoor filters.
- Utilized **turbidity sensors, IoT integration, and low-cost design for effective water quality monitoring**.
- Achieved project goals of verifying cleanliness, creating an outdoor-compatible sensor, and ensuring affordability.
- Provides a basis for **improved water quality management**, contributing to safer water **for household use**.

FINDINGS

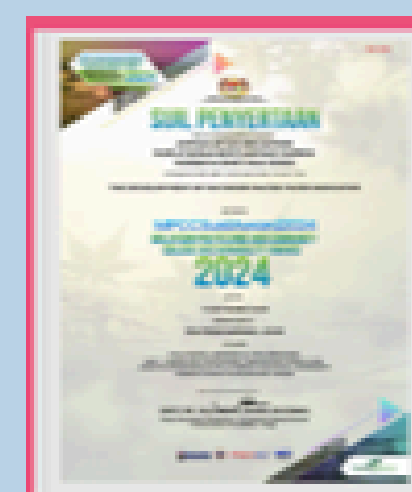
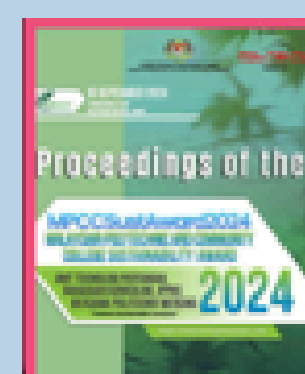
The developed turbidity sensor is accurate, **cost-effective**, and well-suited for **continuous monitoring of water quality**, particularly in **domestic outdoor filtration** systems, to ensure clean, **safe drinking water**.

RESULT

	Clean Water	Dirty Water
Voltage	3.39 V	2.04 V
Byte	575	259



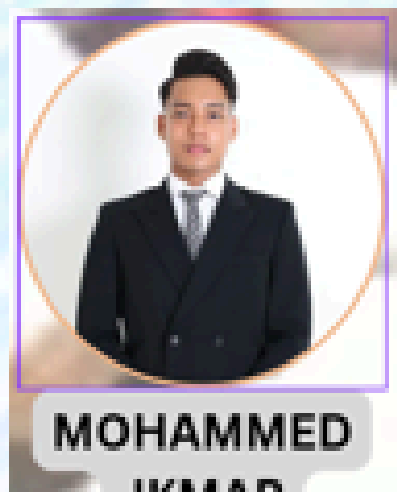
ACHIEVEMENT



DR AFTAS



NUR ATHIRAH



MOHAMMED
IKMAR

Nama **ketua kumpulan** : Nur **Athirah** binti Ahmad Tamrin
Nama **ahli kumpulan** : Mohammed **Ikmar** Hakim bin Ismail
Nama **Penyelia** : Ts. Dr. Hj. Ahmad **Aftas** bin Azman

LEG STRENGTH TESTER FOR DIALYSIS PATIENT WITH IOT

Nama Pelajar : NUR AMIRAH HANIS BINTI HAFIZAL
No. Pendaftaran : 08DEU21F2070
Nama Penyelia : EN.YAAKUB BIN OMAR

INTRODUCTION

This project aims to create a tool using IoT technology to measure the leg strength of dialysis patients. This tool allows real-time monitoring of patient progress, improving the accuracy of care.

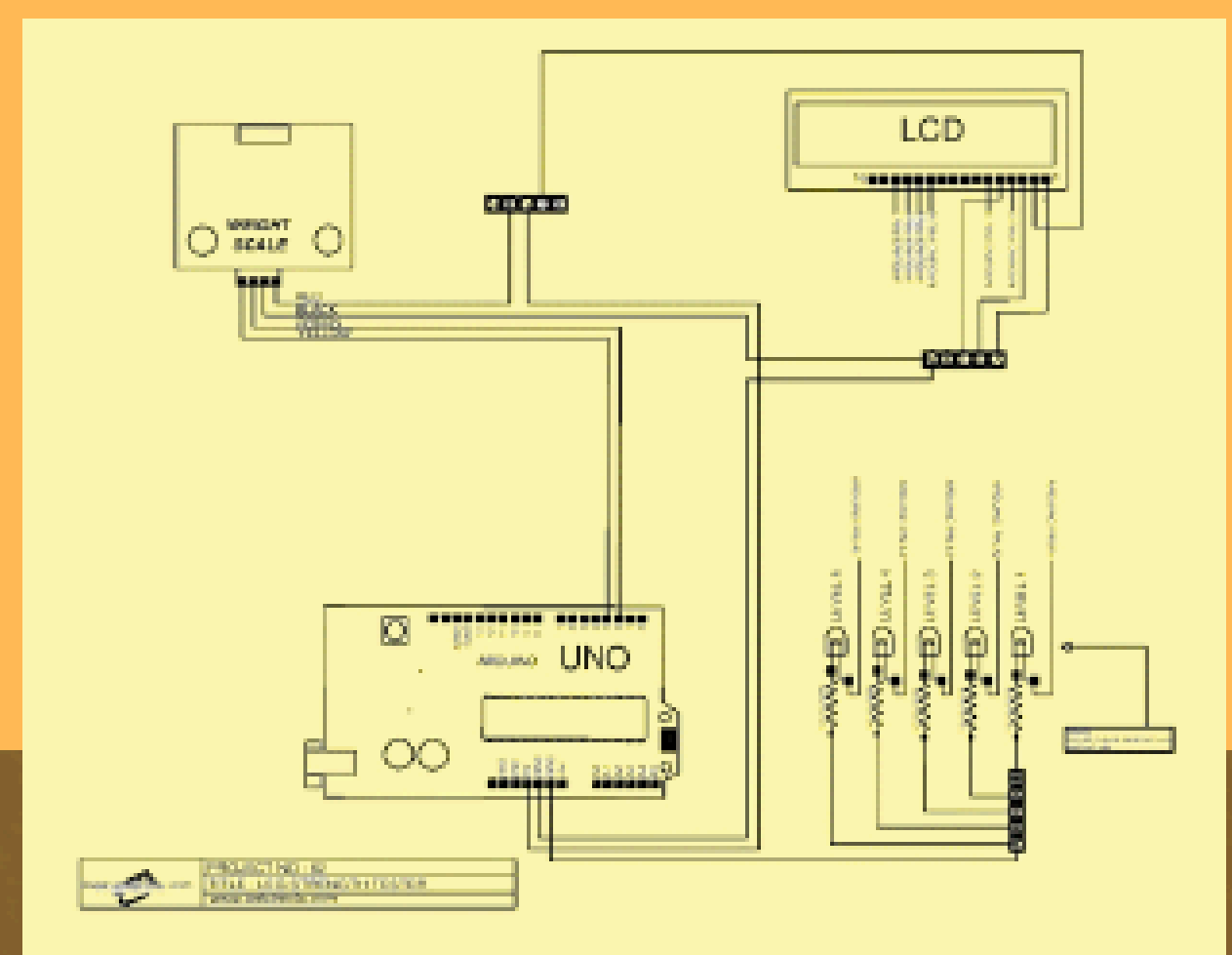
OBJECTIVES

1. To Design and create a device capable of accurately measuring leg strength in dialysis patients, ensuring it is user-friendly and portable for easy use.
2. To implement technology that enables continuous monitoring of leg strength.
3. To conduct trials with dialysis patients to validate the effectiveness of the device.

INOVATION IMPACT

- An innovative device customized based on continuous monitoring of leg strength."
- Early detection of weakness helps prevent complications.
- Empowers patients to manage their health actively.

