KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

INVENTORI PROJEK AKHIR PELAJAR JKE

Jilid 3

Penulis :
Wan Mohd Zamri Bin Wan Ab Rahman
Yaakub Bin Omar
Nur Hadiana Binti Nasruddin

INVENTORI PROJEK AKHIR PELAJAR JKE

Jilid 3

Wan Mohd Zamri Bin Wan Ab Rahman
Yaakub Bin Omar
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INVENTORI
Projek Akhir Pelajar JKE
Jilid 3

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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 dkenali 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 2 2023/2024.

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

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Kejuruteraan
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Kejuruteraan
Elektronik Komunikasi

ISI KANDUNGAN

Tajuk : Smart Bank Locker Using Biometric Authentication

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART BANK LOCKER USING BIOMETRIC AUTHENTICATION

NAME: DINESH RAAJ A/L PARTHIBAN
MATRIX NUM: 08DEP21F2015
SUPERVISOR: PN. ZABIDAH BINTI HARON

PROBLEM STATEMENT

- In today's world, we are concerned about the security of our valuables since robbing cases increasing day by day.
- Everyone needs a safe place to keep their valuables.
- Traditional bank lockers are secured by keys which can be prone to theft or unauthorized access.

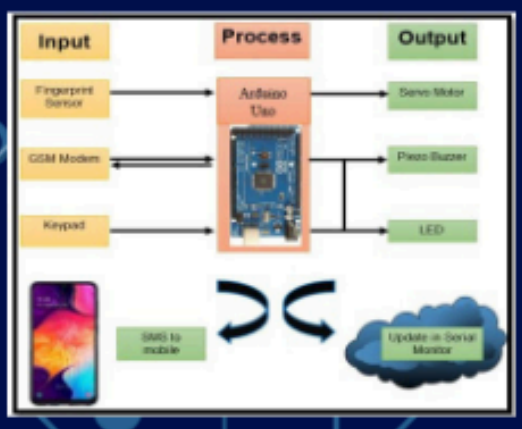
IMPACTS OF INNOVATION

- Providing secure lockers for individuals and businesses offers peace of mind and promotes a sense of financial security within society.
- Smart bank lockers significantly reduce the risk of theft or unauthorized access since they require both a fingerprint scan and a time - sensitive OTP for entry.
- Banks that provide cutting - edge, secure services are more likely to draw in and keep clients.

OBJECTIVES OF INNOVATION

- To significantly improve the security of bank lockers by eliminating the reliance on keys.
- To build a bank locker that can authorize access based on fingerprint and OTP received.
- To provide an innovation, user - friendly locker system that meets the demands of tech - savvy customers.

BLOCK DIAGRAM



PICTURE OF INNOVATION

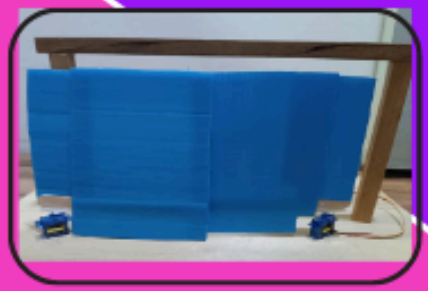
Tajuk : Smart Gate

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING
FIGHT THE POWER
JOIN THE RESISTANCE
INNOVATION COMPETITION

SMART GATE

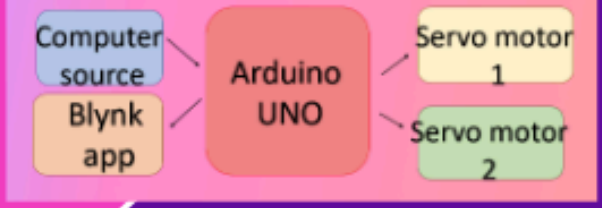
FINAL PRODUCT



DESCRIPTION PRODUCT

The Internet of Things (IoT) is enabling the transformation of conventional gate systems into smart gates. Compared to traditional gate systems, a smart gate offers improved security, convenience, and efficiency by integrating cutting-edge IoT technology. Smart gates transform the way we manage entry to buildings, cars, and restricted areas by utilising automation and connectedness. Smart gates provide homeowners increased convenience and security by letting them manage entry to their properties from a distance.

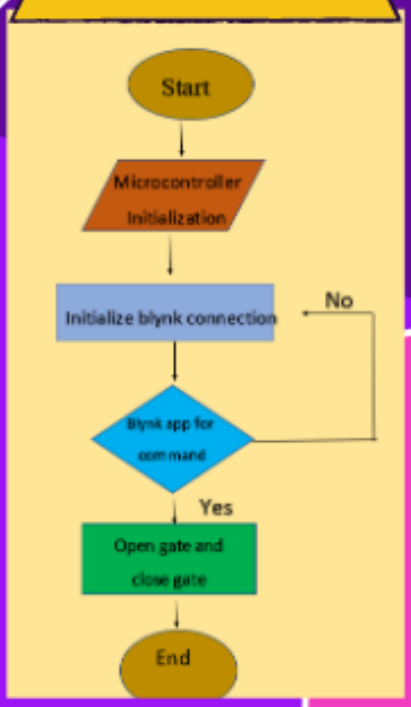
BLOCK DIAGRAM



PROBLEM STATEMENT

- In traditional gate, many people need to operate the gate manually and not using phone or any other devices to control the gate.
- Some people might forget or lost the gate key to open and it need time to open the gate

FLOW CHART



OBJECTIVES

- The owners can access through the gate using an app to open and close the gate, so that the owners no need wait until someone opens the gate.
- It also reduces the need for manual operation. It shows that many people are using modern technologies.

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KEMENTERIAN PENDIDIKAN TINGGI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

Automatic smart mimbar by using IOT

ASMA SALSABILA BINTI MOHD KHAIRULNIZAM
08DEU21F2029

SUPERVISOR
ENCIK KHAIRUL NAPISHAM BIN ABD RAZAK

PROJECT DESCRIPTION

The project produced requires less manpower, this smart mimbar can identify the movement of a person towards it with a predetermined distance. In addition, this smart mimbar uses an IR sensor to identify a movement and an arduino uno to facilitate the operation of the machine used. With the movement of a person /priest to the microphone mimbar and the stick will move simultaneously towards a person/priest.

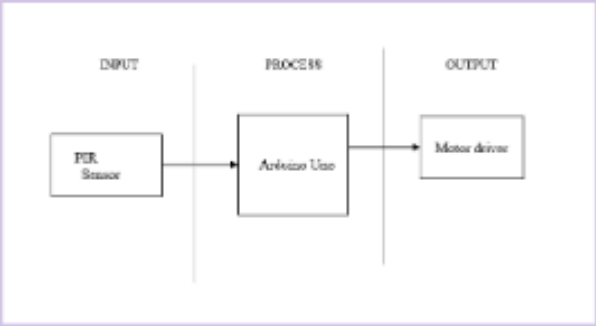
OBJECTIVES

The objective of this project is to facilitate the imam's movement while taking the microphone and wooden stick. In addition, this automatic movement can also save the imam's time when going to the mimbar. With this automatic movement, it can also reduce errors that occur such as the microphone falling from the mimbar or the wooden stick falling from the imam's hand during the sermon.

PROJECT IMPACT

The impact of this project is to facilitate the recruitment and movement of preachers who want to give sermons.In addition, it can also save some time and energy before and after giving a sermon in the mosque.

BLOCK DIAGRAM



Tajuk : IOT Helmet Tracker

POLITEKNIK MALAYSIA

ELECTRICAL & ELECTRONIC ENGINEERING INNOVATION COMPETITION

FIGHT THE POWER JOIN THE RESISTANCE

ABOUT SAFETY, TRACKER

IOT HELMET TRACKER

MUHAMMAD HAKIM BIN SAZALI

08DEP21F2034
DEP5A
SUPERVISOR OF
PUAN IRMA BAIZURI
BINTI MOHD AKHIR

DESCRIPTION OF THE PROJECT

The IoT helmet tracking project aims to develop an advanced system to enhance motorcyclists' safety by combating helmet theft. This solution integrates embedded chip technology and GPS on smartphones for real-time helmet tracking. Users can remotely monitor and locate their helmets through a smartphone app, ensuring quick access to vital information in case of theft. Leveraging IoT, the project prioritizes user convenience and usability. With its theft deterrent features, the system safeguards helmets and provides peace of mind to motorcyclists. Overall, the project signifies a significant advancement in motorcycle safety and security.

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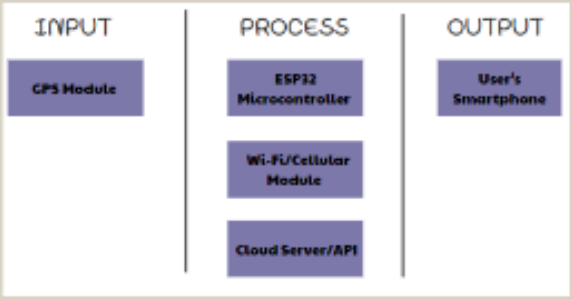

PROBLEM STATEMENT

- Helmets are essential for protecting riders from head injuries.
- Cost is considered high
- Helmet tracking essential.

OBJECTIVE PROJECT

- To provide enhanced safety, the helmet tracking system, equipped with ESP32 technology, offers precise monitoring and location services.
- To enable prompt action and enhance security for motorcyclists, real-time GPS alerts ensure immediate notification of the helmet's location.
- To ensure peace of mind and security, the theft deterrent system is meticulously designed to prevent unauthorized access and safeguard valuable assets.

IMPACT OF PROJECT

Environmental Conservation

- Environmental conservation plays a crucial role in protecting the Earth's ecosystems and maintaining ecological balance for future generations.

Energy Efficiency

- Design the system to be energy-efficient to minimize power consumpti

Security Program

- Safeguard assets, prevent access, and protect sensitive information with security programs.

Tajuk : IOT Based Infant Incubator Monitoring And Temperature Control System

IOT BASED INFANT INCUBATOR MONITORING AND TEMPERACURE CONTROL SYSTEM

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

NAMA PELAJAR : HAMID HAMIZAN BIN ABDUL MUIN
NO. PENDAFTARAN: 08DEU21F2055
NAMA PENYELIA : EN. ABU BAKAR HAFIS BIN KAHAR

DESCRIPTION OF INNOVATION

This project introduces an innovative approach to infant care with its IoT-based incubator monitoring and temperature control system. By integrating Internet of Things technology, it ensures real-time monitoring of vital signs and precise temperature regulation, revolutionizing the traditional methods of infant incubation. This innovation enhances the quality of neonatal care by providing a more efficient, reliable, and remotely accessible solution for monitoring and maintaining optimal conditions for newborns.

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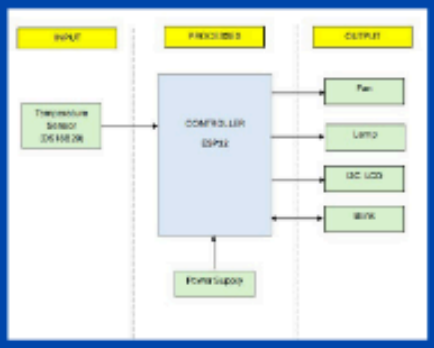


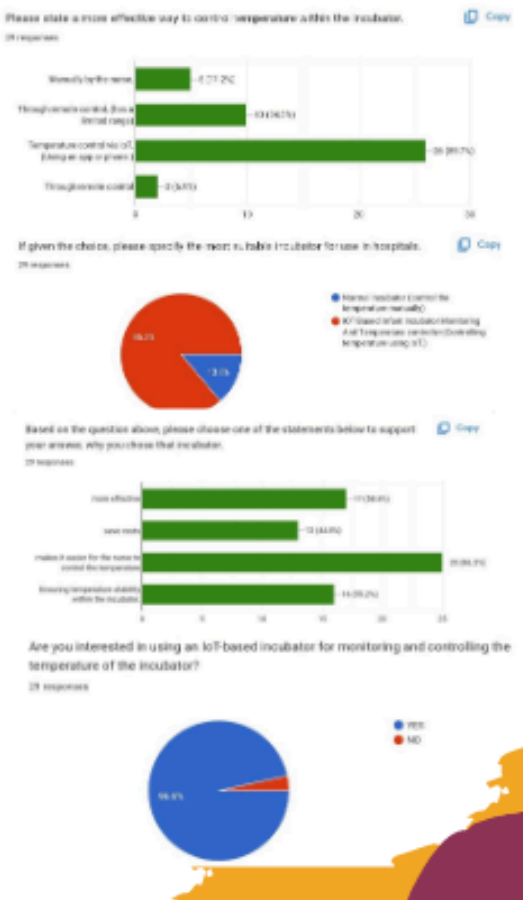
OBJECTIVE

1. To design the IoT-infant incubator with energy-efficient features, such as intelligent temperature regulation and, to reduce operational costs for healthcare facilities.
2. To implement an IoT-based control system that adjusts and maintains the temperature within preset safe limits.
3. To develop a system capable of continuously monitoring and displaying real-time temperature data within the infant incubator.

