UNIVERSITI TEKNOLOGI MARA

IOT BASED LASER MOVEMENT SYSTEM FOR CATS

NUR SABRINA BINTI MD JASNI

Thesis submitted in fulfillment
of the requirements for the degree of
Diploma of Electrical Engineering

Centre for Electrical Engineering Studies
College of Engineering

DEC 2023

ABSTRACT

This thesis proposes a wireless laser cat toy that pairs a laser pointer and servo motors. It has two mode, manual mode or automatic mode. An implied IoT- based laser movement system may provide cats with a new level of interaction and enjoyment considering standard pointer laser toys are ineffective and demand constant observation. This thesis aims to create an Arduino-based laser movement system as well as wireless control system utilising an IoT and a smartphone. The system consists of a laser module, ultrasonic sensor, and an IoT linked to the Bluetooth. To have exact control over the laser's direction, it is attached to servo motors. The laser will generate a powerful yet safe beam to attract the cat. The owner of the cat may therefore remotely activate the laser and the servo's movements without being present thanks to the IoT Bluetooth module. In this case, the system will assist in motivating the cat to exercise, which could improve the cat's general health and well-being as well as the owner of the cat.

ACKNOWLEDGEMENT

Assalamualaikum w.b.t and praised to Allah SWT. Before I start with my thesis, I would like to express my sincere gratitude to all those who have contributed to the completion of this thesis, without whom this endeavour would not have been possible.

First and foremost, I extend my deepest appreciation to my supervisor, Dr Siti Hazurah for her invaluable guidance, unwavering support, and constructive feedback throughout the project process. Her expertise and commitment to the project have been instrumental in shaping the quality and depth of this thesis.

I would also like to express my heartfelt thanks to Sir Rijalul Fahmi and Madam Noor Hafizah for providing the necessary resources, facilities for the project and a conductive environment for the project. Without the preparation and guidance, the completion of the thesis will be impossible.

Finally, I would like to thank myself for believing in me, for doing all this hard work, having no days off and for never quitting. Alhamdulillah for all the support I receive from myself, the thesis could finally be completed.

TABLE OF CONTENT

Page

CHAPTER ONE

INTRODUCTION

1.1 Research Background

We have always had a particular place in our hearts and homes for those mysterious and adored animals, cats. They enrich our lives with their vitality and appealing companionship, even beyond the role of beloved pets. Throughout the ages, these cats managed to retain their natural instincts, which makes them an intriguing companion with unique characteristics that are both captivate and charming. Beyond the joy of being companions, it is also required to consider the essence of their existence and their requirements for mental and physical engagement.

In response to this consideration, an innovative laser cat toy has been designed to enhance the lives of the cats by giving them an active engagement that could also be a substitute for their hunting tendencies. This laser cat toy is a combination of servo motors and a laser pointer that could be controlled by an automatic mode or manual mode. Unlike traditional toys, this invention is not just in a form of entertainment but an encouragement of physical activity for the cats as well as improving their well-being. This toy aims to simulate the thrill of a hunting play, providing an original and an enjoyable form of exercise.

1.2 Motivation

The motivation behind embarking on this project stems from an understatement of the positive impact that cats can have on reducing stress for their owners. Despite their simple routine of playing, eating, and sleeping, the mere presence of the cats can brings unspeakable comfort to cat lovers. What makes me to undertake this project is a sincere desire to address the needs of my cats, especially since when I am frequently away from home. While the cats may engage with each other, they are unmistakably affectionate pets that crave the proximity of their owners. This project is a testament to my commitment to their well-being which is a way to demonstrate that even in my absence, my thoughts are dedicated to ensuring their health and happiness.