BLOCK DIAGRAM



INNOVATIVE





KEMENTERIAN PENGAJIAN TINGGI

GAS LEAKAGE DETECTOR USING APP WITH IOT

MUHAMMAD NAIM BIN ABDUL SALAM

08DEU21F2034

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

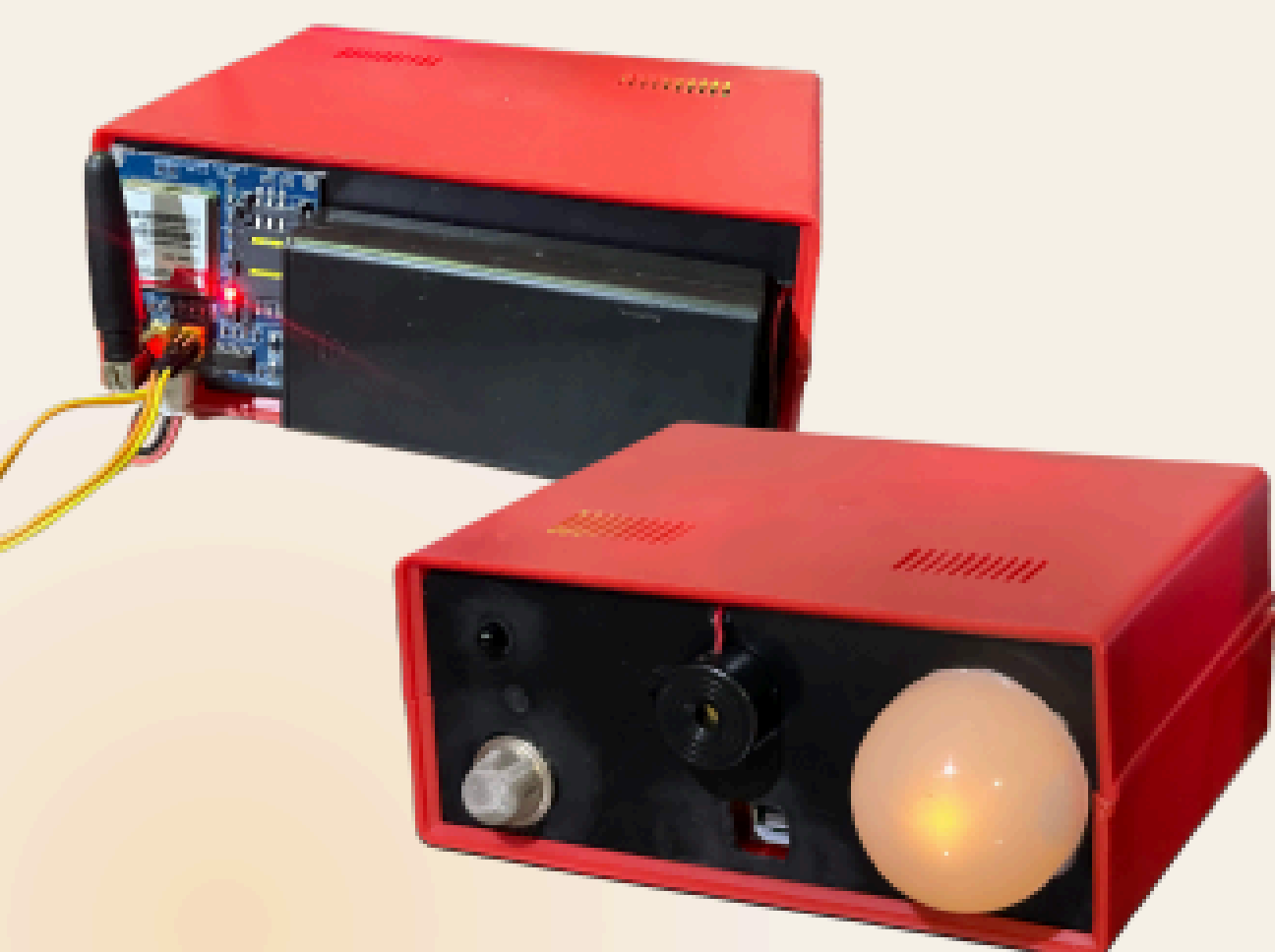
SUPERVISOR : USTAZ KHAIRUL NAPISHAM BIN ABD RAZAK



PROJECT DESCRIPTION

This project is to improve an safety precaution in home with alert gas leakage via sms and fire alarm call to the user . The project utilized MQ2 sensor to detect the gas leakage and fire sensor to detect the fire that would automatically begin the alarm process. First, the MQ2 sensor will detect the gas leakage and turn on the buzzer that will ring for 2s and send the sms to user , if fire detect from the fire sensor the buzzer will ring for 2s and make a call to the user .Both sensor will contouniously ring the buzzer and send sms and call until fire and gas dissapear

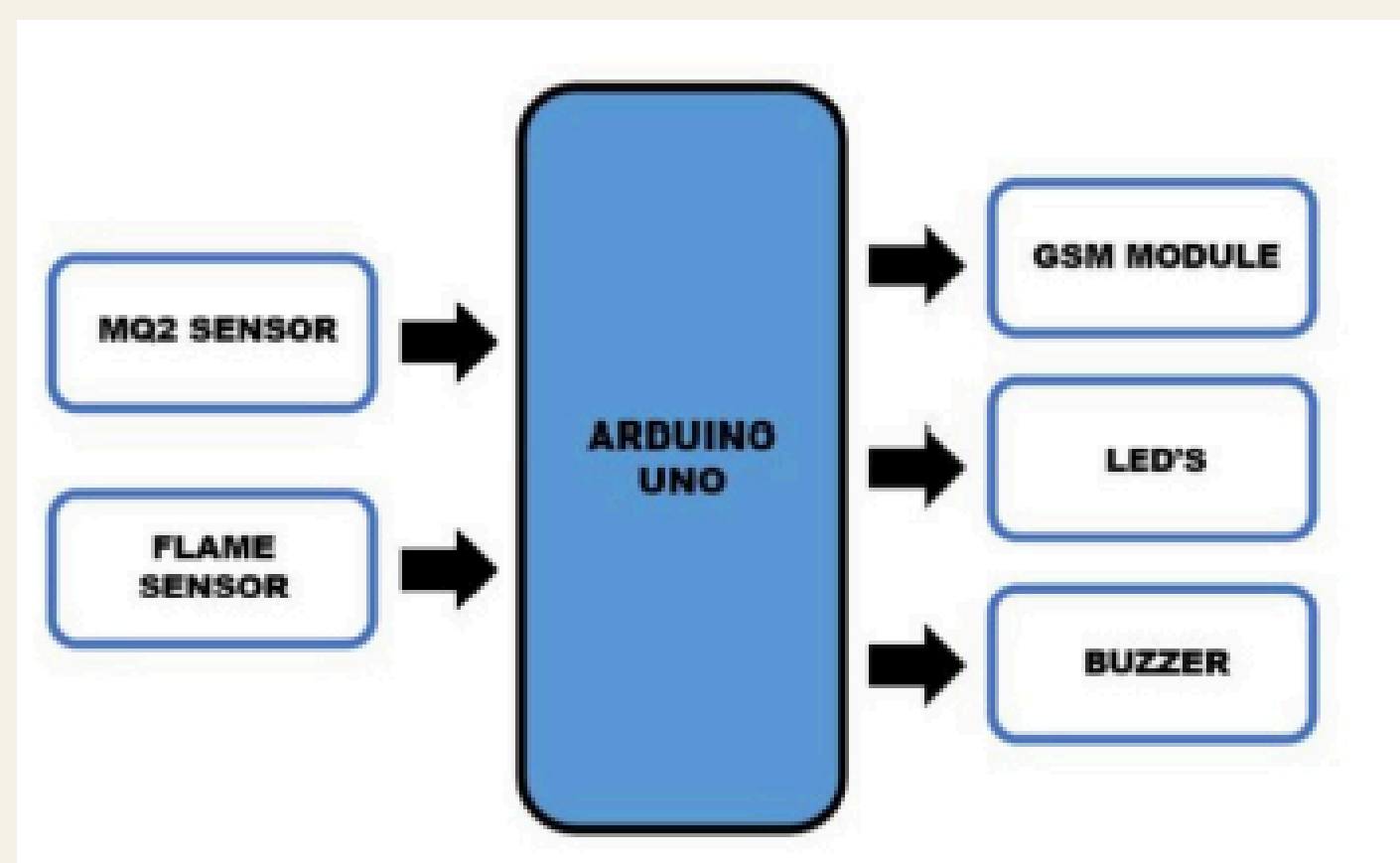
PROTOTYPE



PROJECT OBJECTIVES

1. To design a fire and gas LPG detection system in home using Arduino and GSM module.
2. To implement the system is reliable, accurate, and efficient in detecting fires and gas LPG
3. To develop a notification system that sends SMS and call alerts to designated personnel in case of fire.