IMPACT OF INNOVATION

1. Enabling real-time monitoring of vital signs, leading to timely medical interventions and improved health outcomes.
2. Allowing remote access for healthcare professionals, enhancing efficiency and enabling prompt responses to any issues, ultimately saving lives and improving infant healthcare delivery.

PROJECT ANALYSIS



PROJECT

top view

side view

Tajuk : SS Door Lock System

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POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SS DOOR LOCK SYSTEM

PN MASLIZAH BT MUNAHDAR
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DESCRIPTION OF INNOVATION

Traditional door lock systems have long been the foundation of physical security, but modern lifestyles demand flexibility and connectivity, which they frequently don't provide. These drawbacks are addressed by the addition of features like user-centric control, real-time monitoring, and remote access to door lock systems through IoT connection. In order to develop a door lock system that meets the changing demands of people and organizations who are concerned about security, this project aims to investigate and apply these developments.

PROBLEM STATEMENT

- Traditional door lock system is weak that it fails sometimes to provide robust security.
- It is not always possible to know if someone is approaching or trying to open the door, at night or no one is in the room.

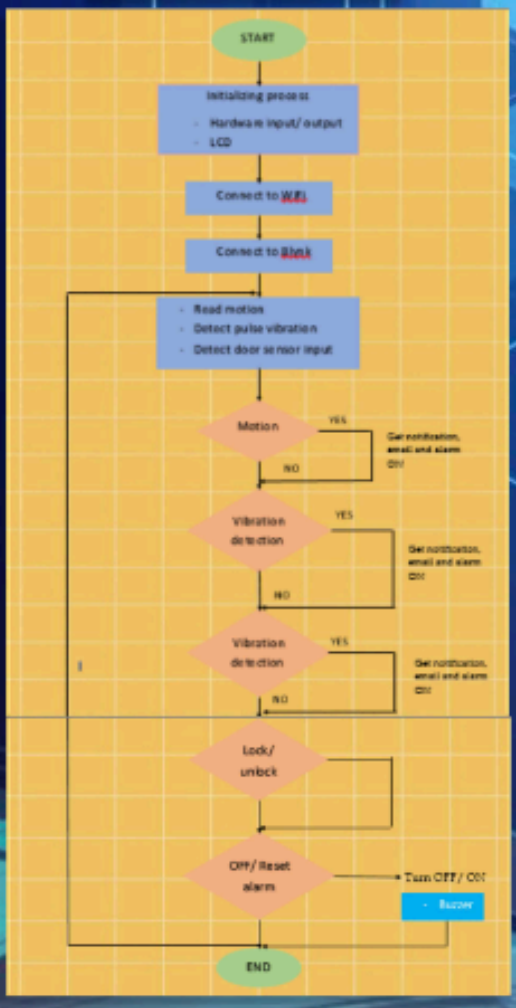
OBJECTIVES

- To improve the existing door lock.
- To alert users as soon as the door status changes to guarantee that they are aware of and can react to security occurence quickly.

INNOVATION IMPACT

The locking and unlocking mechanism is based on remote access which using the Blynk App in mobile application, grants access to the home. An innovation which ease the locking and unlocking with keyless method. Tracks if there is someone trying to enter the house without our permission and knowledge and get instant notification via email and app notification. Provides an intelligent and secure solution for door lock control, combining remote monitoring, and advanced security features. The integration of various sensors enhances the overall functionality and ensures a robust and responsive door lock system.

FLOWCHART



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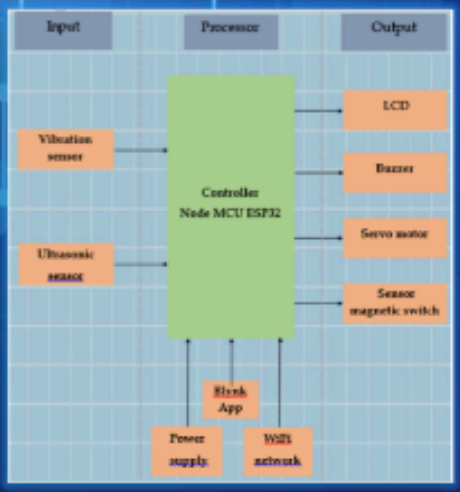
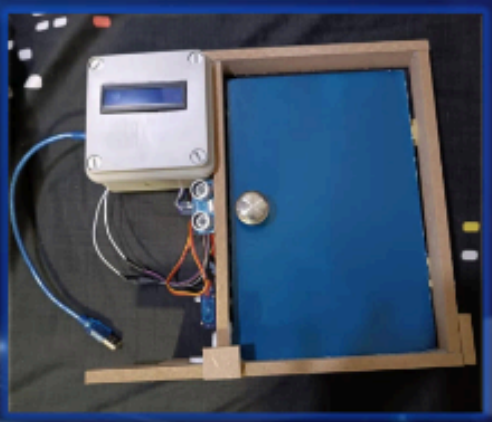


FINAL PRODUCT



Tajuk : IOT Based Heart Monitoring System Using ECG

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

IOT Based Heart Monitoring System Using ECG

Nama Pelajar :MUAZ HANIFULLAH BIN KAMALUDIN

No. Pendaftaran :08DEU21F2066

Nama Penyelia :EN. YAAKUB BIN OMAR

INTRODUCTION

The Embedded technology has entered almost in all aspects of day-to-day life, and the healthcare field is no exception for that the requirement for fully-equipped hospitals and diagnostic centers growing day by day as people are becoming more unaware of their health problems. An ECG signal can trace various physiological and abnormal conditions of the heart. This heart monitoring system also helps to inform the person whether he/she has any heart diseases or not. This is done by checking the heart beat level. In this system Atmega controller is used to scan ECG signal and search for pattern in common range, if the pattern will be in common range then it gives the report of being normal if it is found that the is not in common range then the person is suffering from some kind of heart disease. The following result is sent as message on IOT.

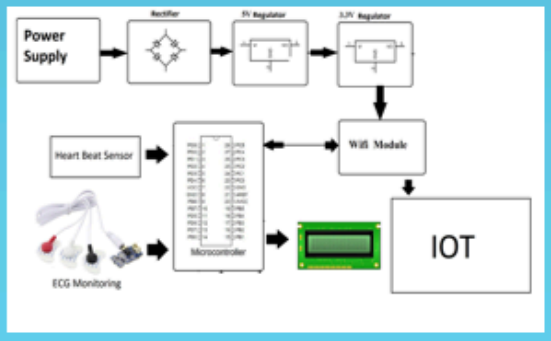
OBJECTIVES INOVATION

- To continuously monitor heart health with ECG.
- To detect abnormalities and provide prompt feedback.
- To send health information via IoT to individuals and healthcare providers.
- To enhance awareness of individual heart health.
- To strengthen healthcare service accessibility through remote monitoring.

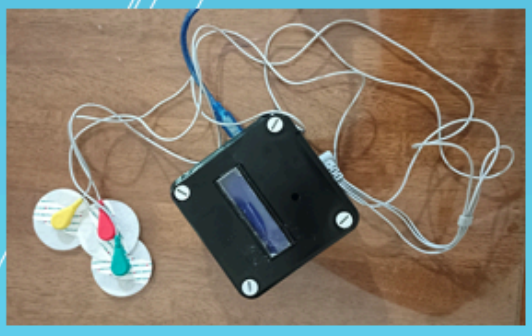
INOVATION IMPACT

- Prevention: It helps catch heart issues early, reducing risks.
- Better Care: Doctors get quick, accurate data for better treatment.
- Improved Life: People can live better with continuous heart monitoring.
- More Innovation: It drives more research for better heart health tech.
- Health Awareness: It boosts awareness, leading to healthier habits and fewer heart problems.

BLOCK DIAGRAM



INOVATION



CONTACT
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EMAIL:ZXZHANIF@GMAIL.COM.

Tajuk : GPS Pet Tracker

Nama : Danish Aqmal Bin Ahmad Suhaimi
No Matrix:08DEP21F2044
Kelas:DEP5A

SUPERVISOR:PUAN NUR SURIYA BINTI MUHAMMAD

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

JABATAN KEJUTERAAN ELETRONIK (KOMUNIKASI)
PSA

ABSTRAK

GPS Pet Tracker yang dibentangkan dalam projek ini menggabungkan teknologi Arduino, GSM (Global System for Mobile Communications) dan GPS (Global Positioning System) untuk mencipta penyelesaian yang serba boleh dan cekap untuk menjejak dan mencari haiwan peliharaan. Peranti ini menawarkan keupayaan pengesanan masa nyata, jauh melalui aplikasi mudah alih atau tapak web khusus. Mikropengawal Arduino memproses data GPS dan menyampaikannya melalui GSM ke pelayan berpusat, di mana pengguna boleh mengakses maklumat lokasi haiwan kesayangan mereka. Abstrak ini memberikan gambaran keseluruhan komponen utama dan kefungsian Penjejak Haiwan Peliharaan GPS, menekankan potensinya untuk meningkatkan keselamatan dan keselamatan haiwan peliharaan sambil memupuk ketenangan fikiran bagi pemilik haiwan kesayangan.

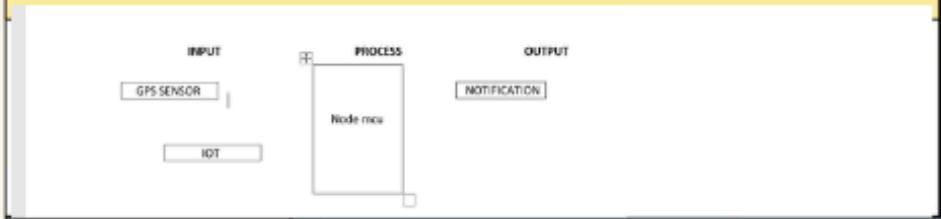
PERNYATAAN MASALAH

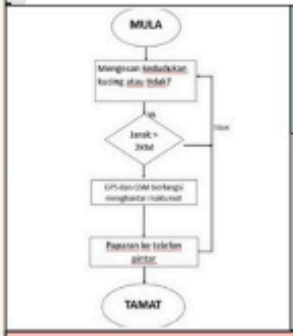
TUJUAN PENYELIDIKAN:
Menganalisis faktor yang menyebabkan kehilangan kucing peliharaan.
- Menilai kesan kehilangan kucing terhadap kesejahteraan pemilik dan kesihatan haiwan peliharaan.

Membangunkan strategi pencegahan kehilangan kucing yang berkesan.

FAEDAH PENYELIDIKAN:
- Penyelidikan ini diharap dapat memberi gambaran yang mendalam tentang masalah kehilangan kucing peliharaan
dan menjadi asas kepada pembangunan inisiatif yang boleh membantu masyarakat mencegah kejadian ini.
- Melaksanakan strategi pencegahan yang sesuai boleh membantu meminimumkan kadar kehilangan kucing dan meningkatkan kebajikan haiwan peliharaan dan pemiliknya

BLOCK DIAGRAM





OBJEKTIF

- Memudahkan manusia untuk mengawal pergerakan haiwan perliharaan mereka dimana-mana
- Memudahkan manusia untuk mengesan keberadaan haiwan perliharaan mereka
- Kebarangkalian untuk mengetahui kedudukan haiwan perliharaan lebih tinggi

NILAI KOMERSIAL

Penjejak haiwan peliharaan GPS mempunyai nilai komersial yang signifikan, kerana ia menangani permintaan pasaran yang semakin meningkat untuk penyelesaian keselamatan dan pemantauan haiwan kesayangan. Berikut ialah beberapa potensi manfaat komersial dan cadangan nilai untuk penjejak haiwan peliharaan GPS:

- Pemilik haiwan peliharaan semakin mengambil berat tentang keselamatan dan keselamatan haiwan peliharaan mereka. Penjejak haiwan peliharaan GPS menyediakan penjejakan lokasi masa nyata, membolehkan pemilik mencari dengan cepat haiwan peliharaan mereka jika mereka mengembara atau tersesat.

