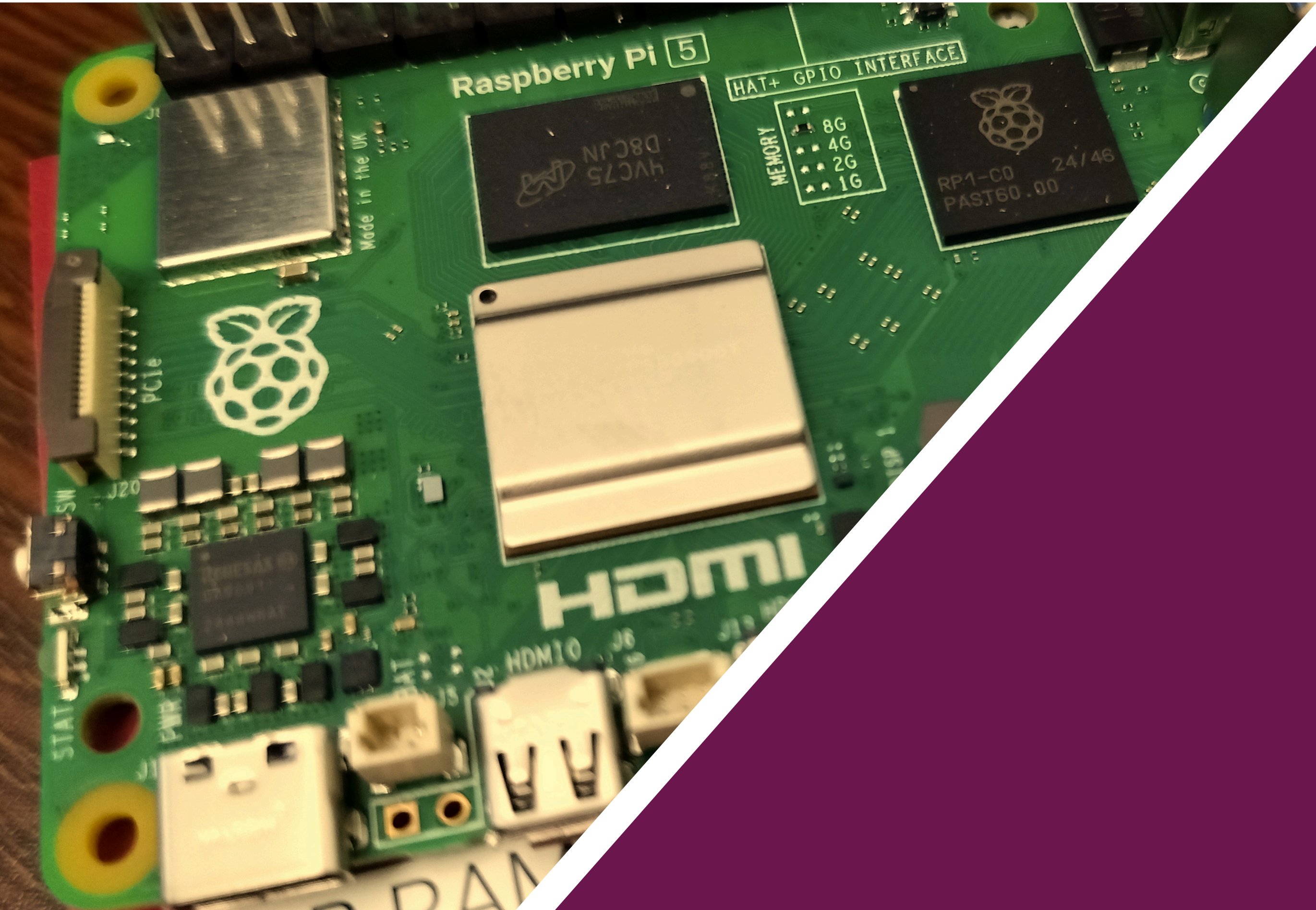




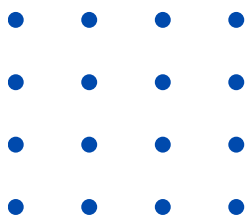
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EESEE 2025

10TH ELECTRICAL ELECTRONICS SYSTEMS
ENGINEERING EXHIBITION 2025
VOLUME 1



FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
JOHOR BRANCH
PASIR GUDANG CAMPUS