BLOCK DIAGRAM



PROJECT IMPACT

Encourages people to take safety precaution at home before become worse



SMART CURTAIN

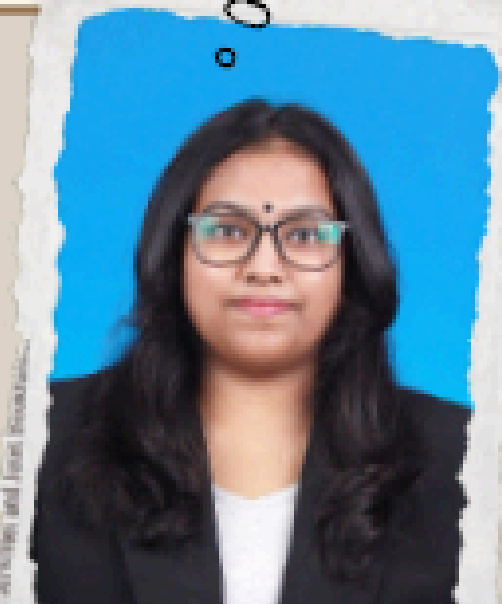
WITH VOICE COMMAND



VASUNTHRA PRAGASH KUMAR

08DEP21F2026

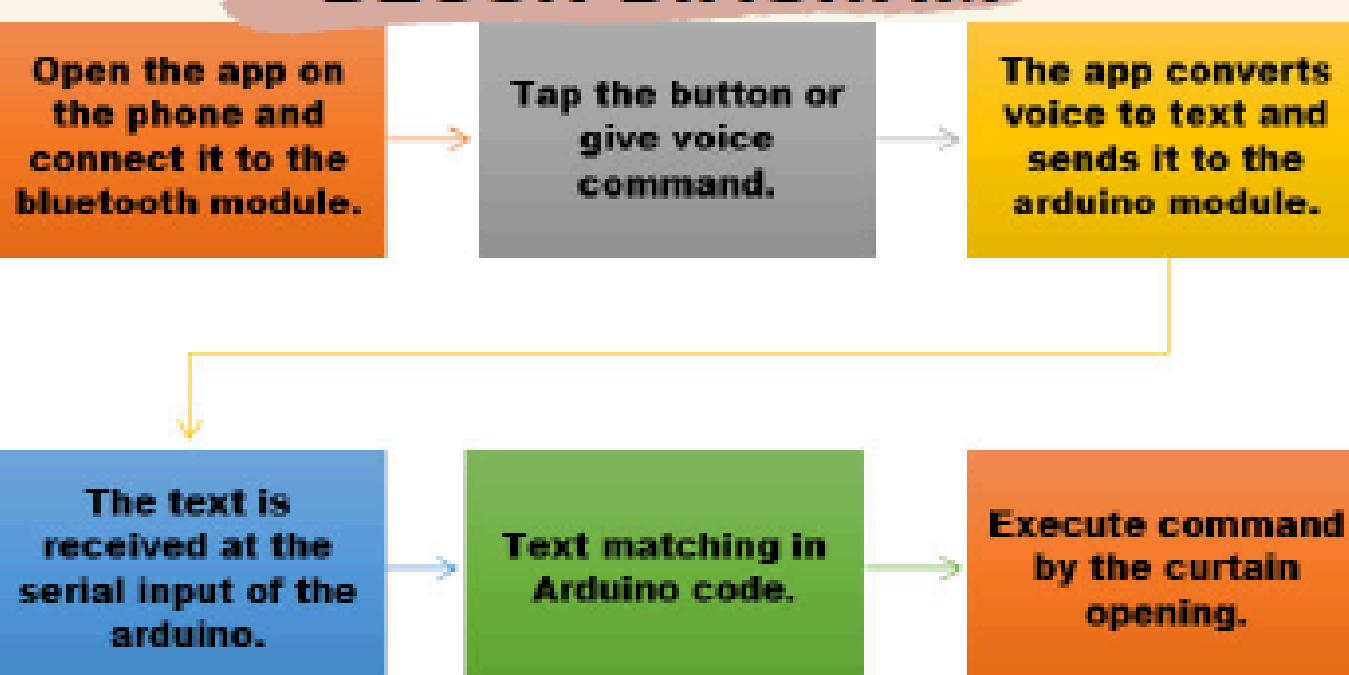
PUAN NUR HADIANA BINTI NASRUDDIN



DESCRIPTION

SMART CURTAINS, ALSO KNOWN AS AUTOMATED OR MOTORIZED CURTAINS, BRING TOGETHER LUXURY, CONVENIENCE, AND CONTROL. THESE CURTAIN SYSTEMS INTEGRATE ADVANCED TECHNOLOGY FOR AUTOMATIC OPERATION THROUGH VOICE COMMANDS. IT ELIMINATE THE NEED FOR MANUAL OPENING OR CLOSING BY ENABLING YOU TO ADJUST THEM REMOTELY. SMART CURTAINS OPERATE THROUGH A MOTORIZED MECHANISM, TYPICALLY CONSISTING OF A MOTORIZED TRACK THAT CAN BE WIRED INTO YOUR HOME'S ELECTRICAL SYSTEM. USING A SMARTPHONE APP, YOU CAN CONTROL THE CURTAINS' MOVEMENT ON THE TRACK, AS LONG AS YOU'RE CONNECTED TO THE BLUETOOTH.

