SITTING, STANDING, AND SLEEPING ROBOT

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ABSTRACT

Robotics is a famous subject these days as modern day devices are all about robotics. Production and manufacturing plants needs robots to help carry out task which are impossible to carry out by humans; medical field need robots to help carry out very delicate tasks while robotic competitions are held annually all over the world. Especially in medical field, human body parts are able to be replaced by robotic parts, such as robotic arm, mechanical heart pump and so on.

So to further explore the contribution of robotics in medical field, this project is done to study on the human basic daily actions: sitting, sleeping and standing up. The whole robot will be controlled by the 16F877A PIC Microcontroller. The microcontroller will control the every movement of the robot, and also the voice notification of the robot. The robot is moved by using servo motors as their parts. When a sitting object is placed behind the robot, the infrared sensor will pick up the presence of the sitting object and first analyze whether it is suitable to sit on or not. While sitting down, voice notification is provided to notify users about the current actions the robot is doing right now. The three other commands: wake up, sleeping and stand up command is given to the robot wirelessly via a remote control. When the sleeping and waking up button is pressed, the robot will slant sideways to indicate that it is sleeping and then turn back up to the original straight position again to indicate that it is awake. When the stand up button is pressed, the robot will stand up from the sitting position. Additional feature has been added to this robot, where the LED will provide sight notification for the users. LED will act as a mood notification where different color LED will light up while executing different actions.

This report started off by stating the introduction, aims and objectives of this project. A block diagram is then placed to explain the function of the overall system of this project. Next in literature review, the theoretical background of the project is being explored and all the major components used in this project will be explained thoroughly in there. The detail designs of the hardware and software components of the project are explained in the methodology chapter. The test results will be shown to prove that the project is working and functioning properly. Lastly, discussion on the project will be stated and conclusion of the project is concluded at the end of this report.

Keyword: Servo Motor, PIC16F877A, Infrared Sensor