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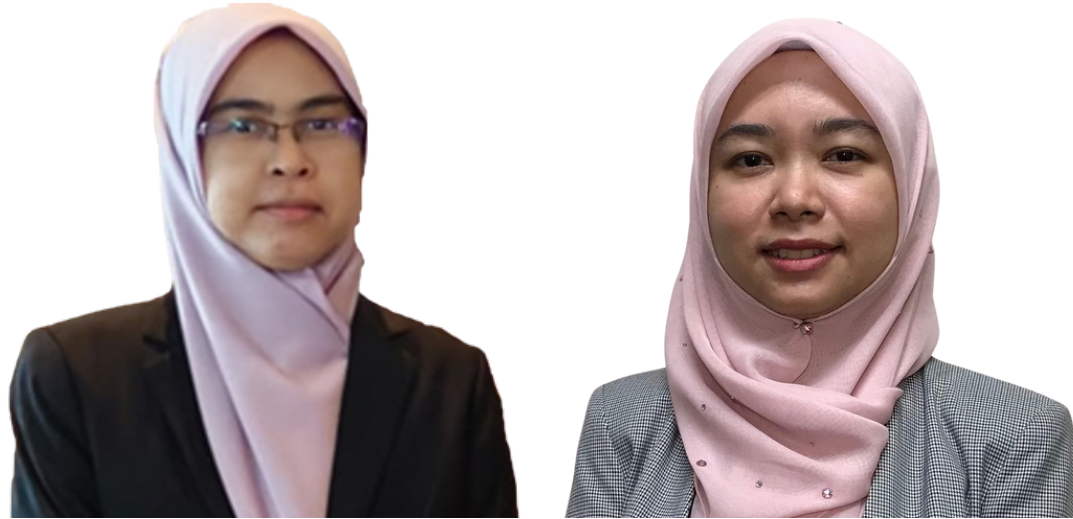
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FOREWORD BY THE PROGRAM CHAIR



Greetings from the Electrical, Electronics, and Systems Engineering Exhibition 2025 (EESEE 2025).

As the Program Chairs, it is our great pleasure to present this compilation of extended abstracts, showcasing the remarkable projects developed by our final-semester students from the Diploma in Electrical Engineering (Power) and Diploma in Electrical Engineering (Electronics) programs at Universiti Teknologi MARA, Cawangan Johor, Pasir Gudang Campus.

This exhibition marks a significant milestone in our students' academic journey, representing the culmination of years of dedication, perseverance, and learning. It also serves as an essential step toward the successful completion of their diploma studies. The projects featured this year are centered on the theme *Engineering Excellence: Bridging Technology and Life*, reflecting current trends and innovations in the engineering field.

This extended abstract book highlights not only the students' technical expertise but also their creativity, problem-solving skills, and ability to engage meaningfully with peers and industry professionals. Within these pages, you will find a diverse range of projects that embody a unique blend of knowledge, innovation, and practical application.

We warmly invite you to explore this collection, which celebrates the achievements of our aspiring engineers. Welcome once again to the Electrical, Electronics, and Systems Engineering Exhibition 2025. May the insights shared here inspire and pave the way for the next generation of innovative engineers.

Warm regards,

Dr. Fatimah Khairiah binti Abd Hamid

Dr. Atiqah Hamizah binti Mohd Nordin

Program Chairs

Electrical, Electronics, and Systems Engineering Exhibition 2025 (EESEE 2025)



Automated Room Control and Monitoring System with Solar Power

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ABSTRACT

Automated room control and monitoring systems that use solar energy play a crucial role in promoting energy-efficient and sustainable solutions for modern living. Solar panels, which harness the photovoltaic effect, produce clean, renewable electricity, helping to lessen environmental impacts and decrease dependence on conventional energy sources. This work proposes the design of an Automated Room Control system that uses temperature and motion sensors to automate the operation of fans and lamps, with power supplied by solar panels. By utilizing a Wi-Fi module, the system can monitor and record energy consumption in real-time, enabling continuous optimization. The solar-powered setup not only works independently without constant intervention but also enhances user comfort and convenience. Components like surface-treated temperature sensors and optimized microcontroller configurations greatly enhance system efficiency. The system uses a Blynk application to make connectivity and monitoring easy, showing how solar energy can power smart systems. With its ability to collect and control data effectively, this system combines renewable energy with automation, creating smarter and more sustainable living spaces.

