JUMPING AND PUSH-UP ROBOT

Prepared by: Mizar Agusta Diwangga

ABSTRACT

Nowadays, humanoid robots have been heavily researched and improved to achieve the ultimate goal that is to create a robot that perfectly resembles a human body and movement. Jumping and Push-Up Robot is designed to mimic human behaviour and movements, specifically in jumping and push-up movement. This topic requires a research in human anatomy, as well as the physic involved that are needed to do jumping and push-up movement.

In this project, the main brain or main controller is microcontroller PIC16F877A which control every single movement of the robot as well as the notification system. The robot was designed to do jumping and push-up movements when a command is given wirelessly while at the same time the information on the action, such as the action taken and the amount will be displayed on the LCD. These movements is produced by mimicking the human joints utilizing the rotation of the servo motor, and the power muscles produced mimicked by torque of the servos. The movements will begin when the first command is given through remote control, and continuously repeat the same action unless the next command in the correct sequence is given. The commands to do the movements will be given wirelessly utilizing RF transceiver combined with encoder-decoder IC. The LCD will show actions taken and show the amount of jump or push-up done. Two additional features were also added in this project, sound notification and nodding head. Sound notification tells the user what current action is being done at that moment. Also **the robot will nod its' head every time** a command is given, giving an illusion of the robot understands and agreed to do action.

This final year report starts with the aims and objectives as well as the background for this project. Then block diagram will be shown to explain briefly on the working of overall system. In chapter 2 literature reviews, description on main components used in this project are explained. The next chapter (methodology) will explain the details of both hardware and software designs of the project. Finally, results and discussion is given and conclusion on the project outcome is proven.