PORTABLE BAG

Prepared by: Tay Han Hong

ABSTRACT

The title of this project is Portable Bag. The objective of this project is to design a luggage bag which can move and stop by referring to the human step including turning left or right, moving forward, stopping in a specific distance between the bag and the user. On the other hand, the bag is also designed to carry not more than 10kg weight. The weight of the luggage should be checked and displayed to the user as well. If it is overloaded, it will alert the user and the user has to remove the luggage inside the bag by referring to the displayed weight until it is below 10kg.

There are two main systems which are digital weighing system and human step tracking system to be built in the project. Peripheral Interface Controller, PIC16F877A is used for the both systems. MikroC is used to program the microcontroller in the project.
For the digital weighing system, Force Sensitivity Resistor (FSR), which is called strain gauge as well, is used to detect the weight of the luggage. Its function is changing the resistance according to the force which is the weight of the luggage applying on it hence changing the output voltage which can be converted into KG operated by microcontroller. Then, the result of the weight is displayed on the LCD. If the luggage is more than 10kg, the buzzer will be activated by microcontroller as well to inform the user about it is overloaded.

Secondly, the tracking system of human step is designed. The infrared transducers are used. There is an infrared transmitter with the user and few infrared receivers with the bag to receive infrared signal from different direction. So, the bag can determine the direction of the user according to the receiver which receives the signal. Two DC motors are used to turning left or right, moving forward or backward of the bag. The dual full bridge, L298N is used as motor driver in the project. On the other hand, if the distance between the portable bag and the user is too far away or the portable bag cannot follow the user step because the user speed is too fast, the portable bag also has to alert the user by measuring RF module data receiving time.

Keywords: digital weighing system, human step tracking system, PIC16F877A, FSR, LCD, infrared transducers, L298