



اَبُو سَيِّدِي تَكْوَلُ لِي مَا اَنَا
UNIVERSITI
TEKNOLOGI
MARA



PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)



*“Flourish and Nurturing Sustainable
Innovation for a Prosperous Nation”*

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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector



Assalamualaikum warahmatullahi Wabarakatuh,
Salam Sejahtera, Salam Malaysia MADANI and
Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most
Merciful.

It is a great honor to welcome you to the Johor
International Innovation, Invention, Competition, and
Symposium 2024 (JIIICaS 2024). This event

connects various disciplines, focusing on education and engaging educators,
students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and
determination to turn those ideas into reality. The remarkable projects
showcased today highlight the dedication and spirit of all participants.
Initiatives like this not only explore new technologies but also cultivate skills
and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor
Branch, we are fully committed to fostering a dynamic culture of innovation,
promoting the commercialization of new products, and encouraging
meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all
sponsors, judges, the College of Computing, Informatics and Mathematics,
UiTM Pasir Gudang Campus as the event organizer, as well as to the
researchers and participants for their hard work in making this event a
success. Let us continue striving for innovation and excellence. May the
ideas presented today inspire us and lay the groundwork for future
achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-SS036) STEPGUARD BOX

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ABSTRACT

StepGuard Box is an innovative product that addresses typical shoe-related difficulties such as unpleasant odors and fungal growth. This concept reimagines the traditional shoe box by including sophisticated elements designed to improve shoe storage cleanliness. The StepGuard Box combines fan ventilation, UV lamp technology, and long-lasting solar-powered batteries to offer a shoe storage solution that is both efficient and environmentally beneficial. The key goals of this invention are to produce a portable, sustainable solution that minimizes odors and avoids fungus growth. The StepGuard Box seeks to alter the shoe storage experience by using solar energy for electricity, fan ventilation to increase air circulation, and UV light to kill bacteria and fungi. The methodology entails combining various technologies into a compact, user-friendly design. According to the results, the StepGuard Box significantly reduces odor and fungal concerns while providing a high-quality, portable, and sanitary shoe storage option. Finally, this innovation encourages a more sanitary and sustainable approach to shoe storage, hence increasing user experience and shoe cleanliness.

Keyword : Shoe storage, Uv lights, Solar, Fan ventilation

1.0 INTRODUCTION

When it comes to storing shoes, shoe owners all around the world are always fighting against smells and fungal overgrowth. Seeing this recurring problem, creative efforts have been undertaken to transform traditional shoe storage options. The innovative idea presented in this abstract is a redesigned shoe box with cutting-edge features to fight odour, stop fungal development, and improve overall shoe storage cleanliness. This concept aims to raise the bar for shoe storage to previously unheard-of levels of simplicity and efficacy by combining fan ventilation, UV lamp technology, and sustainable solar-powered batteries.

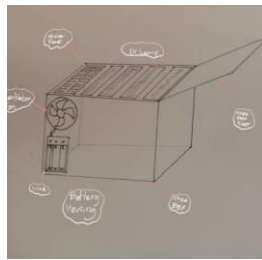
2.0 OBJECTIVE

The primary objective of this invention is to introduce a multipurpose shoe box with cutting-edge capabilities in order to overcome the inadequacies of traditional shoe storage techniques. The idea is to give shoe owners a solution that is portable, sustainable, and reduces odour and fungal development. The goal is to completely transform the shoe storage experience by utilising solar-powered batteries for

sustainable energy, fan ventilation to improve air circulation, and UV lamp technology to eradicate germs and fungus. With a focus on sustainability in both product design and usage, this invention aims to provide a holistic solution that enhances shoe hygiene.

3.0 METHODOLOGY

Our products are innovative in that they incorporate fan ventilation and a UV lamp into a shoe box powered by solar and small batteries. Shoe box included these elements to address issues like odors, fungi, and other concerns, ensuring that the shoes are even better protected. First, the fan. Fan ventilation effectively removes scents by increasing air circulation, which helps distribute and dilute the odor molecules in the air. As the air flows, the concentration of odor molecules drops, resulting in a lower perceived smell.



Next, there are UV lights, which are a form of electromagnetic radiation that has shorter wavelengths than visible light. We use UVC (short-wave ultraviolet): These have the shortest wavelengths and are the most toxic to living things. Shoes are often infected with fungi, thus UV light can kill them by destroying their DNA and interfering with their capacity to reproduce. (The Asahi Shimbun Asia & Japan Watch. (n.d.). The Asahi Shimbun)

Our shoe box use solar with a tiny battery in which solar panels generate power during the day and then store it in a small battery for use when the sun is not shining, such as at night or on cloudy days. Furthermore, solar's flexibility and scalability combined with a compact battery make it ideal for powering portable and mobile inventions such as our shoe box.

4.0 RESULTS

Shoe boxes were upgraded to be high-quality, portable, and odor-resistant, perfect for travelers. Shoe Box includes a built-in fan to dry damp shoes, with future plans for transparent mirrors, UV lamps, and additional fans.

This shoe box includes a fan to help dry shoes and prevent rotting or bad odors, as moisture is the main cause of smelly shoes according to the research process. Next, Shoe Box incorporates UV lamps to combat bacterial growth, enhancing visibility in low light and eradicating microorganisms in 20 to 30 minutes based on studies.

Furthermore, Shoe Box comes with a battery container that serves as the "heart" of the device. It can facilitate the successful operation of all of its features. Furthermore, Shoe Box supplies solar energy for this project as a "backup" in case the batteries run out of power or if customers are unable to find a place to purchase batteries while away from the area. This is highly stressed in order to ensure that customers are happy with Shoe Box. Shoe Box Incorporate works hard to deliver the greatest experience possible to each and every user and will never compromise on quality.

5.0 CONCLUSION

In conclusion, the invention offers a complete solution to enhance shoe storage by successfully resolving issues with odour and bacterial development and fostering mobility and sustainability through the use of solar-powered batteries. This innovative shoe box might improve user experience and help create a more sanitary and clean shoe storage environment

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