MEDSense: Accessible Pill Dispensing Device- Week 5 Report

Work Completed

Last Friday we received the text-to-speech module from Acroname. We had received all of our parts except for the text-to-speech module so the group was relieved to finally have all of our parts.

The initial programming of the device was easy because the company sets up software to interface with the module. We typed phrases into the appropriate fields within the software and the text-to-speech module read them. The pronunciation was sufficient for our application. The sound clarity and volume were less than ideal which reflects a problem with the speaker. We plan on replacing the speaker within the module with a more powerful speaker.

The rest of the week centered on my primary goal of programming the microcontroller. I purchased a book detailed the architecture and programming methods of the PIC microcontroller. This book has been useful in learning how the microcontrollers are programmed and the theory behind it.
I was hoping that the book would have sample code for the various applications but that proved not to be the case. It was helpful because I have learned how to interact with an RTC. This will prove valuable since the RTC is being used as the clock instead of the internal clock of the microcontroller. All that is left to do in programming the alarm system is to find out how to compare signals and memory locations within the microcontroller.

I also have found some code online that was used to drive motors. I do not plan on using the code but it has given me a basis to work on writing my own code. Knowing the theory behind controlling other motors will help me program this specific motor. The code I wrote last week underwent many changes when I found new information and learned more about C++ programming. I was rusty in programming in the C++ language so it took another week to become comfortable programming in the language. I rewrote some programs that were used in CSE 123 so that I could relearn some of the syntax. Though these projects will not directly apply to the application the time I spent in programming this week will make the programming in coming weeks easier.

I have learned a lot this week and have made some progress in writing code for the motors. Microcontroller programming was a foreign concept to me two weeks ago but it is becoming increasingly familiar. I am very confident that within the next week and a half I will have written the initial code for controlling the motors with the knowledge that this code will be modified once testing is completed.
**Future Work**

My work this coming week will be much like my work this past week. I have made strides in the area of programming the microcontroller to control the stepper motors. This is an area that is of the utmost importance at this stage in the project. The sooner I can program the microcontroller to control the motors the sooner we can begin to test the motors to figure out the speed and accuracy of the stepper motors. I am also working on code for the servo motors. At this time we have not decided whether stepper motors or servo motors would be used. Once we decide exactly which motors we will use I will focus heavily on that type of motor. Knowing how to program both kinds of motors will be beneficial in the long run because if one type does not work it would not be difficult to use the other type of motors.

Apart from controlling the motors I also want to begin interaction with the Bluetooth device. Knowing that we have an active connection from the eb505 module to the PC makes me want to work more on this aspect of the project. It would allow us to finish completely one aspect of the device. The motor control is the more pressing need and thus most of my effort will be concentrated in that direction. Any other time working on the project will be with the Bluetooth device.

**Project Overview**

Now that all parts are in the group has started work on all elements of the device. While none of the parts are finished as of yet we are making progress. I am very pleased with all of the machining that has been done. The physical aspects of the project are going well though many of the original ideas have changed. Both Ashley and Tim have done well adapting to the changing ideas about cutting the pill. I am also happy that we have established serial connections with both the text-to-speech module and the Bluetooth module. Once we establish interaction with the PIC we will have completed these aspects. Both of these things were done in a short period of time which leaves more time for PIC interaction. I will feel even more confident about the project as a whole once we have made more progress on the programming.

**Hours Worked**

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