

CHAPTER 5 - CONCLUSION AND RECOMMENDATION

5.1 Conclusion

As a conclusion, the thesis objective has been achieved. Sticks and pedals for air drum kit successfully constructed and able to mount all required sensors. The accelerometer MMA7361 is sending analog data and protocol in 10 bits long. Based on its protocol, the program can be made to convert analog data and showed output value in voltage and acceleration for all axes.

To accomplish this thesis project, Microcontroller is needed to act as a brain and storage for all data that accelerometer and limit switch sends. The program can be made thus Microcontroller able to encode the left and right hand and leg motion become musical note and chords that represented by MIDI messages. Acceleration value from accelerometer able to control the velocity of musical note that represented by low or high sound level. Limit switch input cannot control velocity of musical note, thus MIDI messages from limit switch will generate musical note in constant velocity. And the bouncing signal from limit switch has been reduced by adding debouncing program into the main program.

Music Sequencer in Sound Module already have drum kit sounds on FPC application, thus an interface between Microcontroller and Sound Module should be made so that Music Sequencer understand the data transmission in MIDI baud rate which is 31250 baud rate speed.

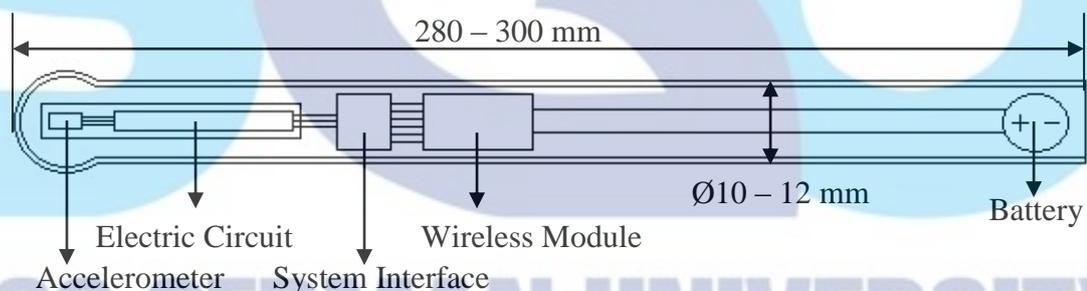
5.2 Recommendation

The next extension of the development and construction of an air drum kit for entertainment purpose can be done first by improving the mechanical design of drum sticks and pedals which holds all sensors and directly connected with Microcontroller. Materials for constructing drum sticks and pedals could be changed for a better implementation.

Second, is improving the electrical designs on drum sticks and pedals. Accelerometer on drum sticks is rather too big, it would be better if used only the accelerometer chip which is smaller than whole accelerometer board. Thus, the size of drum sticks can be reduced. Limit switch on drum pedals have lacks in some area, it would be better to change the limit switch or even change it for other sensors such as accelerometer for bass pedal because it can control velocity of bass pedal musical note. Connection between drum sticks and drum pedals with Microcontroller Board by using cables will decrease the latitude. Implementing wireless concept is the best solution to change all cables connection and increase the latitude. And for power source, it is better to use small battery as the substitution of cable to supply all systems.

Last, is improving the program designs. For the next improvement, the air drum kit should be able to generate up to 14 kinds or even more of drum kit sounds.

Proposed Stick Design:



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