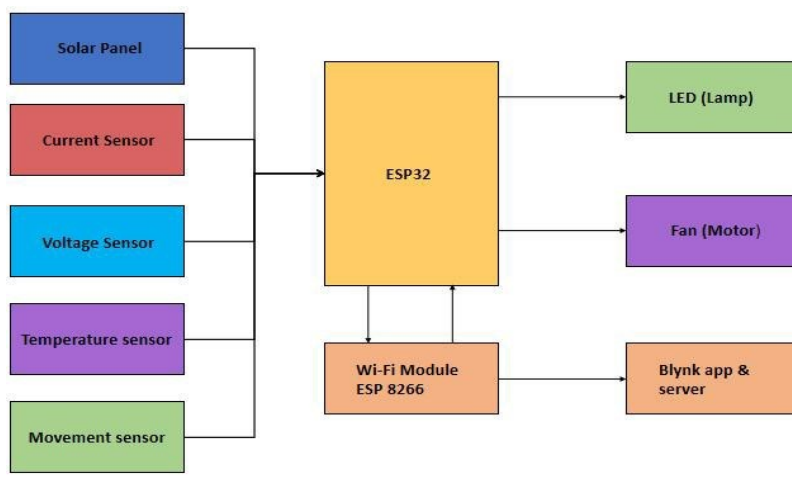
KEYWORDS: Motion sensors, Solar energy, Temperature sensors, Blynk application, User comfort

PRODUCT DESCRIPTION

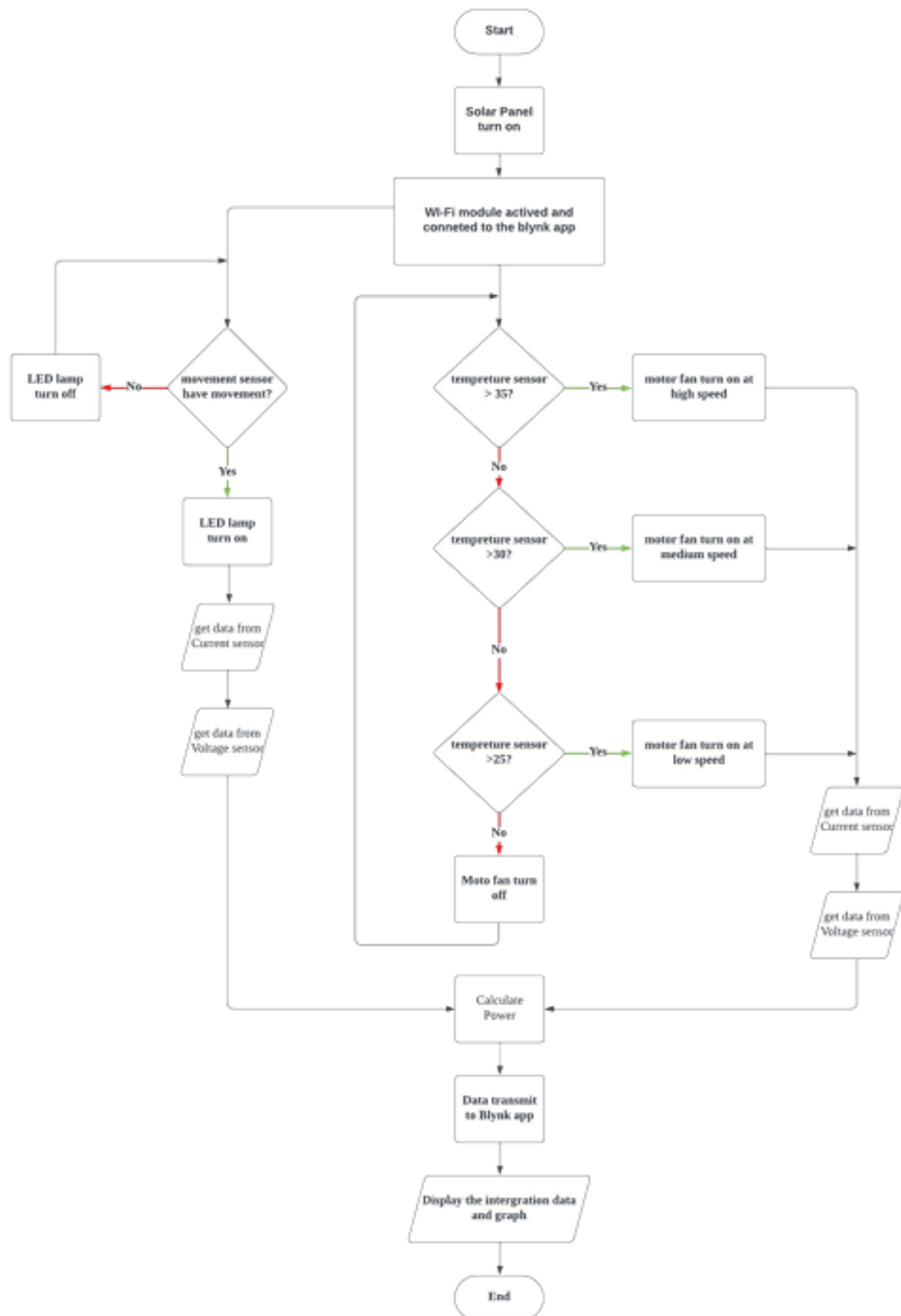
For modern living spaces, the solar-powered Automated Room Control and Monitoring System offers a smart and eco-friendly solution. By harnessing clean, renewable energy from solar panels, it reduces environmental impact and reliance on traditional energy sources. The system utilizes motion and temperature sensors to automatically adjust lighting and fans based on occupancy and room conditions, promoting energy savings and enhancing convenience. With an easy-to-use Blynk app, users can monitor and track energy consumption in real-time, thanks to its built-in Wi-Fi module. This autonomous system merges advanced technology with sustainable energy, creating smarter and greener living environments that are designed for reliability and ease of use.