BLOCK DIAGRAM



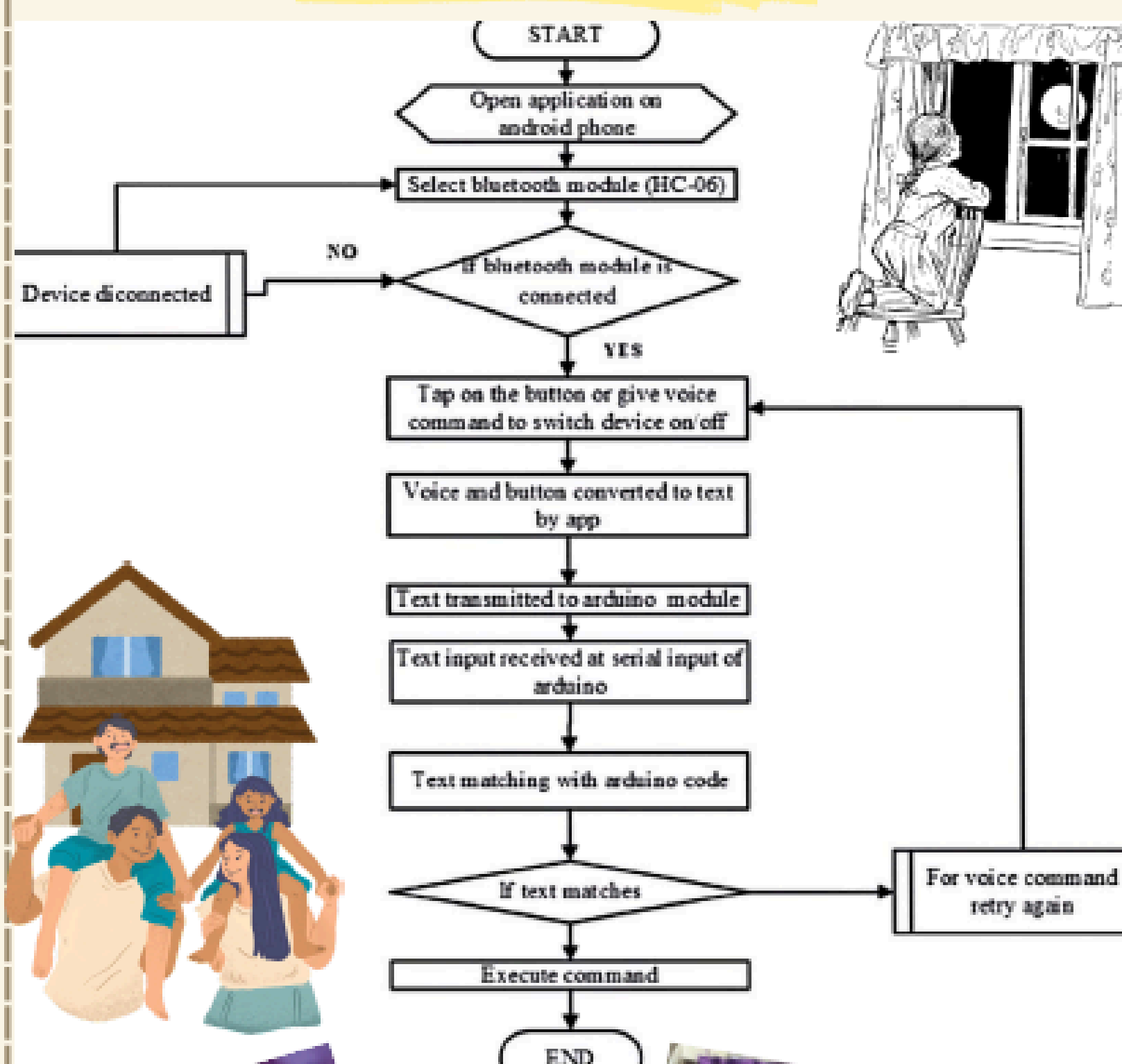
IMPACT

1. REVOLUTIONIZE HOME COMFORT AND ENERGY EFFICIENCY BY OFFERING AUTOMATED CONTROL OVER NATURAL LIGHT AND PRIVACY.
2. ABILITY TO OFFER CONVENIENCE, ENERGY EFFICIENCY, AND ENHANCED HOME AUTOMATION CAPABILITIES.
3. SMART CURTAINS ARE SEEING WIDESPREAD ADOPTION DUE TO THEIR CONVENIENCE AND ENERGY-SAVING BENEFITS.

OBJECTIVES

1. TO DESIGN AUTOMATED SMART CURTAIN SYSTEM.
2. TO IMPLEMENT METHOD OF PROJECT.
3. TO DEVELOP TECHNOLOGY IN THE SMART HOME SYSTEM.

FLOWCHART





KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI



SITI NOR ATIKA BINTI MOHD AZWAN

08DEU21F2002

NAMA PENYELIA : PUAN SITI HAJAR

BINTI ABD HAMID

IOT BASED MONITORING HYDRATION TRACKER (WATER BOTTLE)



DESCRIPTION

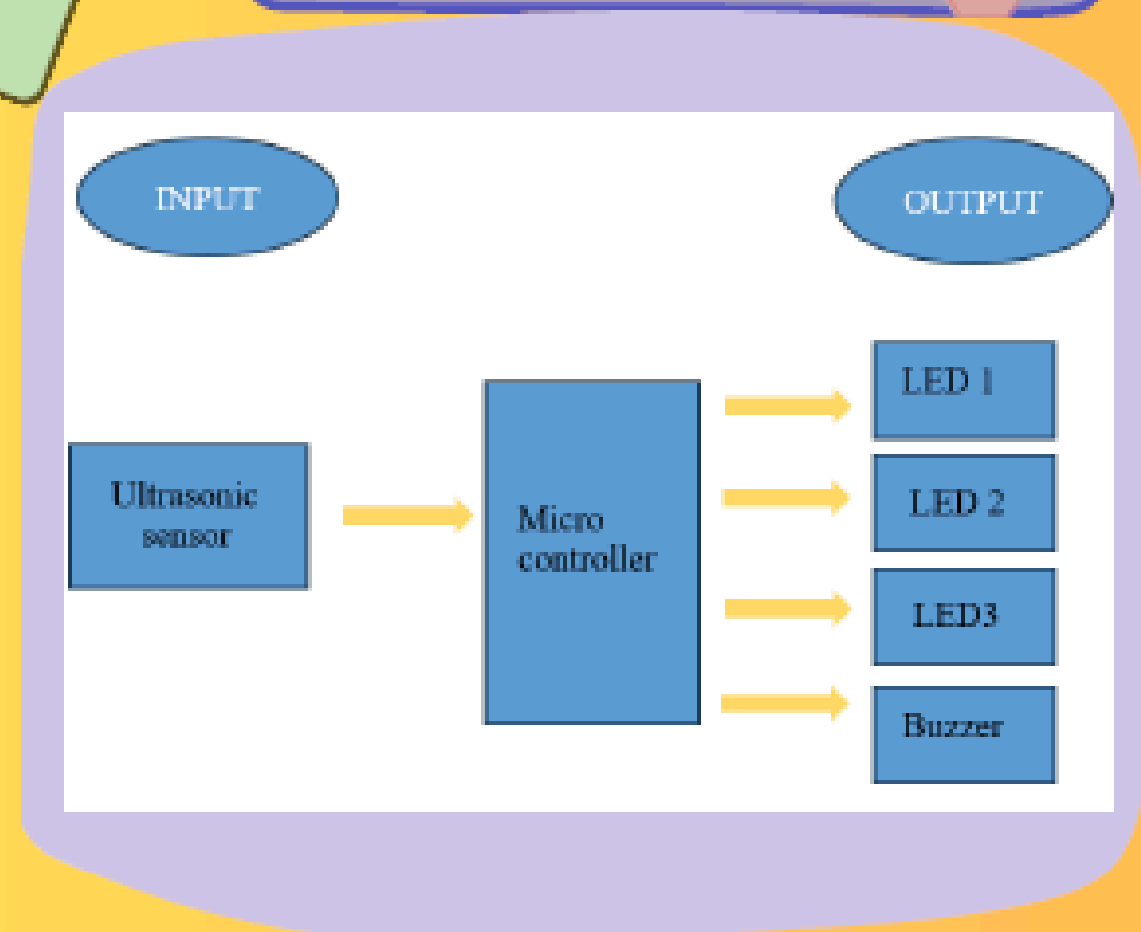


The IoT-based Monitoring Hydration Tracker Water Bottle is a cutting-edge solution designed to revolutionize the way individuals manage their hydration levels. Dehydration, a common yet often underestimated health concern, can lead to various health issues ranging from mild discomfort to severe complications.

This project aims to address this challenge by introducing an innovative water bottle equipped with IoT technology to monitor and track hydration levels in real-time.



BLOCK DIAGRAM



OBJECTIVES



Develop a user-friendly IoT-enabled water bottle with integrated sensors to accurately track water intake in real-time

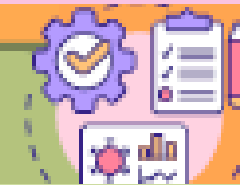


Create a user-friendly smartphone app that syncs with an IoT water bottle and offers personalised hydration data and reminders.



Evaluate the effectiveness of the hydration tracker system in promoting healthier hydration habits through monitoring of hydration-related metrics.

IMPACT



Health and Wellness:

this innovation promotes better health outcomes by preventing dehydration-related complications



Technological Advancement:

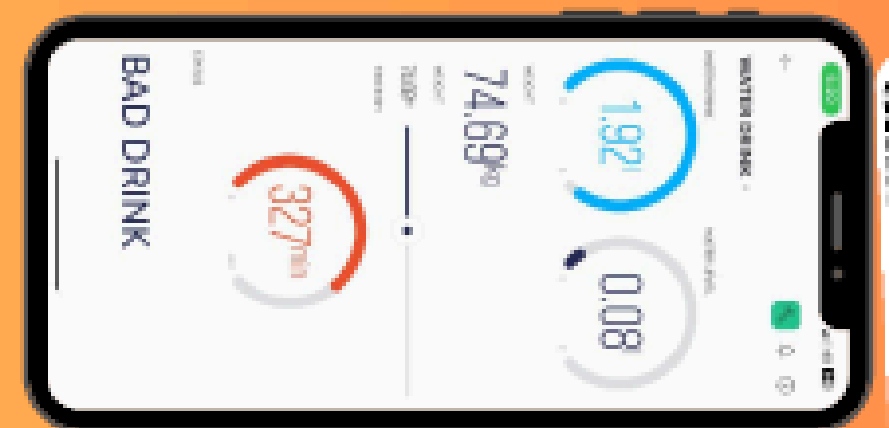
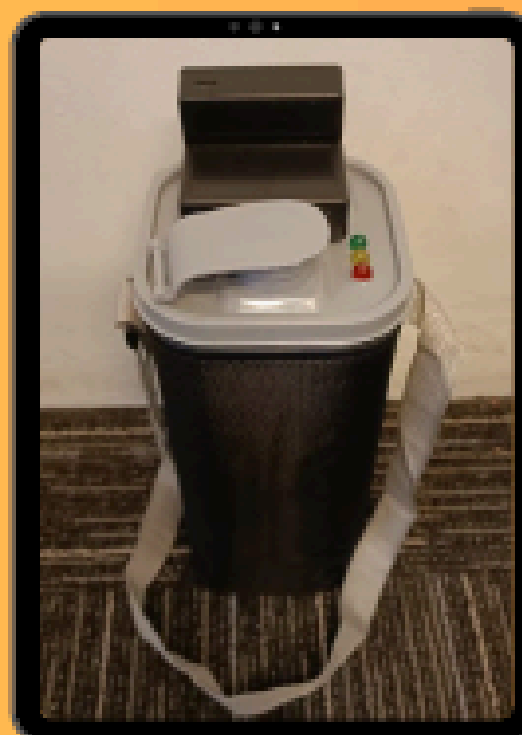
The research advances IoT applications in everyday life, highlighting the potential of smart gadgets to address health concerns.



