LIBRARAY ASSISTANT ROBOT

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BORANG PENGESAHAN STATUS LAPORAN
PROJEK SARJANA MUDA II

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ABSTRACT

The main objectives of this project are to build a design the Library Assistant Robot which has the capability to send the book at their place. This robot also can be assistance handling to send the book at high place because this robot has CCTV or camera for watching and has mechanism to transfer the books to it shelf. This robot's action will be monitoring using PS2 Wireless and Personal Computer (PC) by human's control. This robot is combining between hardware and software to control it. The purpose of Library Assistant Robot is to increase the work's management, reduce time rating and energy of worker in the library. Thus, a safety environment and journey was existed. The function of software which is the visual basic programming sixth (VB6) will be control all action of robot such as left, right, back, forward, push and pull. Then, the function of hardware will be action with provide combination mechanical system, electronic and electric system, motor system, and other system which is to guidelines for setting up Personal Computer (PC) and PS2 wireless to communicate with robot. The signal will transmit and receive by using transmitter, receiver and Bluetooth from the PS2 wireless circuit. The transmitter is located by combined between PS2 control and parallel port circuit. The receiver is located in the robot which is in PS2 Wireless circuit. The received signal is analyze and will activate the Bluetooth. Bluetooth is another part that a device an open wireless protocol for exchanging data over short distances from fixed and mobile devices, creating the wireless communication is the transfer of info over a distance without the use of electrical conductors or wires. So the Library Assistant Robot can be easy, flexible and suitable to use everywhere such as industry.

ABSTRAK

Objektif utama projek ini adalah untuk membina satu set Pembantu Robot Perpustakaan yang mampu menghantar buku-buku dan menyusun ia pada tempat yang telah disediakan. Robot ini juga boleh membantu mengawal dan menghantar buku pada tempat yang tinggi kerana robot ini mempunyai kamera tertutup untuk memerhati dan mempunyai mekanisma untuk mengangkat buku dan menolak ia pada rak-rak yang disediakan. Segala tindakan dan pengawalan robot akan dikawal oleh seseorang melalui komputer. Robot ini adalah hasil dari gabungan perkakasan dan perisian untuk mengawal ia. Tujuan Pembantu Robot Perpustakaan ini juga adalah untuk menambah pengurusan pekerjaan, mengurangkan julat masa bekerja serta tenaga kerja yang diperlukan didalam perpustakaan. Disamping itu, keselamatan suasana persekitaran juga diambil kira. Fungsi perisian iaitu “Visual Basic 6” adalah untuk mengawal segala tindakan robot seperti pergerakan ke kiri, ke kanan, ke belakang,ke hadapan, dan sebagainya. Disamping itu, fungsi perkakasan adalah untuk mengawal tindakan robot dengan menggabungkan sistem mekanikal, sistem elektronik dan elektrik, sistem motor, dan sistem lain untuk mengawal perhubungan robot dengan komputer. Isyarat akan dihantar dan diterima melalui pengunaan alat penghantaran, alat penerimaan dan alat “Bluetooth”. Isyarat penerimaan akan dikenalpasti dan akan menghidupkan “Bluetooth”. “Bluetooth” adalah bahagian lain iaitu alat perhubungan menghantar dan menerima diluar kawalan jarak tanpa menggunakan pengalir elektrik atau wayar. Jadi ia sangat mudah, fleksibel, dan sesuai diguna dimana-mana kawasan seperti di indusri.

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LIST OF SHORT SIGN

USB	- Universal Serial Bus
SIT	- Static Induction Transistor
ROM	- Read Only Memory
ROBOCON	- Robot Contest
RISC	- Reduced Instruction Set Computer
RAM	- Random Access Memory
PWM	- Pulse Width Modulation
PSM	- Projek Sarjana Muda
PROM	- Programmable Read-Only Memory
PIC	- Peripheral Interface Controller
MOSFET	- Metal Oxide Semiconductor Field Effect Transistor
LED	- Light Emitter Diode
LCD	- Liquid Crystal Display
IC	- Integrated Circuit
GPS	- Global Positioning System
EPROM	- Erasable Programmable Read-Only Memory
EEPROM	- Electrically-Erasable Programmable Read-Only Memory
DC Motor	- Direct Current Motor
BJT	- Bipolar Junction Transistor
PCB	- Printed Circuit Board

CHAPTER I

INTRODUCTION

The main purpose of producing this document is to precisely report the simulation and design a Library Assistant robot. For this chapter is included about project introduction, objectives, problem statement, scope, methodology, and report structure of the project.

1.1 Project Introduction

At the library, some of problem will happen such as decrease of librarian. We know the librarian will send, arrange and put the book at their place. This project is to design the robot which has the capability to send the book at their place. This robot also can be assistance handling to send the book at high place because this robot has CCTV or camera for watching and has mechanism to transfer the books to it shelf. This robot's action will be monitor using PC by human's control. This robot combined between hardware and software to control it. The methodologies of this

project are divides two parts. The first part is software. This project is designed for use with visual basic programming sixth (VB6). This programming will be control all action of robot such as left, right, back, forward and so on. The signal will transmit and receive by using transmitter, receiver and Bluetooth. The second part is hardware. This robot will be action with provide combination mechanical system, electronic and electric system, motor system, platform system which is to guidelines for setting up PC to communicate with robot.