Peranti ini menawarkan ketenangan fikiran kepada pemilik haiwan kesayangan, kerana mereka boleh memantau lokasi haiwan kesayangan mereka pada bila-bila masa. Ini amat berharga untuk pemilik haiwan peliharaan yang tinggal di kawasan yang berisiko tinggi kecurian haiwan peliharaan atau mempunyai haiwan peliharaan yang cenderung berkeliaran.

Tajuk : The Smart Container Heater

Nama Pelajar : Thariq Zeeyad Mohd Zamri
No. Pendaftaran : 08DEP21F2011
Nama Penyelia : Puan Nurakmarya Syukhairilnisah Bt Mohd Akhir

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

THE SMART CONTAINER HEATER

FOR INNOVATION

PROBLEM STATEMENTS

- USERS NEED A WAY TO HEAT FOOD THAT IS PORTABLE AND COMPACT
- THERE IS A CONCERN ABOUT FOOD WASTAGE BECAUSE USERS DO NOT WANT TO EAT COLD FOOD
- THERE IS A NEED TO AVOID THE USE OF FUEL FOR HEATING FOOD

OBJECTIVES

- TO EASE THE PROCESS OF WARM FOOD FOR OUTDOOR FUNCTIONS
- TO AVOID USING COMBUSTIBLE MATERIALS

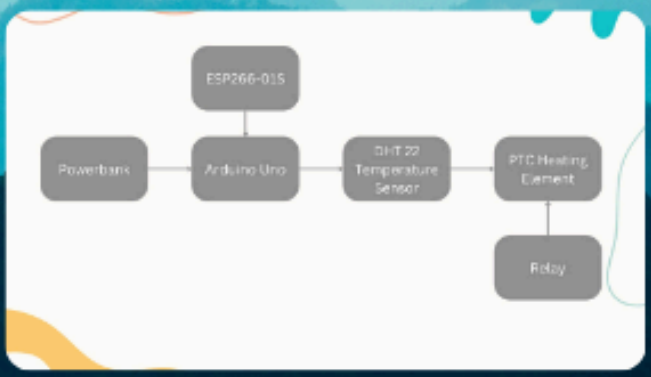
IMPACTS

- AVOID ENVIRONMENTAL POLLUTION
- REDUCE FOOD WASTE
- MEET USER' SATISFACTION WHEN THEY WANT TO INDULGE THEIR CRAVINGS

PRODUCT

THIS DEVICE WAS MADE TO WARM FOOD AND DRINKS DURING OUTDOOR ACTIVITIES. IT CAN MONITOR TEMPERATURE AND ADJUST THE HEATER ACCORDINGLY. THE DEVICE IS PORTABLE AND EASY TO CARRY DUE TO ITS COMPACT SIZE. IT CAN ALSO SERVE AS AN ALTERNATIVE TO EXISTING PRODUCTS.

BLOCK DIAGRAM



BLOOD OXYGEN MONITORING USING PULSE OXIMETER THROUGH PHONE APPLICATION

DESCRIPTION

Blood Oxygen Monitoring using Pulse Oximeters through Phone Applications is a significant advancement in healthcare technology, enabling real-time monitoring of multiple patients and seamless data storage. These devices enhance healthcare providers' efficiency and provide a comprehensive understanding of patients' health. Wireless sensor networks have the potential to improve healthcare services and reduce hospital costs, especially for critical patients in intensive care units. Wireless sensor networks can ensure continuous monitoring by doctors, nurses, or caregivers, even when patients are at home, reducing costs for wiring and installation.

OBJECTIVE

The main objective of this Project is using wireless sensor network to ensure the patients can be monitored continuously by doctors, nurses, or caregivers anywhere and anytime even though the patients stay at home. More specifically the principal objective of this researches are:

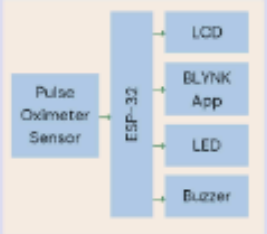
- To design and fabricate patient monitoring system for monitoring heart rate signal.
- To implement wireless system of monitoring system using ESP-32.
- To develop data monitoring system using integration between IC and Mobile platforms.

IMPACT

A wireless pulse oximeter's usability is essential to its effectiveness. It is simple to use, teachable, and customised to meet the particular requirements of the intended user base such as guardian's patient. To guarantee that the gadget continues to be functional and user-friendly throughout time, regular user feedback and continuous modifications are crucial.

Penyelia Projek:
Puan Siti Hajar Binti Abdul Hamid

BLOCK DIAGRAM



Ku Aliya Asiah Binti Ku Muhamad
08DEU21F1115

Tajuk : Medical Equipment Barcode Scanner Using IOT

MEDICAL EQUIPMENT BARCODE SCANNER USING IOT

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SUPERVISOR : USTAZ KHAIRUL NAPISHAM BIN ABD RAZAK

BALQIS BINTI MOHD SHUKRI

OBJECTIVE OF PROJECT

1- The purpose of this project is to offer information such as drug name, expiry date , and proper use of medication.

2 - Provide accurate and thorough information in drug selection.

3 - Eliminating the possibility of patient errors in taking medication

DESCRIPTION OF INNOVATION

Imagine a scanner for medicine, just like those in stores. Scan a medicine's barcode, and it tells you when it expires and how to use it. It's like a little helper ensuring you take the right medicine at the right time, without worry about expired meds.

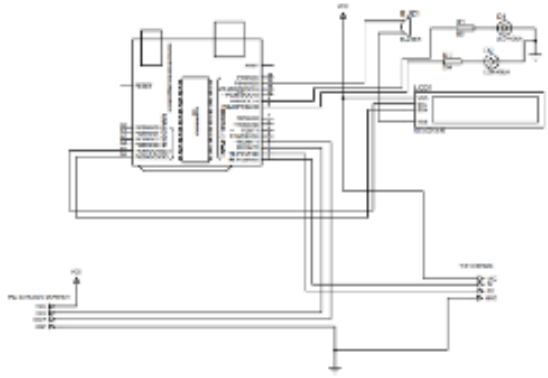
PROBLEM STATEMENT

Not knowing if medicine is expired or how to use it can make people sick and confuse doctors and nurses. We need an easy way to check expiry dates and usage instructions to keep everyone safe and healthy.

IMPACT

This barcode scanner for medicine is a game-changer. It tells you when medicine expires and how to use it, keeping you safe. It helps doctors and nurses too, making things smoother and saving money by cutting waste. It's like a smart helper ensuring everyone gets the right medicine on time.

SCHEMATIC DIAGRAM



Tajuk : Smart Key Management System

DEP5A

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART KEY MANAGEMENT SYSTEM

PROJECT BY : YUSMA DANISH AMSYAR BIN YUSNI
08DEP20F2013

DESCRIPTION OF INNOVATION

This project is a way to solve the problem of workers can't find where the door key is missing and unable to detect who the last person holding the key is. An electronic key management system requires all users to identify themselves on the RFID reader on the key cabinet. Users can identify themselves by using an RFID card and then the reader will send the data to the software. Inside the cabinet, all keys are held in place together with IR sensor to detect the key presence. The selected keys will be detected by IR sensor and send the information to the software.The problem that often occurs nowadays is the lost key without being able to know who the last person was holding the key. Because of that, we need a system to manage the keys

OBJECTIVES

-TO DESIGN A SYSTEM FOR SMART KEY MANAGEMENT SYSTEM.

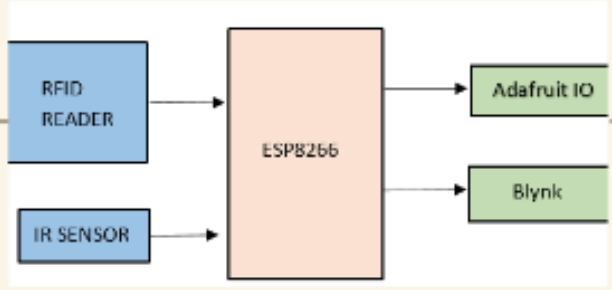
-TO DESIGN SOFTWARE TO SHOW THE INFORMATION OF THE USER AND THE KEYS.

-TO DESIGN A RFID KEY BOX TO STORE ALL THE KEYS.

IMPACT OF PROJECT

-THE ABILITY TO KNOW WHICH KEY IS AVAILABLE WITHOUT GOING TO KEY BOX PERSONALLY
. -TO REDUCE THE HUSTLE TO SEARCH WHO THE LAST PERSON HOLDING THE KEY.
-THE ABILITY TO ALERT IF SOMEONE TOOK OUT OR PUT BACK THE KEY

BLOCK DIAGRAM



FINAL PRODUCT

BLYNK

ADAFRUIT

SUPERVISOR :
PN. NUR HADIANA BINTI NASRUDDIN

KEMENTERIAN PENGAJIAN TINGGI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

Smart System Maintenance for Medical Instrument

Nama Pelajar : AHMAD FAQIHIN BIN AHMAD FATHLI

No Pen dataran : 08DEU21F2008

Nama Penyelia : DR BAHARUDDIN BIN MUSTAPHA

INTRODUCTION

Maintenance of medical equipment machines not according to the set period is the main problem in most public hospitals in this country. Delays in maintaining medical equipment machines tend to cause problems for the officers on duty because of damage to medical equipment that is not properly maintained. Therefore, to eliminate human error and to reduce the excessive burden of constantly monitoring each medical equipment machine, IOT smart system maintenance clinical machine has been proposed.

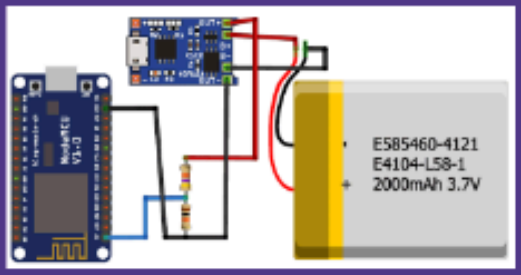
OBJECTIVE INOVATION

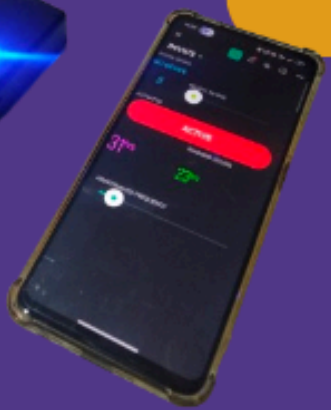
1. To facilitate management so that there is no negligence.
2. To ensure that every use of the machine used is in a good and safe condition.
3. To develop a user interface platform to monitor the usage and maintenance date of each equipment.

INOVATION IMPACT

1. By facilitating management, the project can help minimize instances of negligence, ensuring that operations run smoothly and efficiently.
2. Ensuring that every use of the machine is in a good and safe condition can lead to a decrease in accidents and injuries, promoting a safer work environment for employees.
3. Developing a user interface platform to monitor equipment usage and maintenance dates can lead to better maintenance scheduling and proactive measures, ultimately prolonging the lifespan of equipment and reducing downtime.

DIAGRAM





Project Supervisor

DR BAHARUDDIN BIN MUSTAPHA

STUDENT

AHMAD FAQIHIN BIN AHMAD FATHLI

Tajuk : Shoe Rack With Automated UV Light

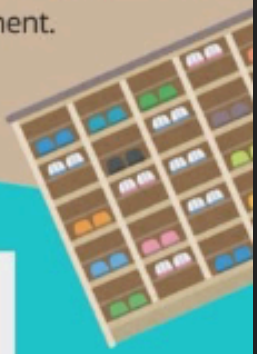
POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING
INNOVATION COMPETITION

SHOE RACK WITH AUTOMATED UV LIGHT

DESCRIPTION OF INNOVATION

The project aims to create an automatic shoe rack equipped with UV light to eliminate bacteria and enhance cleanliness. By harnessing the power of ultraviolet radiation, the system not only sanitizes shoes effectively but also promotes a healthy lifestyle by reducing the risk of illnesses caused by germs. This innovative approach combines treatment results with environmental factors to maintain a hygienic living environment.

