AUTOMATIC CHINESE SCALE

Prepared by: Wong Dong Yean

ABSTRACT

Chinese scale term had been greatly known in the society today. There is still a lot of Chinese scale using in the traditional Chinese medicine shop with the purpose of measuring the weight of the herbal. Chinese scale holds an important role because it use to measure the amount of the herbal to patient for the treatment, the accuracy for the weight of herbal is very important and it cannot be less or more. However, the traditional Chinese scale has become outdated due to it is only limited to a small scale measuring. Thus, an Automatic Chinese Scale as a representation of those scales is created to replace the traditional Chinese scale from doing some big scale measuring, improving the accuracy and perform more effectively. In this paper, the design and construction method of an automatic Chinese scale are presented.

The Automatic Chinese Scale is controlled by a PIC 16F877A 40-pins microcontroller, which acts as the main brain that controls the operation of the scale. There are several components that are interfaced with the microcontroller to perform the automatic Chinese scale operations. The project uses an infrared sensor as load balancing recognition module, L293D motor driver as the stepper motor controller. Stepper motor are implemented in the automatic Chinese scale and base designs that are responsible for adjusting the angle and balancing. Furthermore, a 4x20 Liquid Crystal Display (LCD) is used to select the display all the process details and also the information of the PIC 16F877A microcontroller. The Light Emitting Diode (LED) are used to give a notification to the user for the condition of measuring is in process or balanced. Controlling the stepper motor is done by the PIC 16F877A through programming on MicroC pro software. The direction of angle rotation of stepper motor is accordingly to the load added after compared with the reference load. The vernier scale is used to show scale of the load measured. Weight of the load will be measured by the number of times of the stepper motor rotation angle.

The prototype of the project was successfully constructed and it is able to achieve the objectives that had been set. However, the Automatic Chinese Scale only can measure up to a few hundred gram due to the torque of the stepper motor is selected. This project

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helps to improve student understanding and skills for both hardware and software implementation and emphasize the student to apply the knowledge obtained from various subject in the project design.

Keywords: PIC 16F877A microcontroller, LCD, LEDs, Stepper motor, L293D motor driver, MicroC PRO software, Infrared sensor and vernier scale