Cost Savings:

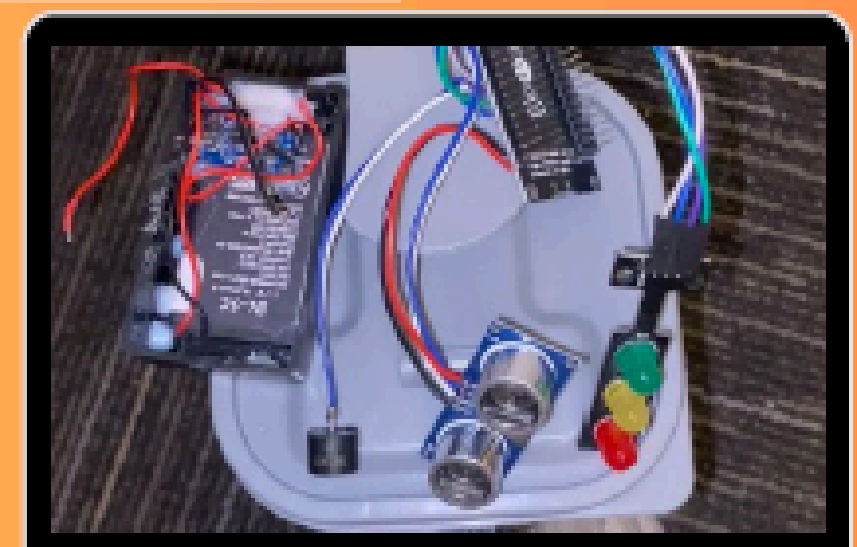
Dehydration-related medical expenses, such as hospital visits and treatments

project model



software

hardware





IOT BASED SECURITY SYSTEM USING ARTIFICIAL INTELLIGENCE TECHNOLOGY

NAMA PELAJAR : NORMAIZATUL ALIA BINTI A RAZALI

NO. PENDAFTARAN: 08DEU21F2012

NAMA PENYELIA : DR, BAHARUDDIN BIN MUSTAPHA



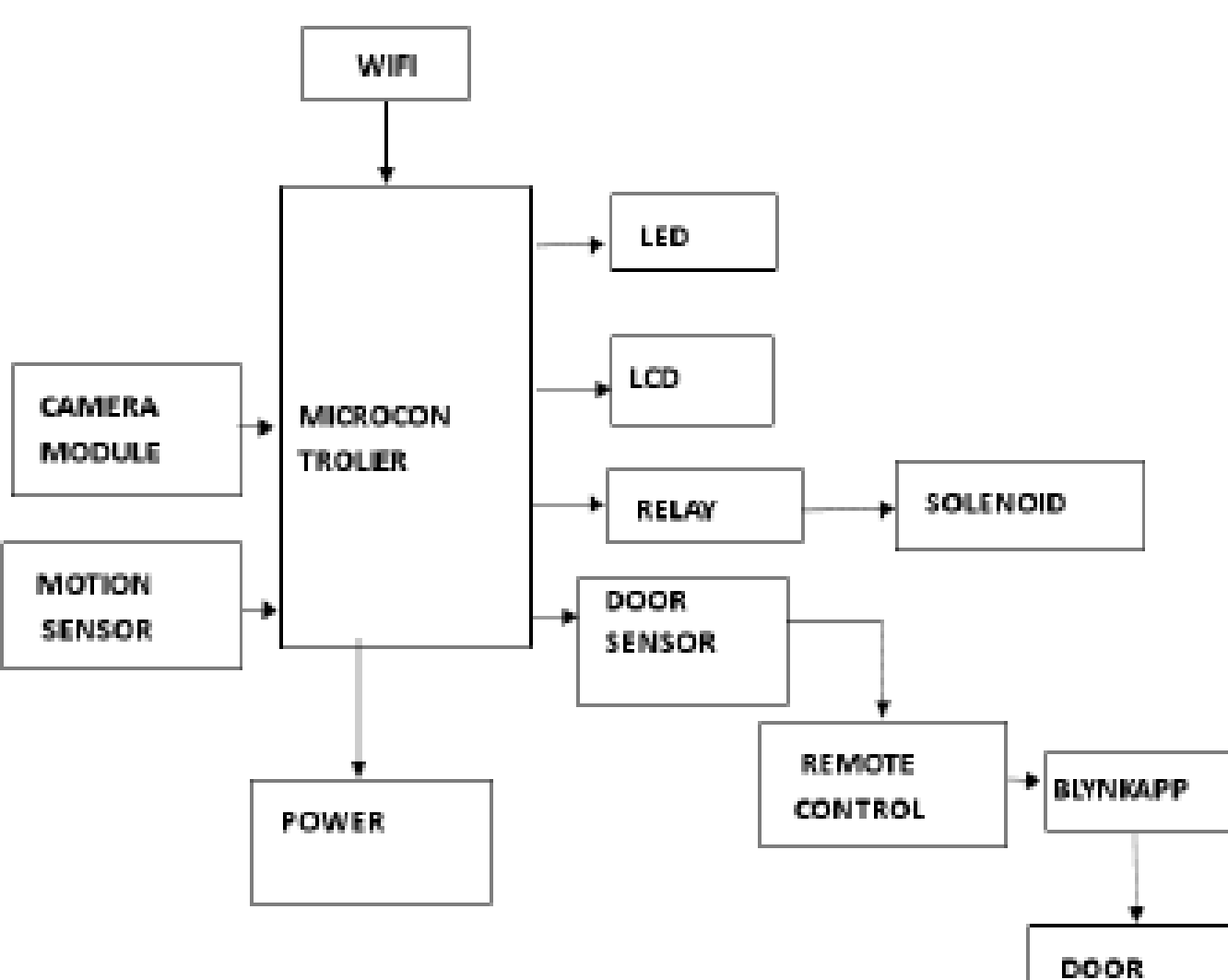
OBJECTIVE

1. Develop an IoT-based security system utilizing artificial intelligence technology to enhance home protection and convenience.
2. Implement robust security measures to prevent unauthorized access and ensure the safety of user data.
3. Improve user-friendliness and reliability by simplifying setup, maintenance, and integrating long-lasting power sources for uninterrupted functionality.

INTRODUCTION

IoT Based Security System Using Artificial Intelligence Technology offer convenience and security by allowing remote control and integration with other IoT devices, enhancing home automation. However, ensuring robust security measures to prevent unauthorized access is crucial. Improving user-friendliness and reliability are key challenges. Simplifying setup and maintenance while ensuring long-lasting power sources will enhance user satisfaction with these advanced home/ building / room security technologies..

BLOCK DIAGRAM



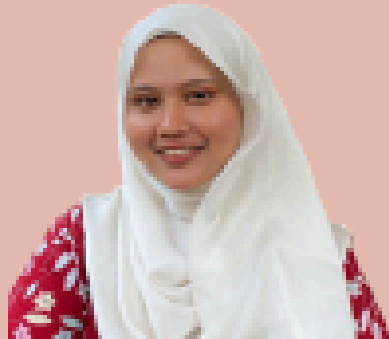
IMPACT

1. Improved Home Security: IoT-based security systems with AI technology enhance home protection, reducing the risk of unauthorized access and intrusions.
2. Customizable User Experience: Users can personalize security settings according to their needs, ensuring adaptive and tailored solutions.
3. Continuous Evolution: Ongoing advancements in AI technology facilitate continuous innovation, adapting to emerging threats and evolving user requirements for optimal security standards.