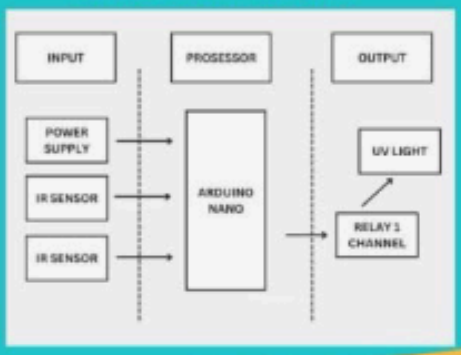


OBJECTIVE

The aim of this project is to develop an automatic shoe rack with UV light. This system can help eradicate the bacteria. The objectives are listed as follows:

1. **Ensure rotten smell doesn't come out.**
2. **Accelerates the shoe storage process.**
3. **UV light to eliminate bacteria.**

BLOCK DIAGRAM



IMPACT OF INNOVATION

- Can kill germs found on shoes.
- Can reduce the rate of bacterial infection and germs on the feet.
- It is a modification from a normal shoe rack to a shoe rack that has ultra violet radiation to disinfect.

Project by:
MUHAMMAD WAZIF BIN ABD KAMIRI

FINAL PRODUCT

DEU5A

Project Supervisor:
Dr. BAHARUDDIN MUSTAPHA

Tajuk : Portable Physio Bike for Paralyzed Rehabilitation Monitored by IOT

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

PORTABLE PHYSIO BIKE FOR PARALYZED REHABILITATION MONITORED BY IOT

PROJECT SUPERVIOR :
PUAN SITI HAJAR BINTI ABDUL HAMID

NURALYAA BINTI A.RAZAK
08DEU21F2004
DEU 5A

01 OBJECTIVE

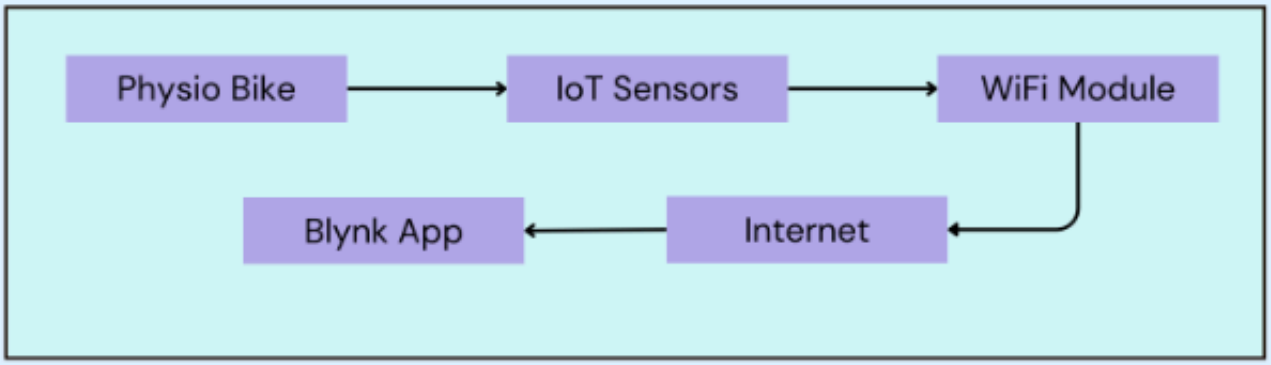
The objective of this project is to create a portable exercise bike that paralyzed individuals can use for rehabilitation. This bike will be equipped with smart technology (IoT) to track their progress and send data to their healthcare providers. By doing this, we aim to make rehabilitation easier to access, personalize treatment plans, and improve the overall effectiveness of rehabilitation for paralyzed individuals.

03 THE IMPACTS OF INNOVATION

1. **Improved Rehabilitation Outcomes**: By providing paralyzed individuals with a convenient and personalized rehabilitation solution, the project can lead to improved physical function, increased muscle strength, and enhanced overall mobility.
2. **Enhanced Accessibility**: The portable nature of the physio bike allows individuals to perform rehabilitation exercises in the comfort of their own homes, reducing the need for frequent visits to healthcare facilities and improving accessibility to rehabilitation services, especially for those living in remote areas.
3. **Empowerment and Independence**: Providing paralyzed individuals with a tool for rehabilitation empowers them to take an active role in their own recovery process. By regaining mobility and independence, individuals may experience improvements in their quality of life and psychological well-being.
4. **Remote Monitoring and Telemedicine**: Integration of IoT technology enables healthcare providers to remotely monitor patients' progress in real-time, allowing for timely adjustments to treatment plans and interventions. This can lead to more efficient use of healthcare resources and improved patient outcomes.

04 DESCRIPTION OF PROJECT

The project involves developing a portable exercise bike tailored for individuals with paralysis. This bike incorporates IoT technology to monitor the user's progress during rehabilitation sessions. The IoT sensors track key metrics like range of motion, resistance levels, and heart rate, transmitting this data to healthcare providers in real-time. This enables remote monitoring and allows for personalized treatment adjustments. Ultimately, the project aims to enhance accessibility to rehabilitation, improve outcomes for paralyzed individuals, and drive innovation in healthcare technology.



Tajuk : Smart Organic Irrigation System : Nurturing Sustainable Agriculture for a Healthier Lifestyle

SMART ORGANIC IRRIGATION SYSTEM: NURTURING SUSTAINABLE AGRICULTURE FOR A HEALTHIER LIFESTYLE

SIRAJUDDIN PUTRA BIN MOHD RASID
08DEU21F2041
SUPERVISOR - NAAGAJOTHI A/P ADIN NARAINA

PROBLEM STATEMENT

- Traditional irrigation methods often used in organic farming can sometimes use too much water. This can harm the environment, lower crop quality, waste water, and damage the soil. Problems like water scarcity, unpredictable weather, and changing climate trends can make these issues even worse.

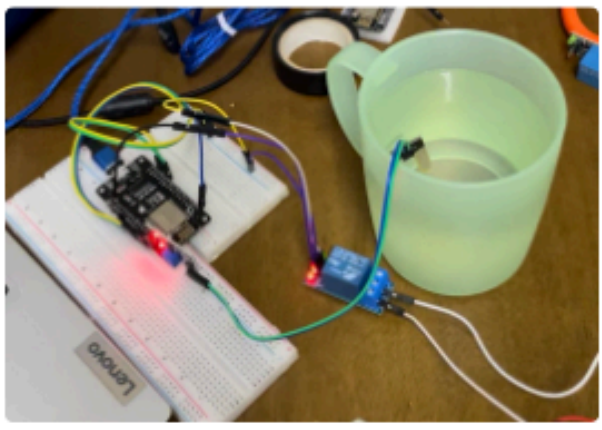
OBJECTIVE

- To monitoring soil health parameters, such as moisture content, and temperature.
- To monitoring the quality of the crop and the yields.
- To measure the water usage efficiency.

INNOVATION IMPACT

- The Smart Organic Irrigation System combines smart technology with sustainable practices to conserve water, reduce chemicals, and enhance crop health. By enabling remote monitoring and data-driven decisions, it promotes efficient farming for a healthier lifestyle and environment.

INNOVATION PICTURE



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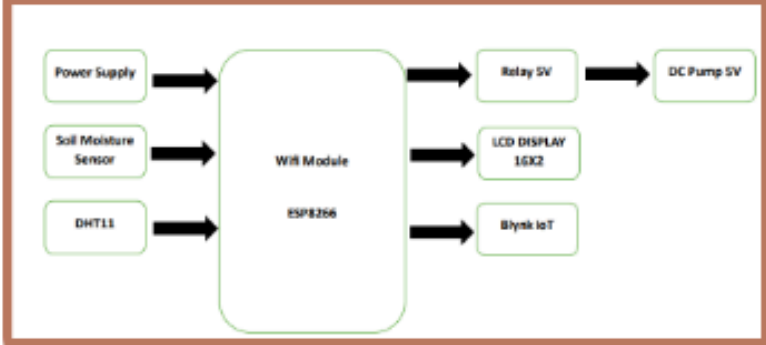


Tajuk : Smart Animal Repellent

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

PERTANDINGAN
PROJEK
AKHIR PELAJAR

SESI II : 2023/2024

SMART ANIMAL REPELLENT

PENYELIA : PUAN ZALEHA BINTI SOLOMON

PROBLEM STATEMENT

Animal abuse is rampant todays. the lingering presence of stray paint causes owner of certain area become aggrassive. This situation often happen to people who live or work at the place such as at food premises and neighbourhood that face the smell of their feces in the environment of the premises. This problem becomes greater if the area has a land area which becomes a habit of animals such as abandoned cats to throw their feces. As for food premises owner, they of course want to make sure comfort for customers who eat in their stores. but when the situation is out of control then both parties will feel the loss where the customer will leave the food premises angrily and the owner will be less of a regular customer.

OBJECTIVE

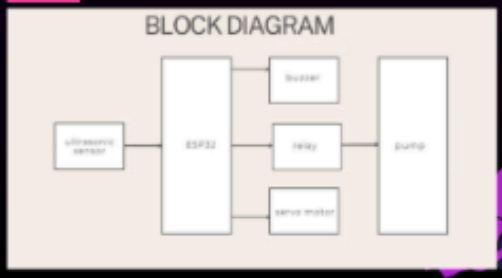
1. Produce a system that can detect the presence of object especially animals
2. To reduce the problem of odor pollution at specific areas
3. Provides continuous and real-time monitoring to ensure timely intervention and prevent operational disruptions.

IMPACT OF PROJECT

1. Can reduce problem faced by zoophobia person.
2. Very reliable to take care of specific parts
3. The animal will reduce the damage in the place where the project is installed.

RAJA NURUL HASYIKIN BINTI RAJA IBRAHIM
08DEP21F2041

BLOCK DIAGRAM



Tajuk : Smart Glove to Rehabilitate Stroke Patients

SMART GLOVE TO REHABILITATE STROKE PATIENTS

AQIF MUHAMAD HAIKAL BIN NOR HISAM
(08DEU21F2045)

NAMA PENYELIA: NAAGAJOOTHI A/P ADIN NARAINA

The objective of innovation

- To enable stroke patients to move their fingers and their hands again
- To allow the patient to do the recovery process more easily
- To facilitate the doctors to observe the patient's recovery virtually

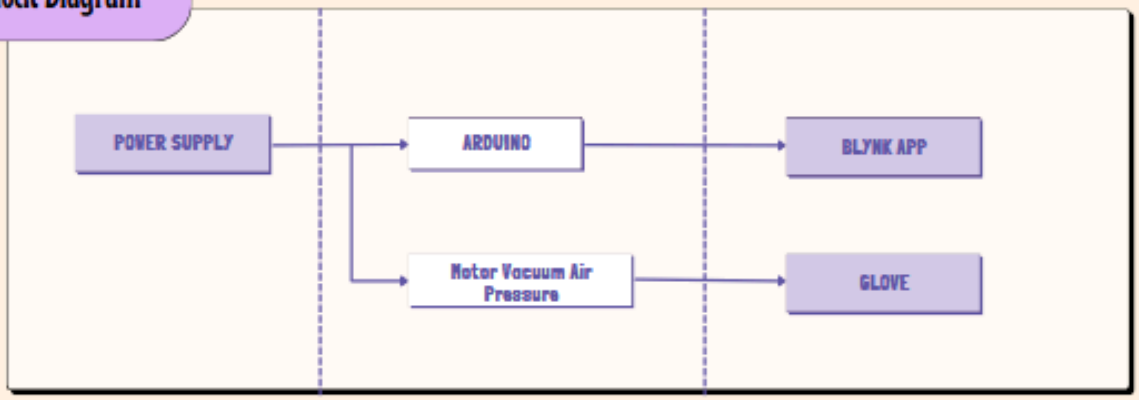
Description of innovation

The " SMART GLOVE TO REHABILITATE STROKE PATIENTS" has been developed to facilitate hand movement exercises for patients and users, eliminating the need to visit specialized facilities like hospitals or physiotherapy centers. This presents a cost-efficient solution, making it possible for individuals to conveniently and affordably engage in these exercise

The impact of innovation

- Smart gloves can provide precise, targeted rehabilitation exercises for stroke patients. They are equipped with sensors and actuators that detect hand movements and provide feedback to ensure patients perform exercises correctly, targeting specific muscles and movements affected by the stroke
- Smart gloves can quantitatively measure patients' hand function and track their progress over time. By collecting data on Blynk app
- This innovation uses IoT to make it easier for patients to monitor the exercise process

Block Diagram



Tajuk : IOT Heart Rate and Body Temperature

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

IOT HEART RATE AND BODY TEMPERATURE

NURUL NATASYA BINTI MIZAN
08DEU21F2027
DEUSA
MANTEE OF
PUAN NORHAYATI BINTI CHE HUSSIN

OBJECTIVES

- INDIVIDUAL CAN CHECK THEIR HEARTBEAT RATE BY JUST USING OUR DEVICE AND THEIR VERY OWN MOBILE PHONE
- THOSE WHO CONSTANTLY NEEDS TO KEEP TRACK OF THEIR HEARTBEAT RATE CAN JUST USE THE DEVICE WHERE IT SHOWS THE INCREASE AND DECREASE OF THE HEARTBEAT RATE.
- AVOID TRAVELLING TO CLINIC AND HOSPITAL SAVES THE HASSLE.