PICTURES/ SCHEMATIC DIAGRAMS/ FLOW CHARTS/SCREENSHOTS/ GRAPHS AND OTHER RELATED VISUALS

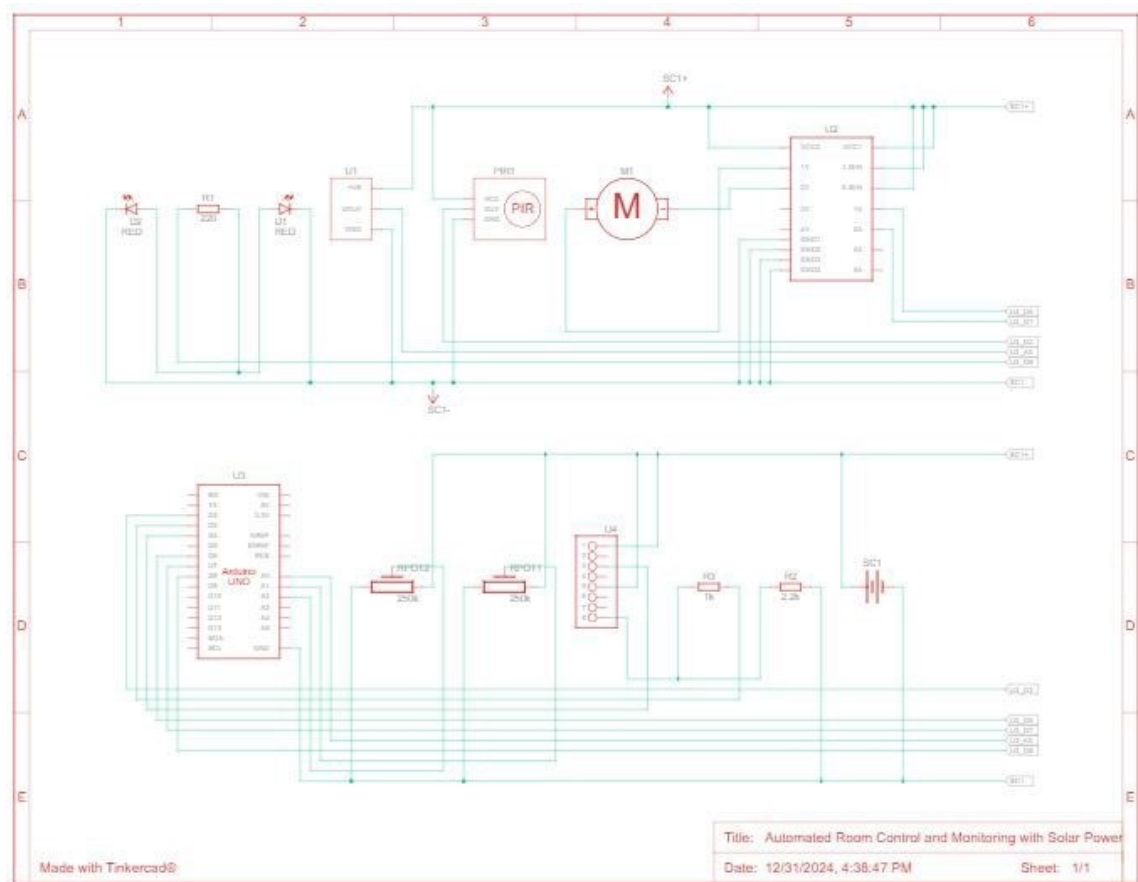
Block Diagram



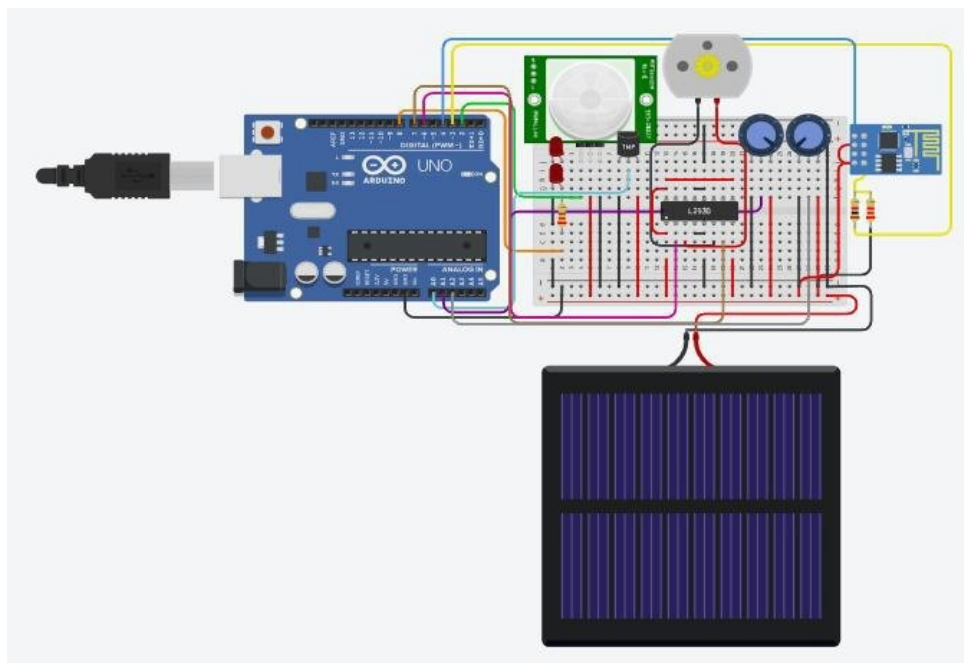
Flow Chart



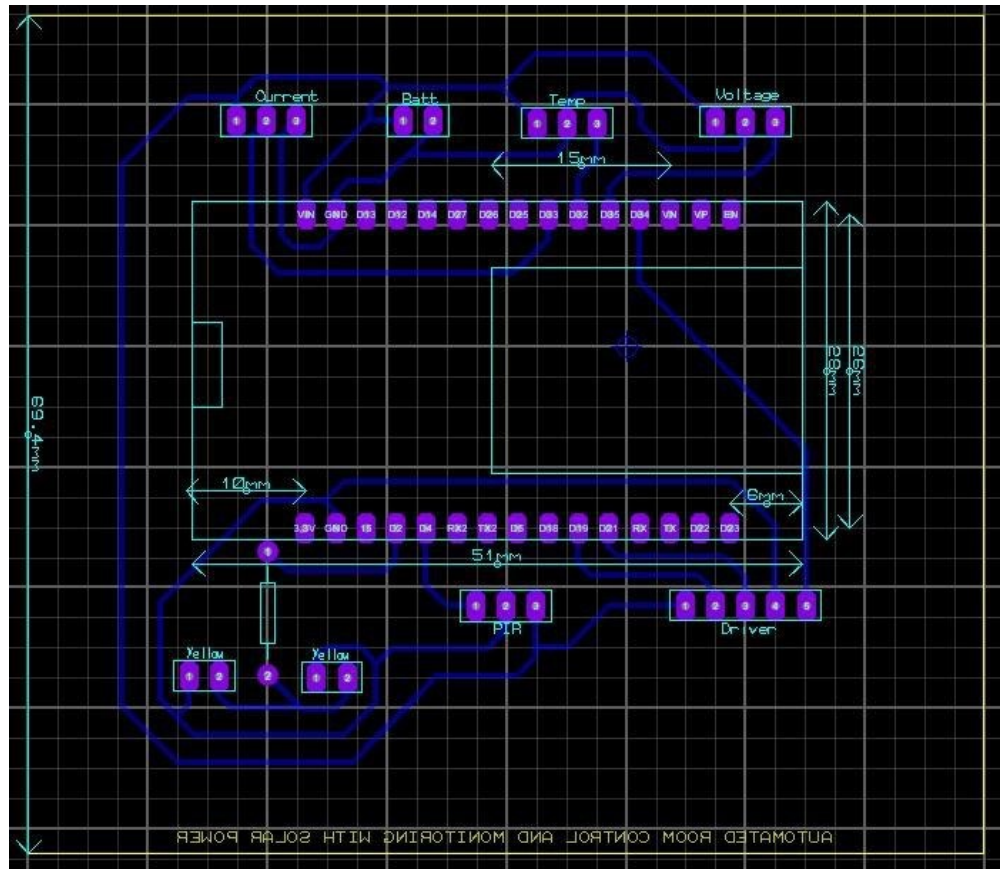
Schematic Diagram



Simulation



Pcb Layout



NOVELTY AND UNIQUENESS

The solar-powered Automated Room Control and Monitoring System is remarkable for being self-sufficient and sustainable, unlike standard systems that rely on external power grids. This eco-friendly approach helps lower its carbon footprint. The system features a Wi-Fi module and the easy-to-use Blynk app, enabling real-time monitoring and control of energy consumption, which is very convenient. It uses a blend of temperature and motion sensors to manage lights and fans effectively, optimizing energy use and improving user comfort.

BENEFIT TO MANKIND

The Automated Room Control and Monitoring System, which runs on solar energy, offers numerous advantages by enhancing sustainability, efficiency, and comfort. By utilizing solar power, it decreases dependence on fossil fuels, contributing to a reduction in greenhouse gas emissions and aiding in the fight against