There are two basic parts in process of robot:

1) The first part is software. This project is designed for use with visual basic programming sixth (VB6) and Bluetooth
2) The second part is hardware such as system platform, system communication, system mechanical, system electronic and system electric, motor and so on

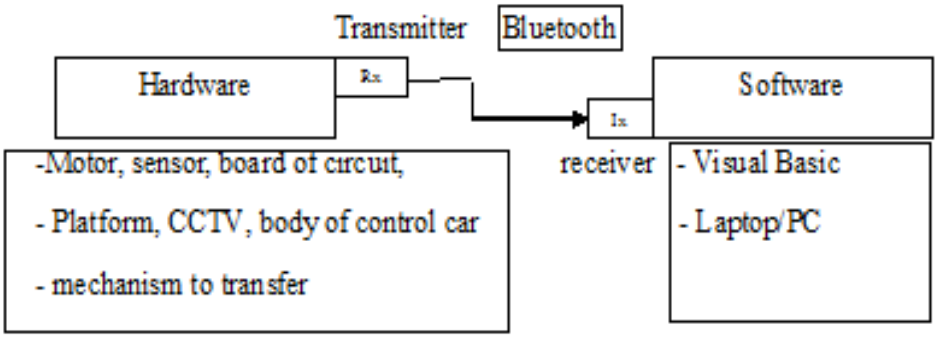

Figure 1.1: Block Diagram of Robot System

1.2 Project Objectives

This main objective of this project is to study the technique concept, performance, and process a Library Assistant robot. So, it must be design a robot which has the capability to take the book and send it at their place. Besides that, it can be assisting handling to send the book at high place. This project is to design a robot has CCTV or camera for watching and has mechanism to transfer the books to it shelf for transfer the book by Personal Computer's (PC) handling.

For software, this project will be development a programming of Visual Basic (VB6) to control all action of the robot. This program will be control all action of robot such as left, right, back, forward and so on. The other objective is to apply the electronic and electric system such as wiring; mechanical system such as motor; communication system such as transmitter, receiver and Bluetooth. The signal will transmit and receive by using transmitter, receiver and Bluetooth. It will combine to system robot's action.

So, this project can help the librarians or someone to spend the time, energy and easy to do work with effective. Besides that, this project can use any application in our life.

1.3 Problem Statement

Person	Distance (meter)	Time (second)	Quantity (Book)
Librarian 1	30m	60s	4 pcs
Librarian 2	30m	120s	8 pcs
Librarian 3	30m	240s	12 pcs
Librarian 4	30m	360s	16 pcs

Table 1.1: The time working of librarian to transfer books to it shelf

Table 1.1, show the time working of librarian to transfer books to it shelf in the Library University of Technical Malaysia Melaka. From the table, number of librarian,

distance from staff's office to the place of book or shelf, time that taken, and the quantity of book. At the same distance, every librarians have been taken different time with different quantity of book. So, from this table we know the librarians have a problem in their work. When the librarian take more book to transfer at it shelf, the more time will be take. Maybe the weight of book will give some effect to their work.

The other problem is decrease of librarian in library can give bad effect to the student. For examples, if the student want borrow book and other student want to use internet, print, and Photostats, but at the same time the librarian want to transfer book at shelf, so this environment can give more problem to both of them, especially in time of service. So, according to this surveyed and researched, the idea to solve this problem was by with this project, the librarian can handle their work by laptop or personal computer to transfer the book. At the same time they can do other service to student. So, it can give more easily, effectives and improve the performance.

The designing goals for this project:

1. To design a programming of robot by using visual Basic .
2. To design a base of robot, a body of robot, a mechanism for transfer book, a mechanism for pushes books.
3. To setup the camera or CCTV of robot that can watch with clear.
4. To create and setup the transmitter, receiver and Bluetooth to communicate between PC and robot's action
5. To simulate and test the all function of software and hardware
6. To minimize system complexity, computational load and system cost

However, the goals in design a robot are clearly in conflict when there are several constraints and theoretical limitations that seem to be very hard to avert. To carry out this project, the knowledge requirements are basic knowledge of Visual Basic software. Besides that, the knowledge and theoretical of robot must be learn and study. In this project, an interaction between software and hardware the system performance is presented and considered.

1.4 Work Scope

In order to ensure that the project can be implemented successfully, the following scopes are listed. The final result of this project is fully based on the listed scope. The work scope of this project is to design a robot which has the capability to take the book and send it at their place. Then, this robot can be assisting handling to send the book at high place. It also to design a robot has CCTV or camera for watching and has a mechanism for transfer the book at it shelf by Personal Computer's (PC) handling. The first scope of this project is, their definition, characteristic, function, application, and how to design a Library Assistant robot are finding out by doing several researches on literature review. The system electric and electronic, system mechanical, system motor, transmitter and receiver, Bluetooth must be study and understandAfter that, a programming of Visual Basic (VB6) is design to control all action of the robot such as right, left, forward, and back. Besides that, the suitable transmitter and receiver are selected to communicate between robot and PC. The programming must be testing on the simulation. Researched is done to gained knowledge about the system robot. After that, the circuit is designed base on function of robot. The main component to build and design that robot must be choose and locate at their body. Then, the circuit is tested on the test board in order to get the required result. The circuit and software must be analyze the simulation result and examine the relationship of software's function and hardware's function. The last part is fabrication of the circuit through etching process and soldered of component on PCB. The testing of robot is done experimentally in laboratory.

1.5 Methodology

This project flow will be documented starting July 2009 until the completion of the project in 30 April 20010 Figure1.1 shows the flow chart of general process in developed this project. This project is carried out step by step. Firstly, the literature review must be study. All the information and suitable input that describes of robot techniques characteristic, application are researched from books journal, articles, technical report and internet online. After understood all the related concepts, innovation of previous system Library Assistant Robot is design. Then, the circuit of robot is designed. After all the designing process is done, the circuit test on test board is done by laboratory test. Simulation process cannot be done for these circuits because of there are several components that not included in the circuit software. After the test is satisfied, the circuit is fabricated. Lastly, the prototype is tested and measured in laboratory.