PRODUCT



THE DEVELOPMENT OF ELECTRONIC NERVE STIMULATOR USING IOT



**NUR AFZA ADLIN BINTI MOHD
ZAINI**
08DEU21F2047
SUPERVISOR - NAAGAJOTHI A/P
ADIN NARAINA

PROBLEM STATEMENT

Current nerve stimulation devices have portability and usability issues, hindering their clinical use. Complications can arise from device-related problems, surgery, or health changes, regardless of age.

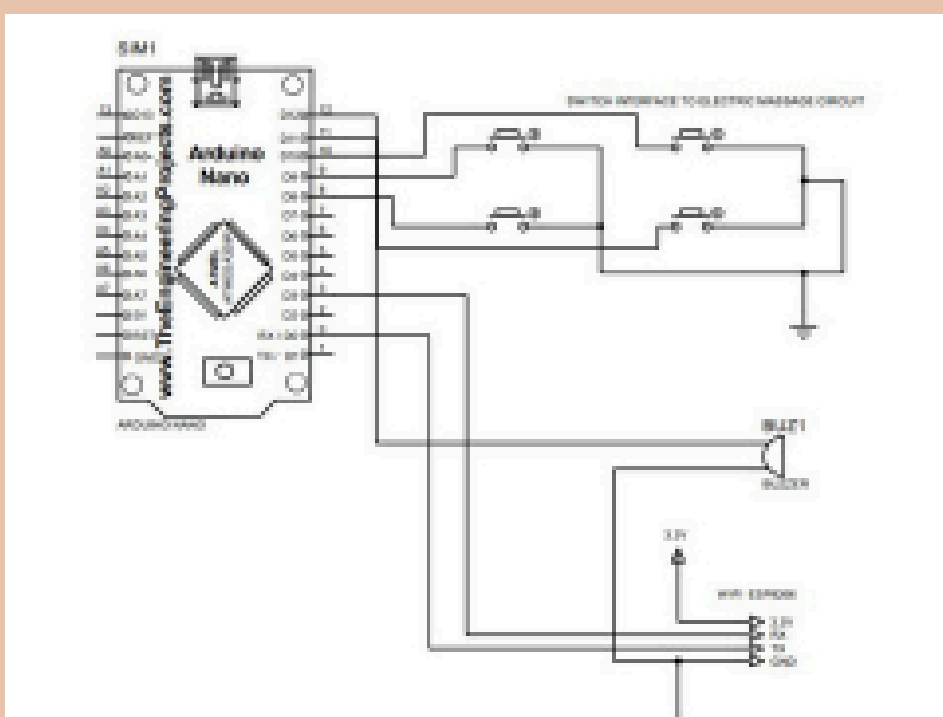
INNOVATION IMPACT

An IoT-integrated Electronic Nerve Stimulator is needed for precise pain relief, remote monitoring, and therapy adjustments. The project aims to develop this device to benefit individuals with persistent pain conditions.

OBJECTIVE

- To measure length of movement.
- To evaluate the nerve stimulator's level of effectiveness before and after use.

SCHEMATIC DIAGRAM



INNOVATION PICTURE



SMART WATER FILTRATION FOR ECO GREEN



OBJECTIVE



- WITH A WATER FILTRATION SYSTEM AND WATER MONITORING SOLUTION THAT **USES A CHEAP WATER FILTER, THE DETECTION OR COLLECTION OF TRASH STUCK IN DRAINAGE AND DRAIN IRRIGATION.** IN ORDER TO PREVENT FLOODING AND COLLECTED TRASH, THE PROJECT ALSO AIMS TO LAUNCH AN IRRIGATION SYSTEM.
- TO **DEVELOP A SYSTEM THAT CAN ACCURATELY DETECT AND IDENTIFY VARIOUS TYPES OF DEBRIS,** INCLUDING FLOATING OBJECTS, AQUATIC PLANTS, AND WASTE, IN THE VICINITY OF THE WATER FILTER.
- **PROVIDE CONTINUOUS AND REAL-TIME MONITORING** OF DEBRIS ACCUMULATION IN A WATER FILTER TO ENSURE TIMELY INTERVENTION AND PREVENT OPERATIONAL DISRUPTIONS.

PROBLEM STATEMENT

01. Current cleanup methods rely **heavily on manual labor or passive collection systems like booms and nets**, which are limited in scope, labor-intensive, and often ineffective in capturing smaller debris

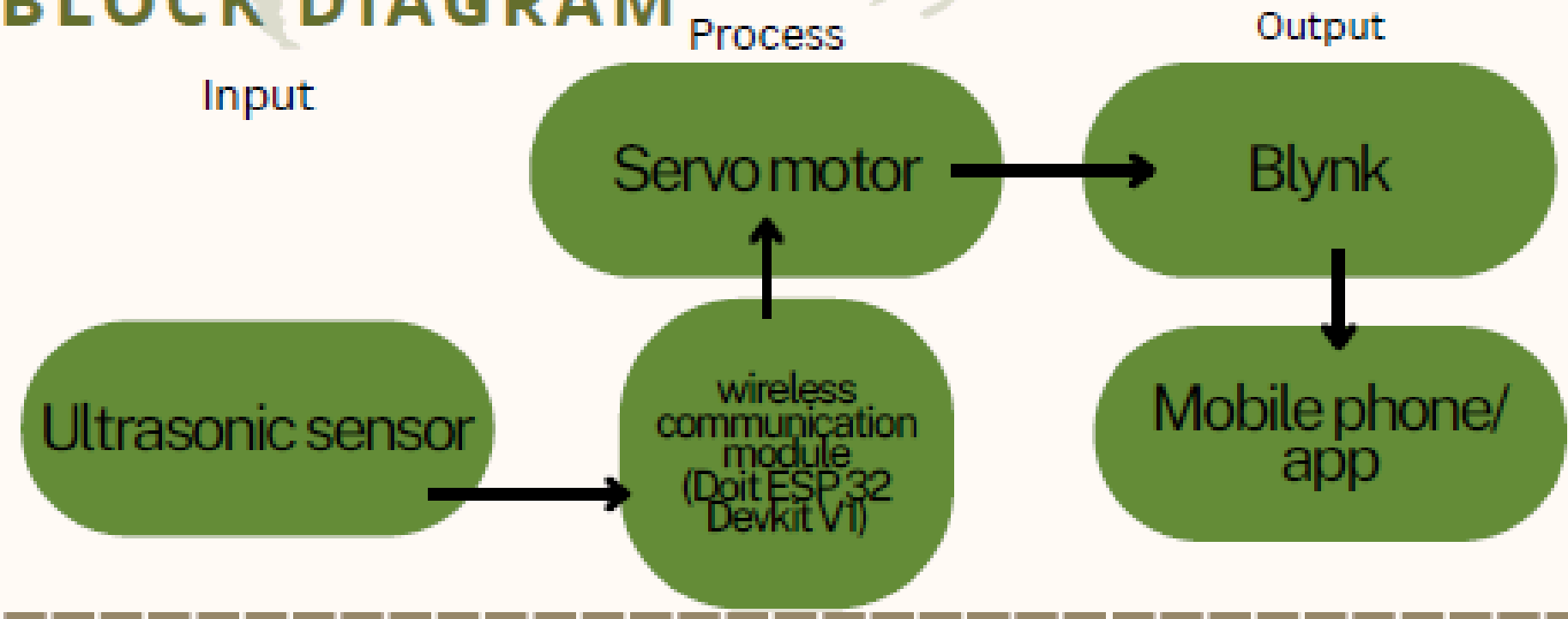
02. **Stationary cleanup infrastructure** is unable to adapt to changing water currents and debris accumulation patterns, resulting in inefficient waste collection and incomplete cleanup.

03. Plastic waste in water bodies not only harms aquatic life through ingestion and entanglement but also leaches toxic chemicals into the water, posing a threat to human health and biodiversity.

