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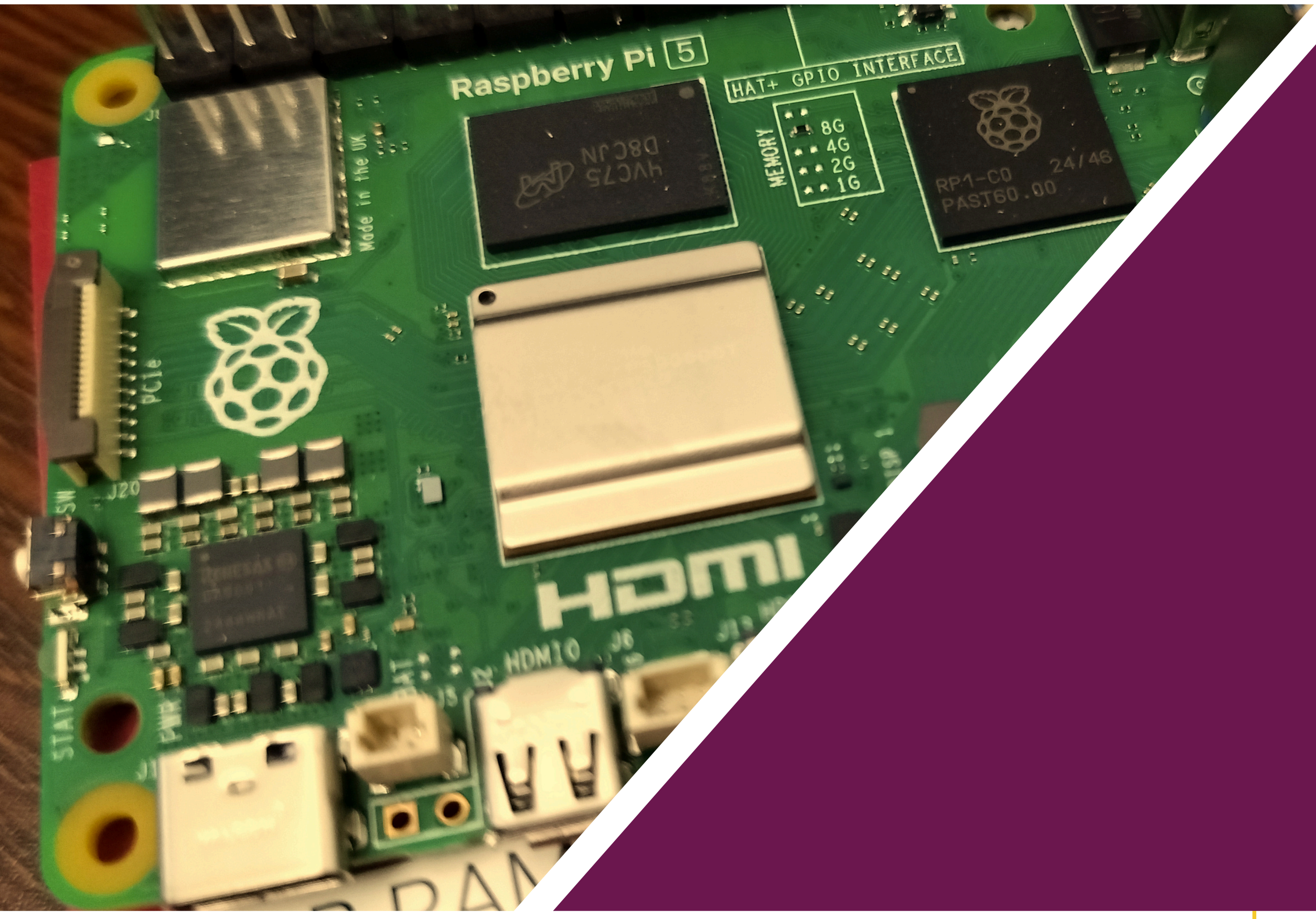
10TH ELECTRICAL ELECTRONICS SYSTEMS ENGINEERING EXHIBITION 2025

VOLUME 1



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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)