IMPACTS OF INNOVATIONS

Healthcare providers can continuous monitoring can facilitate early detection of abnormalities in heart rate or body temperature, enabling prompt medical attention and potentially preventing serious health complications.

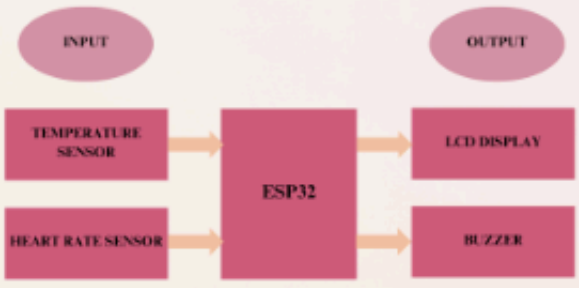
Real-time and archived measurement can be accessed by the user using mobile application , and data analyses can be viewed online in a Blynk app . The mobile application alerts users and gives them the ability to take action to enchances their comfort and protect their health surrounding

By detecting heart rate and body temperature. To provide the information to the users. This innovation can facilitate early detection of abnormalities in heart rate or body temperature, enabling prompt medical attention and potentially preventing serious health complications.

DESCRIPTION OF THE PROJECT

IOT Heart Rate And Body Temperature is focuses on monitoring heart rate and body temperature. It involves using sensors to collect real-time data on a person's heart rate and body temperature, which is then transmitted wirelessly to a central system for monitoring and analysis. It can also be recorded for monitoring purposes if there are abnormalities in the patient. The innovation behind this project is the IOT monitoring system, which includes a monitoring and display system. The goal is usually to detect these vital signs remotely and in real time, allowing early detection of any abnormalities or changes in health status. The users also will get the notifications from Blynk application whenever their health conditions is not in a good condition . The project is so practical for any age because the cost is very suitable for all types of people compare to the commercial ones .

BLOCK DIAGRAM



Tajuk : Arm Rehabilitation Using IOT

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ARM REHABILITATION USING IOT

PROJECT SUPERVISOR
DR. BAHARUDDIN BIN MUSTAPHA

NUR SYAZWANI BINTI HALIM MUSADAT
08DEU21F2010
DEU5A

IMPACTS OF INNOVATION

IMPROVED REHABILITATION OUTCOMES

The innovation in arm recovery tracking enables individuals to actively engage in their rehabilitation process with real-time feedback and personalized exercise plans, leading to better recovery outcomes and potentially shorter recovery times.

ENHANCED MONITORING AND DATA COLLECTION

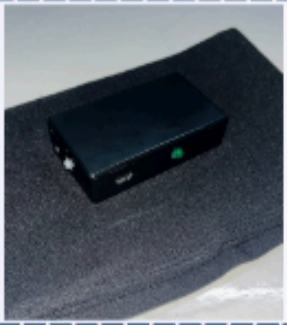
Incorporating IoT devices into arm recovery tracking allows for continuous monitoring of arm flexion movements and rehabilitation progress. These devices can collect real-time data on range of motion, exercise adherence, and recovery milestones, providing a comprehensive picture of the individual's rehabilitation journey.

PERSONALIZED FEEDBACK AND ADAPTIVE REHABILITATION PLANS

IoT-enabled sensors can analyze the data collected and provide personalized feedback to users based on their progress and performance. This feedback can help users make informed decisions about their rehabilitation activities and adjust their routines as needed to optimize recovery outcomes.

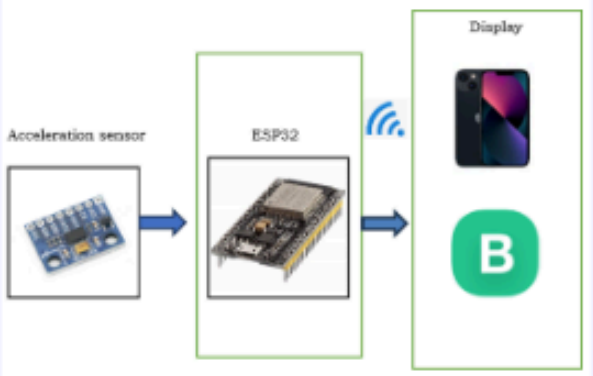
DESCRIPTION OF PROJECT

This project involves creating an easy-to-use that helps individuals track their arm recovery progress. By using wearable sensors, this project measures arm flexion movements in real-time and offers personalized exercise plans. Users can monitor their progress through the app's of Blynk and receive feedback to adjust their routines. The goal is to provide a supportive platform that empowers users to actively participate in their rehabilitation journey, ultimately leading to better outcomes and faster recovery.



OBJECTIVE

The objective of this project is to create a user-friendly solution that tracks arm recovery progress through arm flexion. By utilizing wearable sensors, this project will provide real-time feedback and personalized rehabilitation plans, enabling individuals recovering from arm injuries to monitor their progress effectively and enhance their rehabilitation outcomes.



EMPOWERING RECOVERY THROUGH SMART TECHNOLOGY

Tajuk : Automatic Trolley Scanner by Using IOT

KEMENTERIAN PENDIDIKAN TINGGI

POLITEKNIK MALAYSIA

"AUTOMATIC TROLLY SCANNER BY USING IOT"

NUR FARZANA ISHAMI BINTI SUHADI
08DEU21F2032

ENCIK KHAIRUL NAPISHAM BIN ABD RAZAK
SUPERVISOR

Project Description

The trolly automatic is a tool used to fill items while shopping and simplify the process to buy the item. The trolleys available in the market have several disadvantages such as requiring more energy when used, not suitable for women, the elderly and having wheel problems that often do not work when used. The purpose of this project is to modify the existing trolley design in terms of its functionality and also the consideration of human factors. To optimize existing designs. In addition, ergonomic factors are also taken into account to reduce and simplify the way to use the automatic trolley.

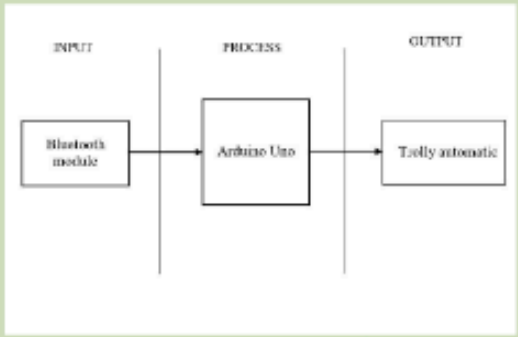
Objective

- Improvement of existing trolleys in terms of functionality and consideration of human factors.
- We develop for the new generation can adapt the way to use the automatic trolley more easily and save time and energy.

Project Impact

- Minimizes the risk of human error in trolley operation.
- Reduces accidents and injuries caused by manual trolley operation.

Block Diagram



Tajuk : IOT Based Smart Lawn Mower

NAME : KISHEN PRAKASH
MATRIX NO. : 08DEP21F2019
SUPERVISOR : PUAN NUR HADIANA BINTI NASRUDDIN

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

IOT BASED SMART LAWN MOWER

PROBLEM STATEMENT

- LABOR-INTENSIVE MANUAL MOWING
- ENVIRONMENTAL IMPACT
- TIME AND PHYSICAL EXERTION

OBJECTIVES

- TO CREATE AN ECO-FRIENDLY ALTERNATIVE TO TRADITIONAL MOWERS.
- DESIGN A LIGHTWEIGHT, EASY-TO-USE MOWER WITH REMOTE CONTROL FEATURES FOR ELDERLY USERS.

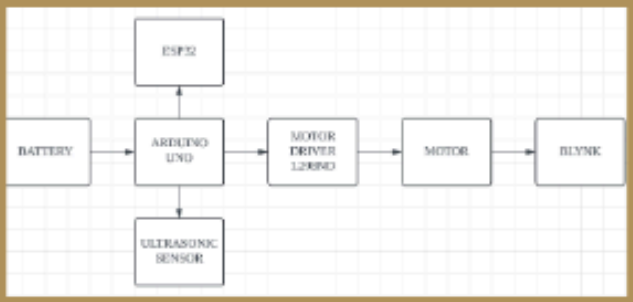
PRODUCT

THIS PRODUCT IS A IOT BASED LAWN CARE SYSTEM WHICH HAS OBSTACLE DETECTION AND CAN BE CONTROLLED FROM YOUR SMARTPHONE

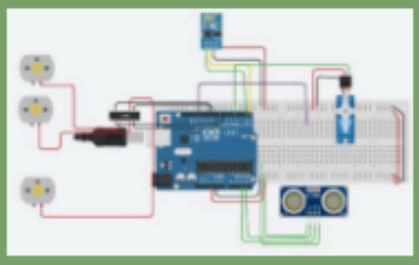
IMPACTS

- REDUCED EMISSION
- REDUCED PHYSICAL STRAIN
- ENGAGEMENT WITH TECHONOLOGY

BLOCK DIAGRAM



SCHEMATIC DIAGRAM



COMPATIBLE IN :

Blynk

MULTIFUNCTION HEATING PAD WITH IOT APPROACH

Nama Pelajar:
Nur Iyzati binti Maizal
No. Pendaftaran :
08DEU21F2068
Nama Penyelia: Yaakub bin Omar
No Tel: 01163364757
email: niyzatimzl@gmail.com

Nama Penyelia:
Yaakub bin Omar

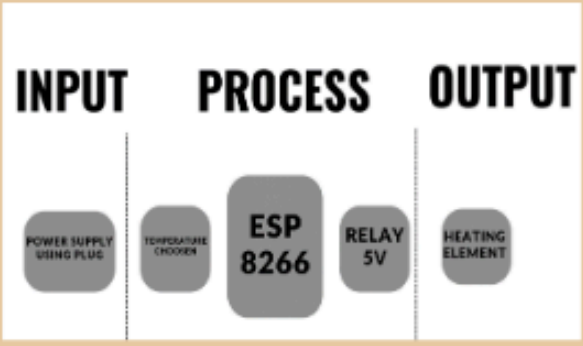
OBJECTIVE

- To design a heating pad to improve individual's lives.
- to develop a heating pad with smartphone setting controlled.
- to analyze the current needed for heating element temperatures.

INTRODUCTION

A heating pad that provides relief for common discomforts, thereby improving well-being by reducing suffering. With its integration with IoT technology exemplifies an innovative approach in healthcare, aiming to enhance productivity and overall quality of life.

BLOCK DIAGRAM



INNOVATIVE

PROBLEM STATEMENT

- unaddressed common discomfort impacting lives.
- lacking solution of long-faced problem.
- limited control over pain management

Tajuk : Automatic Cycling Pedal for Leg Post Stroke with IOT

MINISTRY OF HEALTH MALAYSIA

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING INNOVATION COMPETITION

TVET Malaysia
Memperkasakan Rakyat • Memajukan Negara

AUTOMATIC CYCLING PEDAL FOR LEG POST STROKE WITH IOT

Nama Pelajar :MUHAMMAD ZAFRAN BIN ZU

No. Pendaftaran :08DEU21F2065

Nama Penyelia :EN. YAAKUB BIN OMAR

INTRODUCTION

Smart Pedal:Your Partner in Stroke Recovery

After a stroke, moving can be tough. That's where our Smart Pedal steps in to make things easier. It's like a special bike pedal designed just for stroke survivors.With our pedal, you don't have to worry about starting or keeping up the movement. It guides your legs through gentle cycling motions, making therapy less of a struggle.Therapists can tweak the settings to fit your needs, like how fast or hard you pedal. Plus, they can keep an eye on your progress online and adjust things as needed. It's like having a virtual therapist right there with you.And the best part? You can use it from home, so you don't have to travel for therapy sessions. It's simple, personalized, and convenient – just what you need to get back on your feet after a stroke.