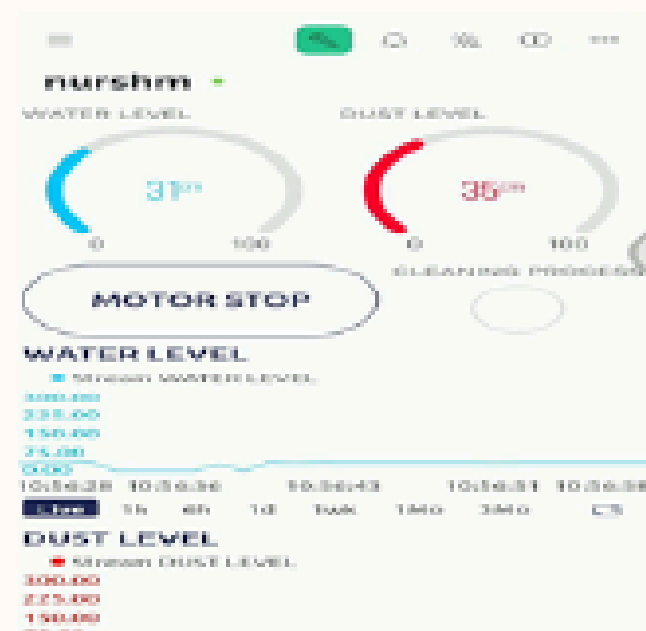
BACKGROUND

smart water filtration for eco-green solutions was created to detect, collect, and manage garbage or pollution in waters such as rivers, lakes, seas, or other waterways. This smart has an important role in maintaining the cleanliness and health of the water ecosystem. It has the potential to reduce the negative impact of plastic waste and other pollution on the environment. This project is about the detector or collection of litter stuck in drainage and drains irrigation with a water filtration system and Ultrasonic sensors, a water monitoring solution that uses a low-cost water filter. The project also attempts to start an irrigation system to prevent flooding and accumulated garbage.

BLOCK DIAGRAM

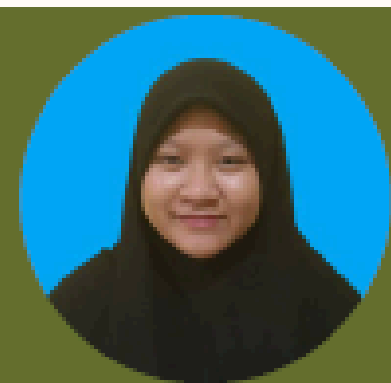


RESULT & FINDING

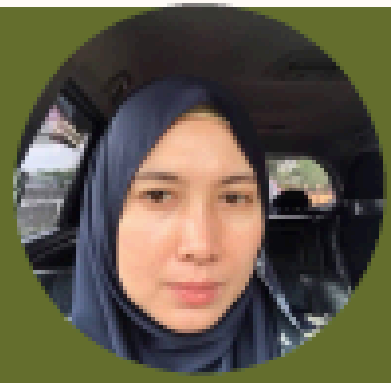


PROJECT SIGNIFICANCE

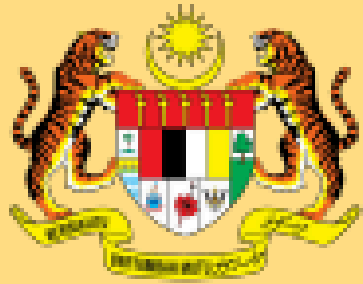
The significance of a smart water filtration project with an emphasis on eco-green solutions lies in its potential to address critical environmental and societal challenges related to water scarcity, pollution, and sustainable resource management.