Solar Wireless Mobile Phone Charging System

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ABSTRACT

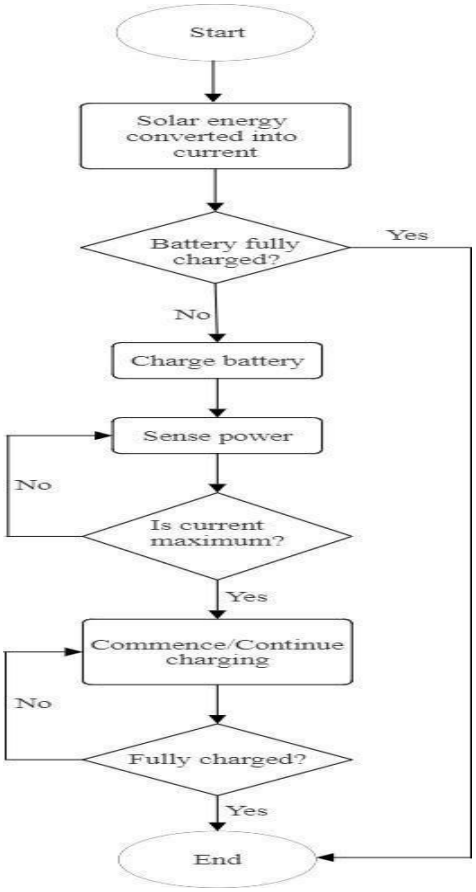
Solar power is one of the renewable energies that had been commonly used to replace nonrenewable energy sources such as fossil fuel since years ago. Besides, solar systems are also suitable for small applications such as solar toy cars, remote control planes and for phone charging applications that is important for the user to charge their electronic devices. This thesis provides the design of a mobile charger that uses solar energy to provide sufficient electricity to charge mobile phones. This is a special kind of charging system in which there is no need for any kind of communication wire to connect the power supply to charge it. The device can charge smartphones or smart devices wirelessly in a short range of distance. Our proposed method utilizes a non-conventional source of energy (solar cell) to wirelessly charge the device. A wireless charger increases the life span of mobile in compared to ordinary charger. The proposed device is environmentally friendly, user friendly and cost effective. This technology proposed can charge any smart phone, anywhere at any time. (150-200 words).

KEYWORDS: solar powered charging, wireless charging, mobile phone charging, renewable energy, Arduino

PRODUCT DESCRIPTION

Solar Wireless Mobile Phone Charging System is implanted to study the performance of the solar-based wireless system. One of the objectives of this project is to design and develop a prototype which could charge a mobile phone using wirelessly transmitted energy with the use of solar energy as input. The basic structure of the model consists of a solar panel, battery, transmitter circuit and receiver circuit. This study provides the design of a mobile charger that uses solar energy to provide sufficient electricity to charge mobile phones. The aim of using a wireless solar mobile charger is that we are using a renewable energy source so that we generate electricity free of cost, and it will give a better solution to people who travel long distances with their mobile phones. The best renewable energy source for this project is solar energy. It is a highly efficient energy source with significant implications for business and society. Any device can be charged without using energy with the suggested model. People who solely use mobile phones or reside in remote areas often find it difficult to charge their gadgets due to a lack of time and electricity.

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



NOVELTY AND UNIQUENESS

The aim of using a wireless solar mobile charger is that it is using a renewable energy source so it can generate electricity free of cost, and it will give a better solution to people who travel long distances with their mobile phones. For wireless charging it is used to transfer power between transmitter and receiver wirelessly. As solar energy is free and abundantly available the proposed device will provide the best solution for outdoor mobile phone charging. It is portable and doesn't require electric supply as it uses solar energy from the solar panel. Wireless charging reduces the use of cables & chargers for charging mobile phones, and it is ideal for charging any electronic gadgets like camera and cell phones. This system helps the rural area people or where huge power cuts occur. This independent charging system will overcome that problems. While travelling people were facing mobile charging issues but with this system it can be rectified. This system is effective and eco-friendly.

BENEFIT TO MANKIND

Wireless charging innovation is progressively progressing in two significant directions, which are radiation wireless charging or radio frequency (RF) type wireless charging and inductive charging. Radiative wireless charging embraces electromagnetic waves, by and large microwaves and RF waves are utilized to convey energy in a type of radiation. Inductive charging depends on the idea where magnetic field couples between two loops. Likewise, the magnetic field of an electromagnetic wave weakens a lot quicker than the electric field thus the power transfer distance is generally restricted.

COMMERCIALIZATION POTENTIAL

The usage of wireless technology is expanding and is now prevalent in many electrical appliances, displacing wired equipment, particularly in mobile phone charging systems. In addition to being one of the most widely used forms of communication available today, mobile phones are also among the most reasonably priced technological devices. The cell phone has become a multifunctional device that can process emails, photos, and other data due to the integration of numerous systems and devices. However, cell phones, like many other electronic devices, depend on electric power to perform their numerous tasks, necessitating periodic charging.

CONCLUSION

A thorough assessment of the literature has been updated to include an analysis of earlier studies on magnetic resonance coupling theory and practice. Gradually, this proposed approach highlights the value of solar-powered wireless charging. Wireless charging is perfect for charging any electronic device, including cameras, cell phones, and other devices, and it minimizes the need for cords and chargers while charging mobile phones. Residents in rural areas or areas with frequent power outages benefit from this approach. This self-contained charging station will solve those issues. People have trouble charging their phones when traveling, but this solution fixes the problem. This system is both efficient and sustainable. To further improve accessibility to sustainable energy sources in underserved regions, future work should concentrate on scalability, incorporate energy storage solutions for extended device use during nighttime or adverse weather conditions, and investigate potential applications in other low-power electronic devices.

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