OBJECTIVES INOVATION

1.To Develop a device that guides stroke survivors' leg movements automatically, making therapy sessions easier and more efficient.

2.To Create a system that allows stroke survivors to do their therapy from home, removing barriers like travel and making rehabilitation more accessible.

3.To Personalize Therapy Customize rehabilitation programs to fit each person's needs, ensuring that therapy sessions are effective and tailored to individual progress.

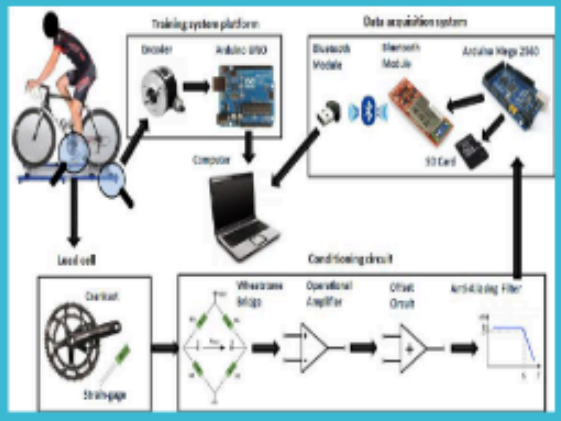
INOVATION IMPACT

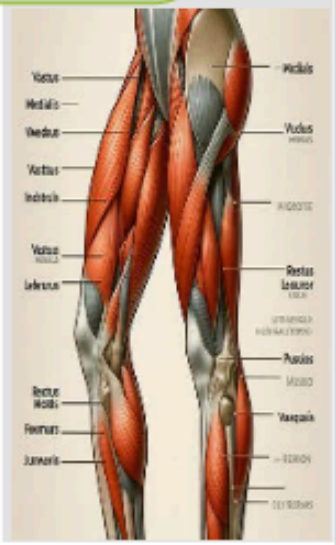
1. Enhanced Rehabilitation Effectiveness: By automating leg therapy and providing real-time feedback, the project improves rehabilitation outcomes for stroke survivors, potentially leading to faster recovery and better mobility.

2. Increased Accessibility
With remote access capabilities, stroke survivors can participate in therapy sessions from home, overcoming barriers like travel and making rehabilitation more accessible to a wider population.

3.Personalized Care: Customizable therapy programs cater to individual needs, ensuring that each stroke survivor receives tailored rehabilitation, maximizing effectiveness and promoting engagement in the recovery process.

BLOCK DIAGRAM





En Yaakub bin Omar
Project supervisor

Find me:
Email:muhdzafran59812@gmail.com
WhatsApp:011-11436832 (zafran)

Tajuk : Smart Cat's Fever Camera Detector

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING INNOVATION COMPETITION

SMART CAT'S FEVER CAMERA DETECTOR

Nama Pelajar: NUR WAHEEDA BINTI ISMAIL
No. Pendaftaran: 08DEP21F2013
Nama Penyelia: PN. ZABIDAH BINTI HARON

PROBLEM STATEMENT

Parvovirus has become well-known among cat owners since it is a dangerous disease, especially in unvaccinated cats. A increase in body temperature is one of the earliest symptoms of the Parvovirus. Many cat owners, however, unintentionally overlook or misinterpret these symptoms, leading in delayed medical care and treatment.

Many cat owner are too busy with their daily life that make them can not monitoring their cats for 24 hours or regularly. Since cats nowadays are too exposed with many dangerous viruses and disease, it can become life-threatening if there is a lack of monitoring .

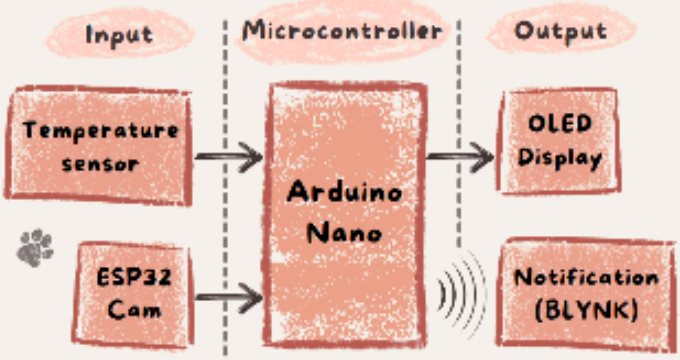
OBJECTIVES

- To develop a system that can detect fevers in cats at the earliest stage.
- To create a real-time temperature monitoring solution for cats, enabling pet owners to continuously track their pet's temperature.
- To implement a notification system that promptly alerts and notifies cat owners via their mobile devices when temperature readings deviate from the normal range.

IMPACT OF PROJECT

- Improving Animal health: This project can maintaining ideal temperature conditions which is important for animals' health and comfort, and real-time monitoring can help prevent overheating and hypothermia.
- Early Detection of Health problems: This project can detect diseases early, allowing for quick veterinarian care and action. This can keep symptoms from getting worse and improve conditions for affected animals.
- Improved Veterinary Care: Temperature monitoring devices may improve typical veterinary care methods, giving veterinarians additional options to examine animal health

BLOCK DIAGRAM



PRODUCT:

Tajuk : Smart Charging Kiosk

SCAN ME !

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING INNOVATION COMPETITION

SMART CHARGING KIOSK

DESCRIPTION OF INNOVATION

The Phone Charging Kiosk project is an innovative solution to a common modern-day challenge. By providing a reliable and easily accessible charging option, this kiosk enhances the convenience and connectivity of individuals while on the move. Whether in busy public spaces or niche locations, this project serves as a testament to the versatility and practicality of Arduino- based solutions.

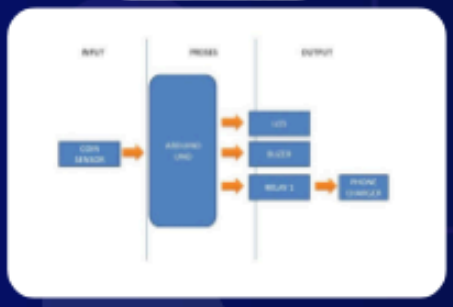
OBJECTIVE

I) this kiosk project aims to reform in today's modern era. Because of this, customers no longer have to worry about running out of battery when leaving the house.
ii) This project is equipped with fast charging and they want the accessibility of this project to satisfy them as an efficient user.
iii) This project facilitates the affairs of customers or the community who have been operating to charge their phone batteries, while they are at shopping mall airports.

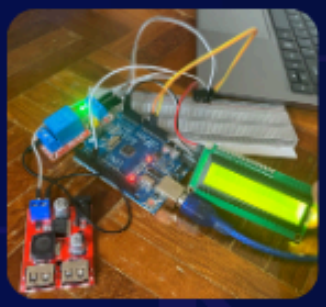
IMPACT OF PROJECT

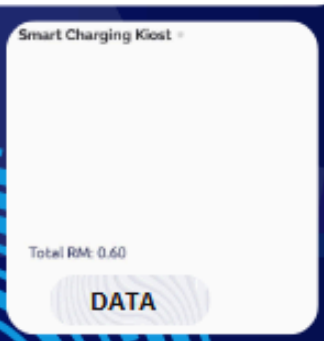
i) This smart charging kiosk is kind of charging capabilities it will have fast charging and . his smart charging kiosk is very convenient for the community or users, when they run out of phone battery.
ii) This project is used to help the people by building a coin-based charger. Also, nowadays, this kind of project is beneficial because of the extensive internet and smartphones usage.
iii) This project can also be implemented at public places to display advertisements to generate revenue.

BLOCK DIAGRAM

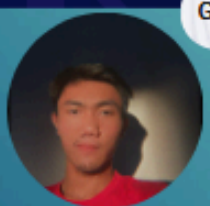


FINAL PROJECT





GROUP PROJECT



PROJECT OWNER: SABARUDIN BIN ABU
MATRIKS NO. : 08DEP21F2023
EMAIL:Sabarudin1511@gmail.com

Supervisor: NUR HADIANA BT NASRUDDIN
EMAIL:hadiana@psa.edu.my

Tajuk : IOT Based Syringe Pump Monitoring System with Air Bubble Sensor

POLITEKNIK MALAYSIA

IOT BASED SYRINGE PUMP MONITORING SYSTEM WITH AIR BUBBLE SENSOR

NAMA : SYAFFIQAH FAZZIRAH
AINY BINTI AKMAL
NO. PENDAFTARAN : 08DEU21F2060
NAMA PENYELIA : ENCIK ABU
BAKAR HAFIS BIN KAHAR

1 DESCRIPTION OF INNOVATION

An IoT-based syringe pump monitoring system with an air bubble sensor is a revolutionary innovation in healthcare technology. This system utilizes IoT connectivity to provide real-time monitoring and control of syringe pumps remotely. The inclusion of an air bubble sensor enhances patient safety by detecting air bubbles in the infusion line, preventing potentially harmful consequences such as embolisms. Overall, this innovation represents a significant advancement in medication delivery systems, ensuring accuracy, reliability, and patient well-being.

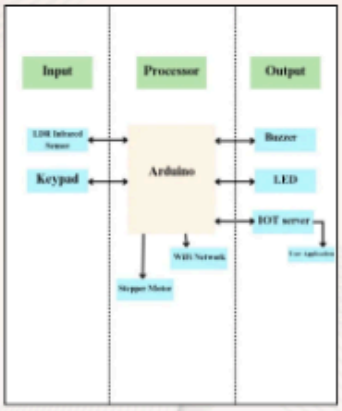
2 OBJECTIVES

- To develop a system that provides real-time monitoring of syringe pump to ensure accuracy and safety
- To detect and alert medical staff of any bubble in the syringe to prevent potential harm to patient
- To notify healthcare provider imediately in case of any issue happen by using an alarm

3 IMPACT OF INNOVATION

- Healthcare providers can remotely monitor multiple syringe pumps simultaneously, allowing for better allocation of resources and faster response times to potential issues.
- By detecting air bubbles in syringes, the system enhances patient safety by reducing the risk of air embolisms, potentially saving lives and minimizing complications.
- Real-time monitoring ensures accurate delivery of medication dosages, reducing the likelihood of dosage errors and improving treatment effectiveness

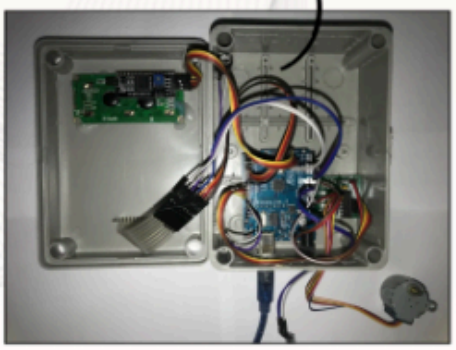
4 BLOCK DIAGRAM



5 FINAL PRODUCT

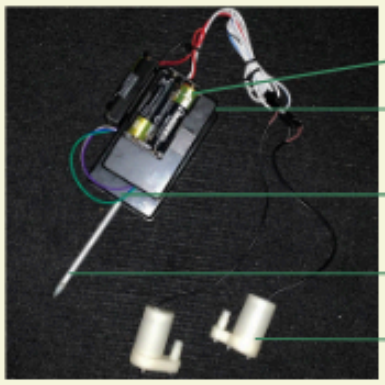
20 ML
SYRINGE PUMP

THE COMBINATION
OF THE COMPONENT



PH MONITORING AND NEUTRALIZATION SYSTEM

Nama: Hannah Zahirah Binti Mohd Zaini
No. Pendaftaran: 08DEU21F2017
Nama Penyelia: Norhayati Binti Che Husin

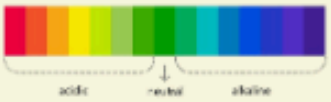


Description

- The "PH Monitoring and Neutralization System" project aims to enhance water quality in industry and the environment by creating an automated system that monitors and regulates pH levels continuously.
- The project demonstrates the potential of innovative technologies in resolving environmental and industrial challenges.

Objective

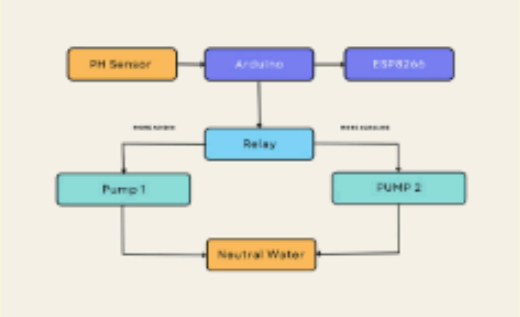
- This system will continuously monitor pH levels and adjust them using neutralization agents in real-time to ensure the water stays within the desired pH range.
- The goal is to maintain water quality and prevent damage to infrastructure and ecosystems.



