AUTONOMOUS SMART ROBOT AS FIRE DETECTOR

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ABSTRACT

This project is to create an autonomous robot by using microcontroller PIC16F84A, to detect differential temperature increasing and also avoiding obstacle. The implementation of this project can be separated into three main sections; mechanism, electrical and programming section. This project is to design and build a simple computer-controlled robot that can navigate through the surrounding using two servo motor as the actuators. The movement of the robot is controlled by the brain; PIC 16F84A microcontroller. The robot reacts to the surrounding using two infrared sensor systems and one heat sensor. When the infrared detect object, the input signal from the sensor will be sent to the microcontroller to be analyzed. Then the output signal from the microcontroller will controlled the servo motors to avoid the robot from hitting the object. As for heat sensor is used to detect the heat temperature surrounding the robot. If the surrounding temperature is over from the limit, sensor will send the signal to the microcontroller. The microcontroller will analyze the signal to make the robot stop and sound the buzzer. The result of mechanism implementation section is to produce a stable robotic body structure. While the electrical section is to produce gearbox direct current servo motors control system. The robotic requirement was complete with the wheel robotic movement module in the programming section. The Autonomous Smart Robot has ability to travel non stop depending the power supplies.

TABLE OF CONTENTS

CHA	PTER
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TITLE

PAGE

TITLE	1
SUPERVISOR CERTIFICATION	Ĭ
DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	vii
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xĭ
LIST OF APPENDICES	xii

CHAPTER I INTRODUCTION

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1.0	Introduction	1
1.1	Objective	2
1.2	Scopes of Project	2
1.3	Project Overview	3
1.4	Problem Statement	4
1.5	Application	4
1.6	Thesis Outline	5

CHAPTER 1

INTRODUCTION

1.0 Introduction

The main purpose of this project is to design and construct an Autonomous Smart Robot as Fire Detector that capable to navigate around the unknown environment without using human control. There are many robots in the market that used a concept of human's leg or a spider's leg to climb over the obstacle. However, in this project a new system design wheel has been developed. Autonomous Smart Robot has two wheels by own design, tire and having fire detection ability. The Autonomous Smart Robot is a self contained robot that consists of chassis design with body and wheel, microcontroller encoding as a brain, sensing system to detect differential temperature increasing and also avoiding obstacle. Continuous servo motors also had been used for Smart Robot as an actuating system.