climate change. Intelligent sensors adjust fans and lights according to the conditions in the room, minimizing energy waste and lowering costs. This system not only ensures comfort but also allows users to monitor and manage their energy consumption through a Wi-Fi-connected app, promoting responsible energy use. Its solar-powered design is particularly beneficial for remote locations lacking access to conventional electricity. By merging renewable energy with smart automation, this system paves the way for a greener and more intelligent future for all.

COMMERCIALIZATION POTENTIAL

The Automated Room Control and Monitoring System, which operates on solar energy, holds great promise for commercialization in various sectors. Its environmentally friendly design appeals to industries that prioritize sustainability and energy efficiency. Key markets include smart homes and offices, where there is a strong demand for energy-saving solutions and automated comfort control. This system can also be utilized in educational institutions and healthcare facilities, offering effective energy management while maintaining optimal environmental conditions. By harnessing renewable energy, it can significantly reduce energy costs and lessen environmental impact. Furthermore, its real-time monitoring and control capabilities make it an excellent choice for businesses and industries aiming to enhance energy usage and boost operational efficiency. The increasing focus on green technologies and smart building solutions positions this system for success in a rapidly changing market.

CONCLUSION

The Automated Room Control and Monitoring System powered by solar energy showcases how smart technology can work hand-in-hand with renewable resources to offer sustainable, efficient, and user-friendly solutions. By utilizing solar energy and integrating motion and temperature sensors, this system minimizes environmental impact while improving comfort and convenience through intelligent automation. Its Wi-Fi connectivity and real-time energy monitoring through the Blynk app highlights its practicality and importance in contemporary living environments. With great potential for commercialization in green technology sectors, this innovation marks a meaningful advancement toward a more sustainable and energy-efficient future.

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