Work Completed

This week, Timothy continued working on the LabVIEW program and made some progress on formatting the request packet for the program. He went to Hartford Hospital on Friday afternoon to work on retrieving data, and spent some time attempting to work with the Biopac system to retrieve some usable test data.

Nathan focused on the PDA integration with LabVIEW and Blackfin. He also worked on learning the steps needed to control an LCD screen using microprocessors, and began to learn to interpret the timing diagrams of the LCD displays.

I focused on determining the proper LCD display to use for our project. In the beginning of the week I talked via e-mail to John Neumann, a Field Sales Engineer at Innovatech Associates in Westford, MA. He suggested an LCD for us to use, and put me in contact with a sales representative and a technical advisor for this screen. When I contacted the person in sales, Bill Manchuck, he gave me several websites where we can purchase the parts needed. The estimated cost for the LCD screen as outlined on the Avnet website is approximately $320. This is in sharp contrast to the screen we found on www.pacificgeek.com for less than half the cost. John Neumann also gave me a contact of someone that can help with the technical aspects of interfacing with the LCD screen, John Clauson at Embedded Solutions. I contacted him with some questions we had regarding the LCD screen and he told me that Analog Devices has a DSP that interfaces with an LCD using a PPI port, which is the Blackfin chip that we already have. He also said, as John Neumann had told me, that we should look at Epson for an LCD driver for our application.

Another large part of my work was trying to determine the LCD/Blackfin interface. We had determined last week that we need the Blackfin A-V Extender card in order to get our LCD to work in conjunction with our Blackfin chip. Before we ordered anything I wanted to make sure exactly what it is that we need to interface with an LCD screen. I spent a good deal of time on the phone with both Analog Devices and National Instruments trying to determine what it is specifically that can be accomplished by LabVIEW embedded on a Blackfin chip. I finally spoke with Janell Rodriguez at National Instruments, who had responded to one of my e-mails in the past, and she informed me that our project cannot be done as we had planned. When LabVIEW gets embedded onto the Blackfin processor it becomes an executable file, and once this happens all the parameters of the Front Panel no longer exist. This means that once the application is on the Blackfin processor, the front panel cannot be displayed on an LCD screen. This had been a large part of our project up to this point, and with this new
information we need to completely rethink how to integrate an LCD screen. Nathan and I began to look into what is necessary to display the information needed using different methods, and so far it appears that it is beyond our capabilities at this point in time. We need to use multiple microprocessors in order to display the information stream coming from the Blackfin Processor, and at this point it just does not seem feasible. Since Dr. McIsaac only is concerned about the LabVIEW program, it will not be an issue to him if we just use a character LCD to display the patient data. From what I understand with speaking to Dave, this is a much simpler, but still challenging method of displaying data, and since we plan on using a PDA to interface with the LabVIEW program, we still will have a graphical representation of the data we have collected. Based on past groups and our current research into graphical LCD displays, the amount of research, work, and experience needed to configure an LCD to our parameters is beyond our abilities. We can, however, research how to configure a character LCD and interface that with the Blackfin chip. Once we have our team meeting this week we will be able to have a more concrete understanding of our duties from here to the end of the semester.

Future Work

This has been a tumultuous week, in that we accomplished very little in terms of getting closer to our final goal, yet still worked very hard to reach it. In the coming week we absolutely need to determine what type of LCD we will use, either graphical or character, and order it. We also need to determine the overall scope of the project, and divide our tasks accordingly. As of now, as best we can tell, the overall block diagram of our project is shown in Figure 1:

![Figure 1: Block diagram of system](image-url)
**Project Review**

Each week this project seems to be going worse and worse. It seems that up to this point every time we try to do something, we find out that it either is beyond our abilities, or it simply cannot be done. The developments this week have completely changed the scope of our project and we are basically forced to once again start from scratch. Being that there are only about 4-5 weeks left until the project is due, we either need to take a simpler approach such as use just a character LCD, or cut out part of the project. This week we will have a better idea of what it is that we need to do after our weekly meeting, and we should be able to get on track as far as actually having something accomplished. Several of the components involved at this point, specifically programming the LCD screen, are beyond the scope of our skills and the timeframe of this project. If we plan on having something to show for this project we need some serious guidance, or a simpler project.

**Hours Worked**
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