SKATER HELMET

Prepared by: Chew Jyh Hao

ABSTRACT

The design of this project implements a smart system into a skater set which is separated into three parts, the skater helmet, roller skate shoe and the skater glove. The skater glove part handles the input from the user for choosing the desired function by using push button switches. The roller skate shoe part interprets the data input from the user and uses the input to determine the proper output for the skater helmet part. Also, in this part the wheel speed calculation is measured by using optical beam sensor and the calculation is done by a PIC Microcontroller. The last part would be the skater helmet where all the output devices are located. With the data input roller skate shoe part, a PIC Microcontroller is used to control the outputs which are two buzzers and a speaker.

The overall system includes three main functions, which are speed voice announcement, high speed warning to surrounding pedestrian and safety buckle strap system. When the user request the speed voice announcement by pressing Button 1, the current speed data in roller skate shoe part is transmitted to skater helmet part. The speed status message is the play through a speaker with the voice playback circuit APR9600. For the second function, the system will on the buzzer only when the user is skating at high speed and requested warning for the surrounding pedestrian to alert them. Button 2 is used to activate this function. The third function is an automatic function that ensures the buckle strap is on when the user is skating. This function is achieved by using two contact switches to detect human presence, on/off of buckle strap and an output buzzer warning. All the data transmission between each part is through wireless transmission using RF module and encoder/decoder.

Keywords: Skater Helmet, Roller Skate Shoe, Skater Glove, PIC Microcontroller, APR9600, Optical Beam Sensor, Contact Switch, RF module, Encoder/Decoder