



UNIVERSITI
TEKNOLOGI
MARA



2023

JII CaS

**JOHOR
INNOVATION
INVENTION
COMPETITION
AND
SYMPOSIUM
2023**



"Innovation Inspires a Society
to be Critical and Creative"

JOHOR INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2023

"Innovation Inspires a Society to be
Critical and Creative"

Editors-in-Chief

**AHMAD KHUDZAIRI KHALID
NUR INTAN SYAFINAZ AHMAD**



الجامعة
UNIVERSITI
TEKNOLOGI
MARA

**Cawangan Johor
Kampus Pasir Gudang**

2023



First Edition 2023

Copyright © 2023 Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang.

All extended abstracts published in this e-book have not been subject to JIICaS2023 peer review or check. The authors are responsible for the contents of their extended abstracts and warrant that their extended abstract is original, has not been previously published, and has not been simultaneously submitted elsewhere. The views expressed in the abstracts in this publication are those of the individual authors and are not necessarily shared by the editor.

All rights reserved. No part of this publication may be reproduced in any form or by electronic or mechanical means, including information storage and retrieval systems, or transmitted in any form or by any means, without the prior permission in writing from the Course Coordinator of College of Computing, Informatics and Mathematics, Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang.

e ISBN: 978-967-0033-17-4

**Editors-in-Chief: AHMAD KHUDZAIRI KHALID &
NUR INTAN SYAFINAZ AHMAD**

**Art & Cover Designer: DR. WAN MUNIRAH WAN MOHAMAD
& DR. NUR IDAYU ALIMON**

**Published in Malaysia by
Universiti Teknologi MARA Cawangan Johor
Kampus Pasir Gudang
81750 Masai**





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 Innovation Invention Competition and Symposium 2023 (JIICaS2023), where JIICaS2023 is a virtual platform for all creative minds to share and present their invention and innovation. The extended abstracts are divided into two categories, which are Category A (Higher Educational Student/ Any Recognized Institutional Students in Malaysia) and Category B (Primary/ Secondary School Students / Special Education School Students in Johor). 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 from both categories and get some ideas to develop future innovation products.



IOT BASED SMART GADGET FOR EYES PROTECTION

Syila Izawana Ismail¹, Aisyah Hannah Mohd Zaki¹, Siti Aishah Che Kar¹,

¹School of Electrical Engineering, College of Engineering
University Teknologi MARA Terengganu

Corresponding author: syila5416@uitm.edu.my (Syila Izawana Ismail)

ABSTRACT

Gadget has become a part of our daily lives. Excessive usage of gadgets for a long time along with unhealthy habits will lead to health problems such as Myopia. Using gadget at a close distance is one of the most common unhealthy habits among gadget users especially children. This project called "Eyes protection" is made to fix the unhealthy habit of using gadget at a close distance with the aim of reducing the risk of eyesight problems amongst children nowadays. This device operates by measuring the distance between the user and the gadget screen using an ultrasonic sensor which will trigger the buzzer, vibration motor and notify the parents if their children use the gadget at a distance less than 30cm. This device has the potential to significantly decrease eyesight problems among children. Other than that, an additional feature of monitoring the distance data over a period of time via the Blynk application can assist the parents to monitor their children's behaviour and habits when using electronic gadgets such as laptops.

Keywords: eyesight problem, ultrasonic sensor, NodeMCU, Blynk.

1.0 INTRODUCTION

High-end technology has a tremendous impact on people's lives in this digital age. The contemporary period is home to a wide variety of technological advancements. Periodically, new products are released onto the market. Electronic devices, like desktop computers, laptops, tablets, and mobile phones, are examples of some of today's most well-liked and often used technology. As is evident today, many individuals of all ages used to spend a significant amount of time staring closely at the screens of their gadgets, especially youngsters. Children that engage in this habit are developing vision issues at an early age. As a result, the goal of the project "IoT Based Smart Gadget for Eyes Protection" is to develop a tool that will inform users when they are using their gadgets at a dangerous distance. Instilling a healthy habit that enables people to use their technology in a healthier way will assist to correct the bad behaviour of staring at the screen too closely.

2.0 OBJECTIVE

The objective of the project is to develop a prototype that offers eye protection against gadget exposure and enables monitoring of children's behaviour while using gadgets through a monitoring platform integrated with the Blynk application.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The control system of this prototype utilises NodeMCU as the microcontroller, an ultrasonic sensor as the input device, and a buzzer and vibration motors as the output components. Figure 1 shows the programming flowchart and the processes of the system. The system was initialised upon the user's commencement of device usage. The distance between the person

and the device was detected by the ultrasonic sensor. The distance measurements obtained from the ultrasonic sensor will be transmitted to the Blynk platform for storage. The system subsequently verifies if the computed distance between the user and their device is below 50 cm or not. In the event that the distance measures below 50 cm, the activation of both the buzzer and the vibration motors is initiated. Nonetheless, if the distance exceeds 50 cm, both the buzzer and the vibration motors will remain deactivated. The data collected by Blynk will be utilised for the purpose of monitoring.

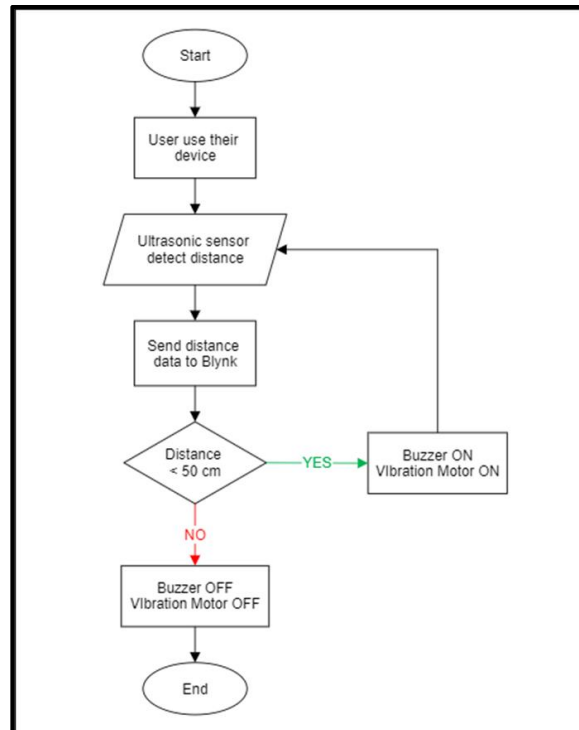


Figure 1: Flowchart of the system.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This commercial innovation offers a method to mitigate visual impairments, particularly among children. The health issue associated with exposure to gadgets has emerged as a significant concern in contemporary times. This product also possesses the potential for commercialization, as it can be integrated into personal computers in the future.

5.0 CONCLUSION

In conclusion, an IoT-based smart gadget for eyes protection has been developed and it can help children break the habit of using gadgets at harmful distances. This technology could greatly improve children's eyesight. Due of its deafness function, this item can be utilised by many people. Most eyes-to-screen distance monitoring systems just employ buzzers, but with a vibration motor, those with weak hearing can be warned. Finally, the Blynk app's distance data feature helps parents monitor their children's laptop use. In conclusion, this endeavour can benefit our community.