Problem Statement

- Addresses the challenge of maintaining optimal pH levels in liquid solutions across diverse applications.
- Limited remote monitoring and control capabilities prevent real-time response to pH fluctuations.

Block Diagram



Impacts of Innovation

- **Enhanced Water Quality:** Automating pH neutralization maintains optimal water pH, preventing infrastructure damage and enhancing water quality for improved work efficiency and safety in industrial settings.
- **Environmental Protection:** By maintaining water quality, the system promotes the protection of aquatic ecosystems and the health of wildlife. This is critical in areas where water quality degradation can cause serious environmental and health problems.

Tajuk : IOT Based Phototherapy Device for Neonatal Jaundice Monitoring System and Light Intensity Controller

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

IOT BASED PHOTOTHERAPY DEVICE FOR NEONATAL JAUNDICE MONITORING SYSTEM AND LIGHT INTENSITY CONTROLLER

DESCRIPTION OF INNOVATION

Neonatal jaundice always occurs in newborns. Neonatal jaundice often resolves on its own without specific treatment. However, in cases where bilirubin levels are high or rising rapidly, medical intervention may be required. This neonatal jaundice is controlled periodically or manually by the doctor. The doctor should be noted at all time to prevent this jaundice from escalating. Therefore, I would like to innovate a project of phototherapy device for neonatal jaundice by using light intensity control. The baby is placed under special lights that help break down bilirubin in the skin. Phototherapy is a standard treatment for neonatal jaundice and is usually conducted in the hospital.This project can be automatically controlled and monitored all time by the doctors. It also can reduce the risk of harm to neonatal.

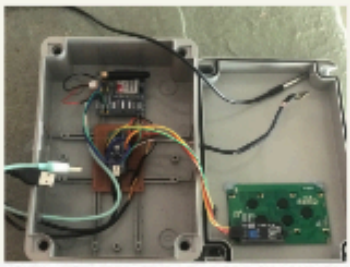
OBJECTIVE

- *Develop an IoT-based system for monitoring neonatal jaundice, enabling real-time data collection on bilirubin levels to enhance diagnostic precision.*
- *Create a light intensity controller integrated with the IoT system to optimize phototherapy treatment, ensuring precise and tailored light exposure for effective jaundice management.*
- *Design and implement a user-friendly interface for healthcare professionals, allowing seamless access to neonatal jaundice data and facilitating informed decision-making.*

IMPACT OF INNOVATION

- *Enables healthcare professionals to monitor neonatal jaundice levels in real-time from anywhere, ensuring timely interventions if necessary.*
- *Allows for personalized treatment plans based on real-time data, optimizing therapy dosage and duration for each baby's specific needs.*
- *Parents can also access real-time data and updates on their baby's condition, fostering better communication and understanding between healthcare providers and parents.*

PRODUCT



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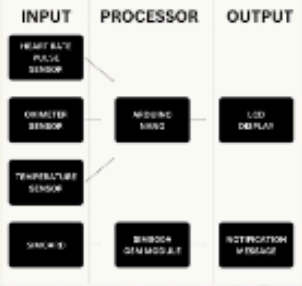

PROJECT BY:

TIMOTHTY LEE
08DEU21F2051

PROJECT SUPERVISOR:

EN. ABU BAKAR HAFIS BIN KAHAR

Tajuk : Park With Ease

KEMENTERIAN PENDIDIKAN MALAYSIA

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

TVET MALAYSIA

TEAM GROUP PROJECT

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STUDENT
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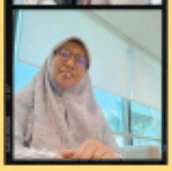
alyasyazrina@gmail.com



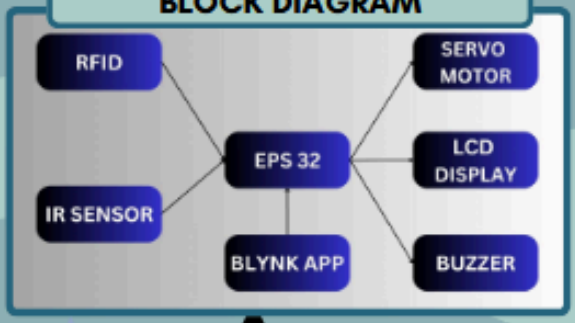
PUAN FA'IZAH BINTI YA'ACOB
PROJECT SUPERVISOR
faizah@psa.edu.my

PARK WITH EASE

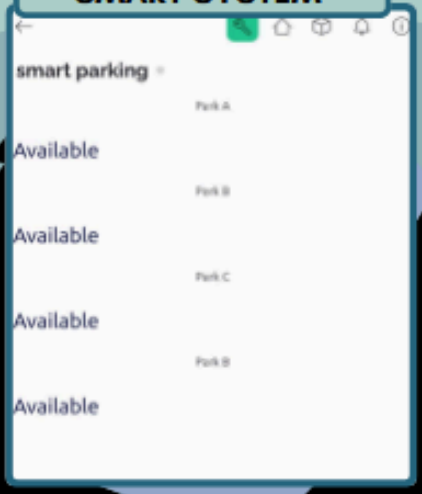
DESCRIPTION OF PROJECT

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.

BLOCK DIAGRAM



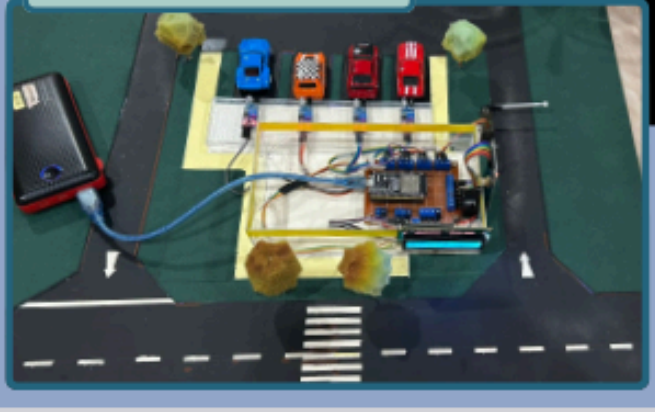
SMART SYSTEM



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



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.

Tajuk : Smart Water Filtration for Eco Green

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING
FIGHT THE POWER
JOIN THE RESISTANCE
INNOVATION COMPETITION

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.

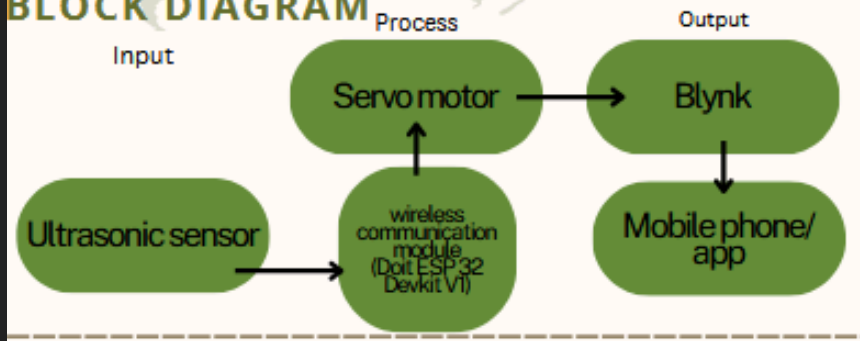
02. Stationary cleanup infrastructure is unable to adapt to changing water currents and debris accumulation patterns, resulting in inefficient waste collection and incomplete cleanup.

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.

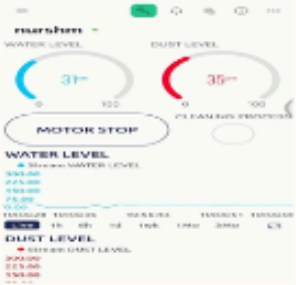
BACKGROUND

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

Tajuk : The Development of Electronic Nerve Stimulator Using IOT

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

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.

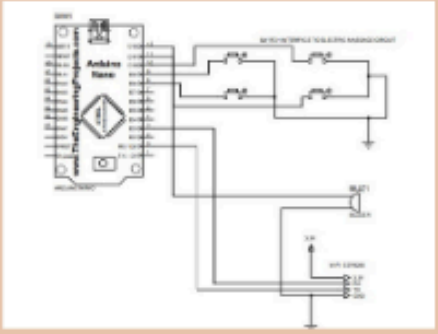
INNOVATION IMPACT

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.

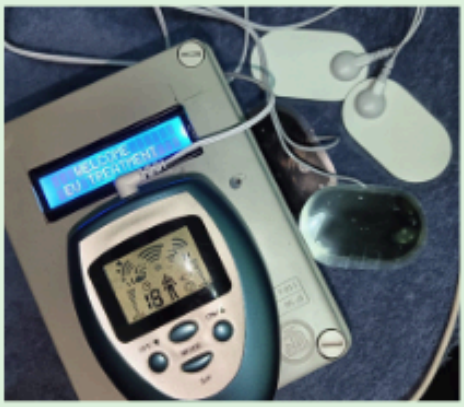
OBJECTIVE

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

SCHEMATIC DIAGRAM



INNOVATION PICTURE



Tajuk : Baby Incubator Using IOT

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

KEMENTERIAN PENDIDIKAN TINGGI

BABY INCUBATOR USING IoT

IZZAH BASIRAH KHAN BINTI RAMZANI KHAN

08DEU21F2019

SUPERVISOR: NORHAYATI BINTI CHE HUSIN

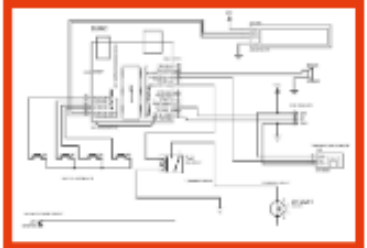
DESCRIPTION OF INNOVATION

Developing an IoT baby incubator requires understanding temperature control, humidity regulation, and vital sign monitoring. Investigating IoT in healthcare provides insights into connectivity via cellular networks like SMS. Choosing sensors, microcontrollers, and ensuring security and regulatory compliance are crucial. Cost considerations, user-friendly interfaces, and rigorous testing are also important for reliability and affordability.

INNOVATION OBJECTIVE

- The project was designed with the requirements and demands of the majority of the rural population in mind. We have extended the current model with a controlling mechanism.
- A notification about the baby's parameters can be sent to the doctor. The primary objective of an incubator is achieved, which is to sustain an artificial environment necessary for the survival of a neonate.
- Using this study, it was confirmed that water was required to maintain controlled humidity levels in the humidity reservoir incubator that was used for this work.
- The intention is that the information presented will be able to make health professionals think twice about the use of water in the newborn incubator's humidity system, and that managing humidity levels may help keep the environment more thermoneutral and enhance the quality of life for premature babies.

BLOCK DIAGRAM



INNOVATION IMPACT

The potential market for IoT-enabled baby incubators spans various sectors. Hospitals and neonatal care units constitute the primary market, benefiting from advanced monitoring and remote management features. Additionally, home healthcare services and developing countries, particularly rural areas with limited access to medical facilities, present opportunities for deployment. NICU transport services also stand to benefit from portable IoT incubators, ensuring safe transport while maintaining vital sign monitoring. Research institutions and healthcare providers may leverage these devices for studies and cost reduction, while a potential consumer market exists for parents requiring at-home monitoring for premature infants. This diverse market landscape offers opportunities for innovation and improved neonatal care on a global scale.

