ROBOTIC ARM, WRIST AND HAND USING PIC MICROCONTROLLER

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ABSTRACT

Nowadays, in life that full with new technologies, many interesting events have been created and developed for the benefit of human being. Robot technology is widely recognized as one of the key technologies for the 21st century. In Malaysia, these phenomena can be clearly observed from the industries that use robots in quality controls, production, monitoring and others. All of these robots basically computerize. In order to reduce human work, robots has been created and the computer act as a brain. This brain will give an instruction to the robot to do as it is programmed. Therefore, this project is proposed on developing and implementing a mobile robot that can be controlled using computer. For PC based controller, a graphical user interface (GUI) software is used to provide control capability on the mobile robot is developed using Visual Basic. The PC is connected to the mobile robot via serial port (RS232). For hardware interfacing, Programmable Interface Controller (PIC) is used. The PIC receives the signal from the PC to provide motion control on the mobile robot. This PIC acts like analyzer that will analyze a serial signal from PC and produce a PWM (Pulse Width Modulation) combined with Electronic Speed Controller (ESC) that has high current spec to control high power motor. All of this combination will be used to control motor speed. It has been shown that the designed robot can grip up to 500 grams load. The robotic arm can be used in multipurpose applications such as industrial manufacturing, and servicing robot.

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CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

Recently, many interesting events have been created and developed for the benefit of human being. Robot technology is widely recognized as one of the key technologies for the 21st century. In Malaysia, these phenomena can be clearly observed from the industries that use robots in quality controls, production, monitoring and others. All of these robots basically computerize. In order to reduce human work robot has been created and the computer act as a brain. This brain will give an instruction to the robot to do as it is programmed.

Therefore, the current study proposed on developing and implementing a mobile robot that can be controlled using computer or in other word PC based mobile robot. A graphical user interface (GUI) software to provide control capability on the mobile robot is developed using Visual Basic. The PC is connected to the mobile robot via serial port (RS232). For hardware interfacing, Programmable Interrupt Controller (PIC) is used. The PIC receives the signal from the PC to provide motion control on the mobile robot.