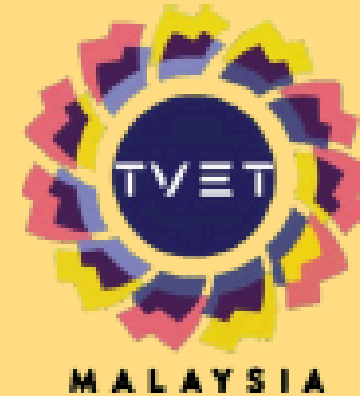
NURSHAM SHOFIAH BINTI SABUDIN
SAM
08DEP21F2004



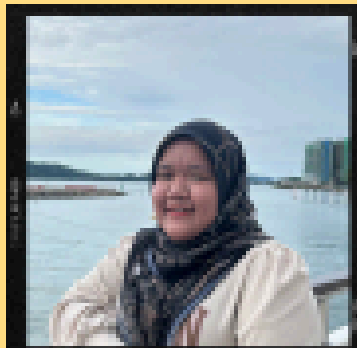
SUPERVISOR
PUAN. AKMARYA SYUKHAIRILNISAH
BINTI MOHD AKHIR



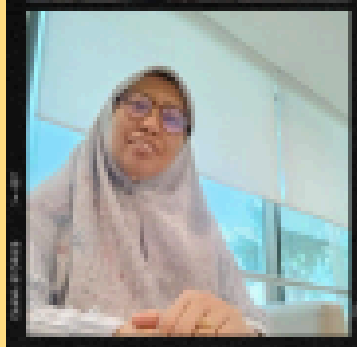
KEMENTERIAN PENDIDIKAN MALAYSIA



TEAM GROUP PROJECT

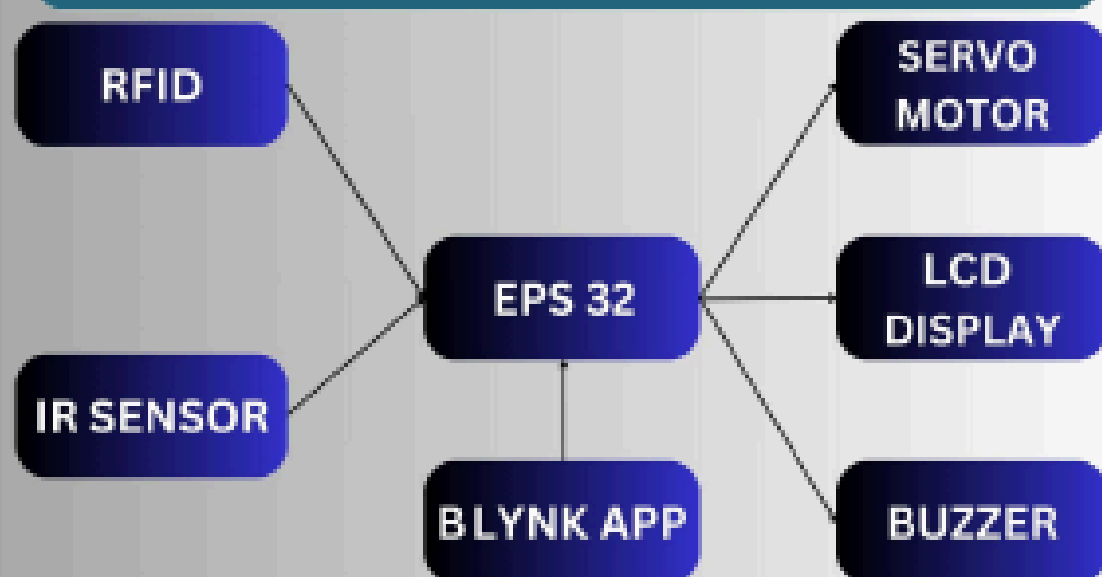


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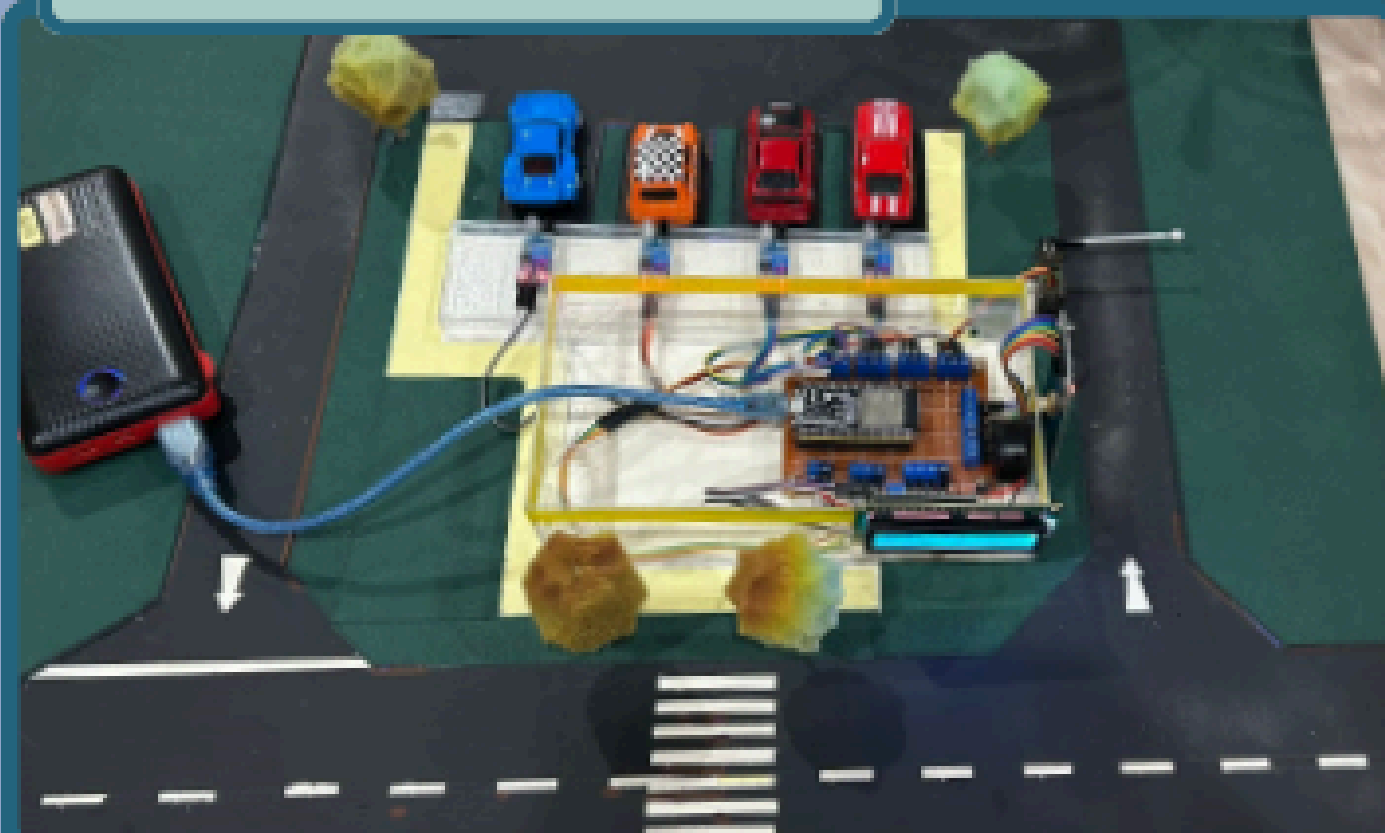
BLOCK DIAGRAM



OBJECTIVES PROJECT

- The goal is to give an up-to-date parking status system and control rush hour through the Blynk app.
- To apply RFID technology in order to automate access to the card's owner only.
- Transform ordinary parking lots into connected, smart areas using IoT, RFID, and mobile app technology.

FINAL PRODUCT

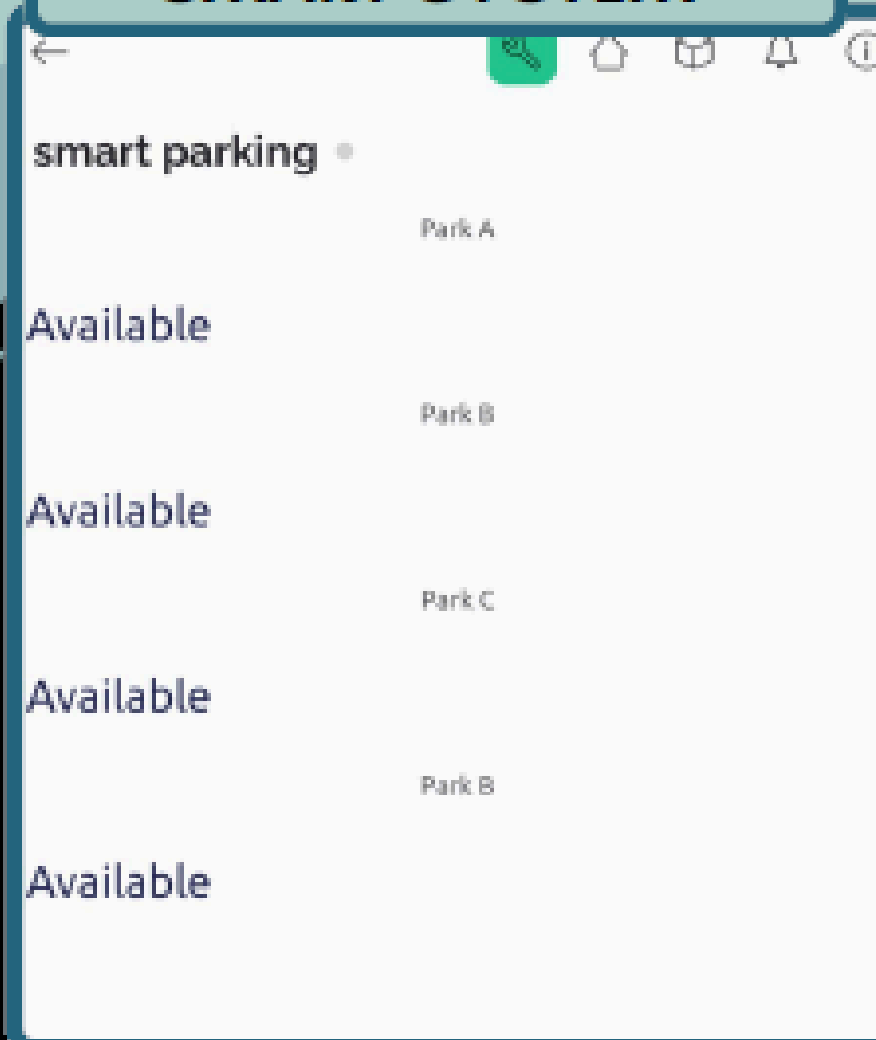


PARK WITH EASE

DESCRIPTION OF PROJECT

The "Park with Ease" project aims to improve the city parking experience by using innovative technologies. The project combines Internet of Things (IoT) and Radio Frequency Identification (RFID) technology with an easy-to-use smartphone app to take on the problem of inefficient parking management and improve the overall parking the environment.

SMART SYSTEM



IMPACT OF PROJECT

- Users will be pleased because they will be able to find parking quickly and spend less time hunting.
- Only cardholders will be able to access parking, making it more secure.
- Parking lots will be less crowded, making it easier to park.
- Less time spent circling for parking will result in reduced carbon emissions.

PERTANDINGAN PROJEK AKHIR PELAJAR SESI II : 2024/2025



SMART STREET LIGHT BASED IOT

PENYELIA : PN ZABIDAH BINTI HARON
PELAJAR : ZIZAN ALAM YAHYA BIN MOHD ISHAK (08DEP22F2002)



INOVATION DESCRIPTION

This Smart Street Light System is an energy-efficient IoT-based project using Arduino. It uses an LDR sensor to detect day or night, and an ultrasonic sensor to detect nearby objects like people or vehicles. When no object is detected, the light stays dim to save energy. When an object is detected, the light automatically brightens for a short time to improve visibility and safety. The system uses PWM to control brightness directly, making it simple, cost-effective, and suitable for smart city or rural use.

PROBLEM STATEMENT

- 1. Inefficient Energy Consumption**
Street lights stay bright all the time, even when not needed. This wastes energy and money.
- 2. Lack of Real-Time Monitoring**
Old lights can't be checked or changed in real time, so it's harder to fix problems or save energy.

OBJECTIVE

- To develop a street light that save energy by automatically adjusting street light brightness based on light levels and object detection.
- To create a street light reliability by using sensors for real-time monitoring and faster response to changes.

RESULT AND IMPACT OF PROJECT

Result:

The Smart Street Light worked well. It used sensors to change brightness based on light and movement.

Findings:

The system worked in different weather and lighting conditions. It accurately detected movement and light. Remote alerts made it easier to spot problems and keep the system working well.

Advantages:

- Saved energy and reduced costs
- Made streets safer with smart lighting that reacts to movement

Market Potential:

This low-cost system could be used in homes, schools, and villages. It's easy to expand for smart city use.

Impact:

The project helps save energy, cut costs, and improve safety. It supports smarter and greener cities.





Penulis:

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Zabidah binti Haron
Noranizah Binti Sarbani
Wan Norhidayah Binti Mohamed Noor

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