GOLFBOT

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A thesis submitted in partial fulfillment of the requirement for an award of the Bachelor Degree Engineering (Electric and Electronic)

Faculty of Electric and Electronic Engineering
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30 NOVEMBER 2007

I declare this the thesis “GOLFBOT” is the result of my own research except for the works that have been cited in the reference. The thesis has not been accepted any degree and concurrently submitted in candidature of any other degree.

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LIST OF SYMBOLS

PWM – pulse wave modulation

Cm – centimeter

ms - milisecond

USB2 - Universal Serial Bus version 2

SPDT - Single pole Double Throw

V - Voltage

PIC - Programmable Intelligent Computer

IC -Intergratred Circuit

MHz -Mega hertz

F -Faraday

Vcc -positive voltage

TTL -Transistor–Transistor Logic

ROM -Read Only Memory

RAM -Random Access Memory

LED -Light Emmiti Diode

Kg -Kilogram

N/m -Newton per meter

RM -Ringgit Malaysia

LCD -Liquid Crystal Display

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ABSTRACT

This project is entitled golfbot. It is the robot that will play golf. The objective of this project is to design the golfbot using PIC microcontroller as the central processor to create the movements for hitting, 4 servo motors are used. PIC microcontroller is programmed to provide 'instructions' to control the servo motor. When the logic switch is initiated, Golfbot will hit the golfball and then return to initial condition. To create the program of golfbot, MicroCode Studio software is used and MeLabs programmer to program PIC. This software emulator of the microcontroller will always suffer limited simulation from the combination device interaction with the circuit. The project is used to analyze the servo motor for future project. It is a success.

ABSTRAK

Tajuk Golfbot telah dipilih untuk projek ini. Projek ini akan menghasilkan Golfbot yang dapat memukul bola golf. Objektif projek Golfbot ini adalah merekacipta Golfbot ini dengan menggunakan PIC sebagai kawalannya. Dengan menggunakan 4 servo motor sebagai penyambung untuk menghasilkan Golbot yang dapat memukul bola golf. PIC digunakan untuk mengawal dengan mengunakan program high language iaitu MicroCode Studio. MeLab programmer merupakan alat untuk memuat turunkan segala program ke dalam PIC. Project ini sangat penting kepada manusia kerana projek ini menganalisis cara pengawalan servo motor untuk kegunaan yang akan datang.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Robot, which is derived from a Czech word meaning "forced labor," derived its modern meaning from a 1920 play, R.U.R. (Rossum's Universal Robots), by Czech playwright Karel Capek (1890-1938). The robots in Capek's play develop emotions and overthrow their human masters. A sinister "power struggle" with robots has long been a popular theme in science fiction. For a change of pace, try Isaac Asimov's "I Robot" stories in which he consciously strove to depict robots as a benefit to society.

Today, robots are used in many ways, from lawn mowing to auto manufacturing. Scientists see practical use for robots in performing socially undesirable, hazardous or even "impossible" tasks like trash collection, toxic waste clean-up, desert and space exploration, and more. AI researchers are also interested in robots as a way to understand human and not just human intelligence in its primary function interacting with the real world.

Robots may soon be everywhere, in homes and at work. They could change the way humans live. If this happens, it will most likely raise many philosophical, social, and political questions that will have to be answered. In science fiction, robots become so intelligent that they decide to take over the world because humans are deemed inferior. In real life however they might not choose to do that. Robots might follow rules such as Asimov's Three Laws of Robotics that will prevent them from doing so. If the Singularity happens robot will be indistinguishable from human beings and some people may become Cyborgs, with some parts half biological and half artificial.

While the personal computer has made an indelible mark on society, the personal robot hasn't made an appearance yet. Obviously there's more to a personal robot than a personal computer, robots require a combination of elements to be effective: sophistication of intelligence, movement, mobility, navigation and purpose.

1.2 Robot

A robot is a machine designed to execute one or more tasks repeatedly, with speed and precision. There are as many different types of robots as there are tasks for them to perform.

A robot can be controlled by a human operator, sometimes from a great distance. But most robots are controlled by computer, and fall into either of the two categories: autonomous robots and insect robots. An autonomous robot acts as a stand-alone system, complete with its own computer called the controller. Insect robots work in fleets ranging in number from a few to thousands, with all fleet members under the supervision of a single controller. The term insect arises from the similarity of the system to a colony of insects, where the individuals are simple but the fleet as a whole can be sophisticated.

Robots are sometimes grouped according to the time frame in which they were first widely used. First-generation robots dated from 1970s and consist of stationary, nonprogrammable, electromechanical devices without sensors. Second-generation robots were developed in the 1980s and can contain sensors and programmable controllers. Third-generation robots were developed between approximately 1990 and the present. These machines can be stationary or mobile, autonomous or insect type, with sophisticated programming, speech recognition and/or synthesis, and other advanced features. Fourth-generation robots are in the research-and-development phase, and include features such as artificial intelligence, self-replication, self assembly, and nanoscale size physical dimensions on the order of nanometers, or units of 10^{-9} meter.

Some advanced robots are called androids because of their superficial resemblance to human beings. Androids are mobile, usually moving around on wheels or a track drive, robots legs are unstable and difficult to engineer. The android is not necessarily the end point of robot evolution. Some of the most esoteric and powerful robots do not look or behave anything like humans. The ultimate in robotic intelligence and sophistication might take on forms yet to be imagined.

The term robot first appeared in a 1920 play by Czech writer Karel Capek, R.U.R.: Rossum's Universal Robots. In the play, the robots eventually overthrow their human creators. The Czech word "robota" means "forced labor”.

1.3 Overview of the Golfbot

For this project, Golfbot that were developed have a position in home or work applications. While robots often elicit ambivalent reactions in the west, because of the possibility that they may displace humans in the future or may cause fake emotions, a lot of society, like Japanese, generally shows a high enthusiasm for all kinds of robots.

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