PICTURE OF INNOVATION

Tajuk : The Development of Knee Device Rehabilitation and Monitoring

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

THE DEVELOPMENT OF KNEE DEVICE REHABILITATION AND MONITORING

NURBADRISYA BINTI SAHARIZAN
08DEU21F2043
SUPERVISOR - NAAGAJOTHI A/P ADIN NARAINA

PROBLEM STATEMENT

patients with ACL feel uncomfortable walking due to loose knees. During rehab, physiotherapists often don't know the knee's flexion limits. With limited time, therapists can only monitor during appointments. Patients follow exercises prescribed by the physiotherapist and doctor. Physiotherapists guide patients to restore movement.y

OBJECTIVE

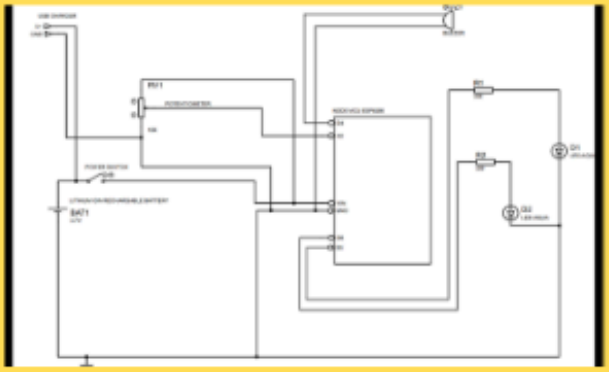
- To design a device for continuous knee joint motion measurement.
- To evaluate sensor usability through comparison.
- To develop a real-time monitoring app for smartphone knee angle display

INNOVATION IMPACT

The potential for such a device is significant. ACL injuries are common among athletes and active individuals, and there's a high demand for effective and efficient rehabilitation solutions. By integrating IoT technology, the device can offer real-time monitoring and personalized rehabilitation programs, enhancing patient outcomes and reducing recovery timet.

INNOVATION PICTURE

SCHEMATIC DIAGRAM



Tajuk : IOT Based Security System Using Artificial Intelligence Technology

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING · FIGHT THE POWER · JOIN THE RESISTANCE · INNOVATION COMPETITION

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.

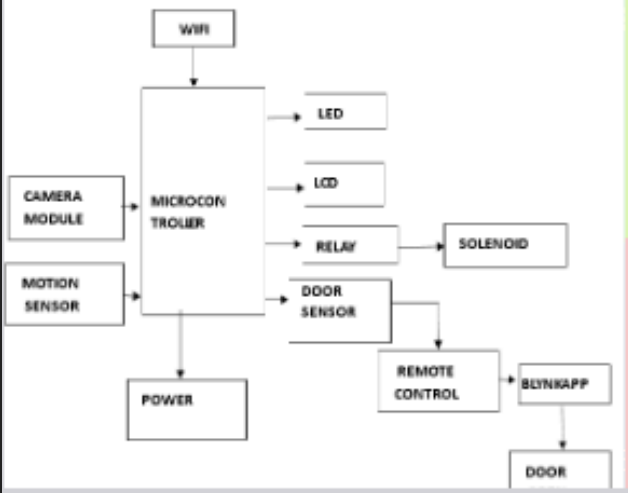
INTRODUCTION

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..

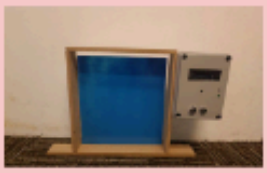
IMPACT

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.

BLOCK DIAGRAM



PRODUCT



Tajuk : IOT Based Monitoring Hydration Tracker (Water Bottle)

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

IOT BASED MONITORING HYDRATION TRACKER (WATER BOTTLE)

SITI NOR ATIKA BINTI MOHD AZWAN
08DEU21F2002
NAMA PENYELIA : PUAN SITI HAJAR BINTI ABD HAMID

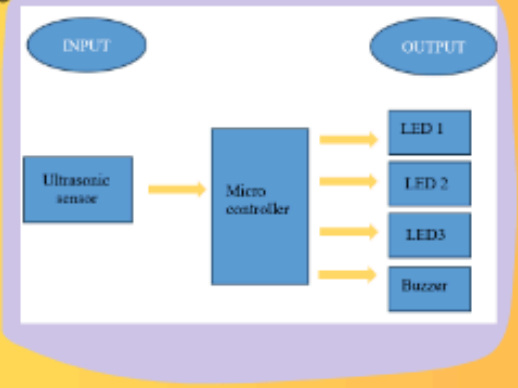
OBJECTIVES

- 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.

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



IMPACT

Health and Wellness:
this innovation promotes better health outcomes by preventing dehydration-related complications

Teohnologioal Advanoement:
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

Tajuk : Development of a Smart Insole for Diabetic Foot Monitoring

KEMENTERIAN PENDIDIKAN MALAYSIA

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

ELECTRICAL & ELECTRONIC ENGINEERING INNOVATION COMPETITION

DEVELOPMENT OF A SMART INSOLE FOR DIABETIC FOOT MONITORING

NAME: MUHAMMAD FIRHAN WAFIE BIN MOHD RADZI
NO. MATRIKS: 08DEU21F2072
PENYELIA: MR. YAAKUB OMAR

Introduction

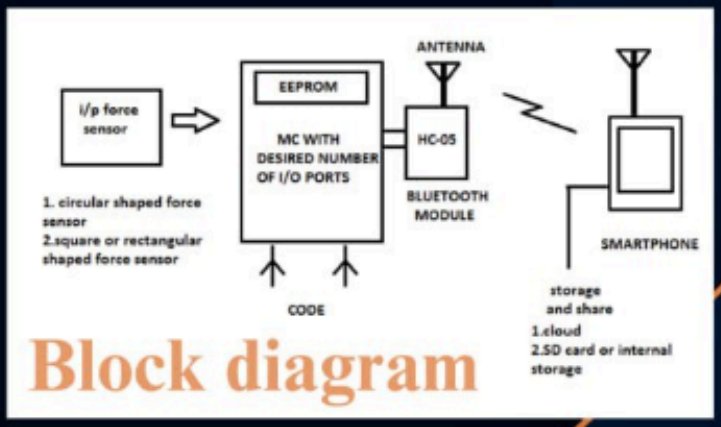
Diabetes continues to pose a significant challenge to public health worldwide, despite remarkable advancements in medical science and technology. The prevalence of diabetes is on the rise, placing a growing burden on healthcare systems globally. Despite efforts to prevent and manage the condition, many individuals face barriers to accessing quality care, resulting in poor health outcomes and increased risk of complications.

Objective

- Increase awareness about the signs and symptoms of diabetes to facilitate early diagnosis and intervention.
- Promote public awareness campaigns and educational initiatives to enhance understanding of diabetes risk factors.
- Improve the quality of diabetes care by implementing evidence-based guidelines, fostering interdisciplinary collaboration among healthcare providers, and promoting patient-centered approaches that empower individuals to actively manage their condition.

Problem Statement

- Despite advancements in medical knowledge and technology, diabetes remains a significant public health challenge globally.
- There is an increasing prevalence of diabetes worldwide, leading to a growing burden on healthcare systems.
- Efforts to promote prevention, early detection, and effective management strategies have been insufficient in stemming the rise of diabetes cases.



Block diagram

INNOVATIVE PROJECT

More Information:
0105658501

MPP SIRIM KEMENTERIAN PENDIDIKAN MALAYSIA

Tajuk : Smart Curtain with Voice Command

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART CURTAIN

WITH VOICE COMMAND

VASUNTHRA PRAGASH KUMAR
08DEP21F2026
PUAN NUR HADIANA BINTI NASRUDDIN

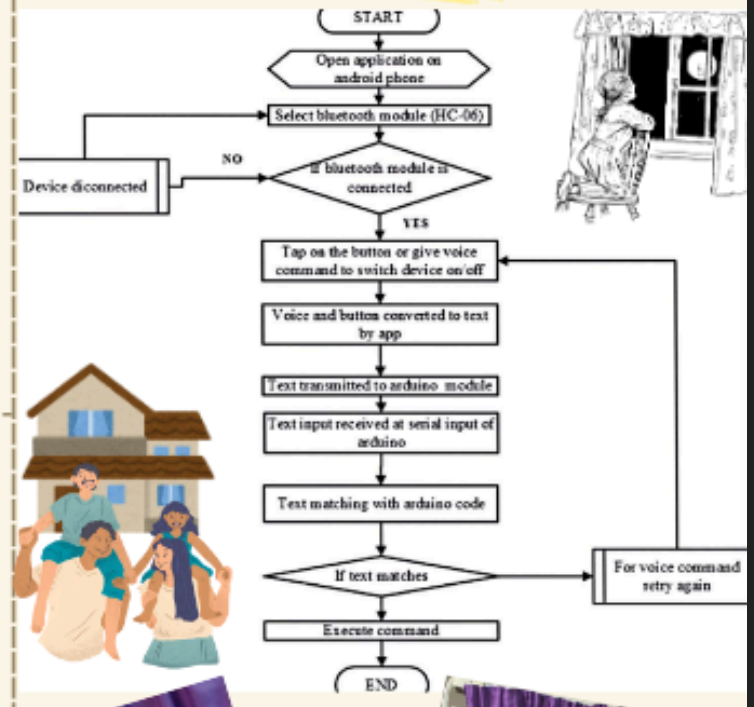
DESCRIPTION

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.

OBJECTIVES

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

FLOWCHART



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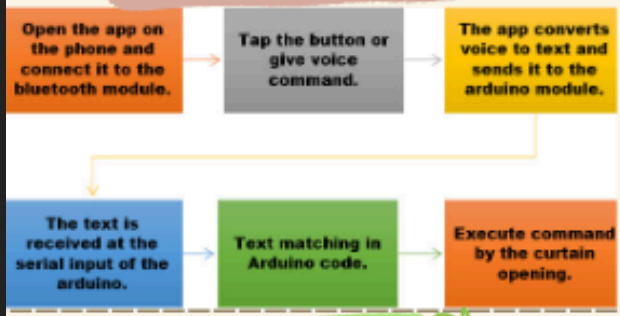


IMPACT

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.

Tajuk : Gas Leakage Detector Using Application with IOT

KEMENTERIAN PENGAJIAN TINGGI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

GAS LEAKAGE DETECTOR USING APP WITH IOT

MUHAMMAD NAIM BIN ABDUL SALAM
08DEU21F2034
POLITEKNIKSULTAN SALAHUDDIN ABDUL AZIZ SHAH
SUPERVISOR :USTAZ KHAIRUL NAPISHAM BIN ABD RAZAK

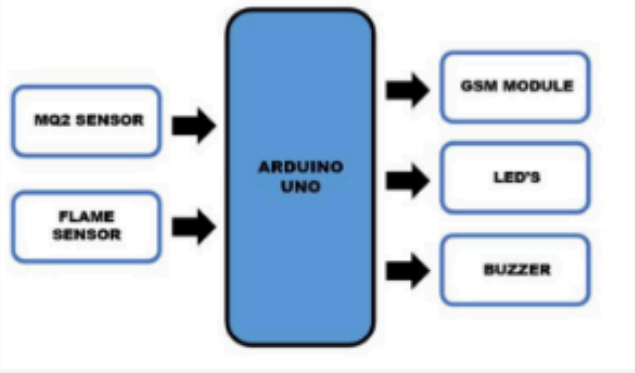
PROJECT DESCRIPTION

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

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



PROTOTYPE

PROJECT IMPACT

Encourages people to take safety precaution at home before become worse

Tajuk : Leg Strength Tester for Dialysis Patient with IOT

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

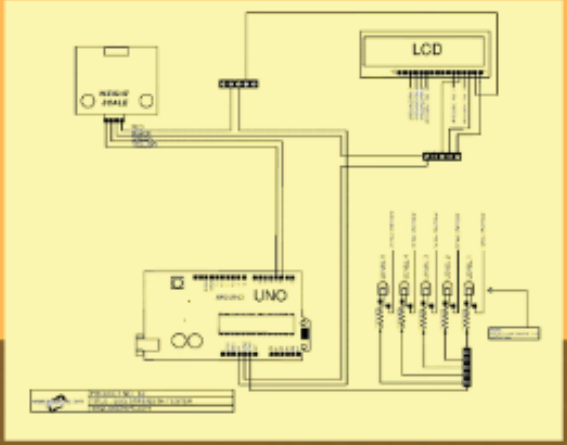
LEG STRENGHT TESTER FOR DIALYSIS PATIENT WITH IOT

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.

BLOCK DIAGRAM



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.

INNOVATIVE

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.

RUJUKAN

KEMENTERIAN PENGAJIAN TINGGI (2021). BUKU PANDUAN PELAKSANAAN PROJEK PELAJAR (PROGRAM DIPLOMA). Politeknik Malaysia, 138-139.

EEEIC

INVENTORI PROJEK AKHIR PELAJAR JKE

e ISBN 978-629-7667-38-6

9 786297 667386

Unit Penerbitan Politeknik Sultan Salahuddin Abdul Aziz Shah

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Yaakub Bin Omar

Nur Hadiana Binti Nasruddin