

sdmay18-12: Pilot Biometrics - ECG waveform captures

Week 8 Report

October 27 - November 3

Team MembersZachary Glanz — *Driver Design Lead*Andrew Jones — *Algorithm Design Lead*David Kirpes — *Circuit Design Lead*Justin Bader — *PCB Design Lead*Kory Gray — *Operating Systems Lead*Ryan Gallus — *Team Lead***Summary of Progress this Report**

This past week, our team focuses on the filter design and the board. We ordered a new board with a new board support package to solve some of our memory issues, and streamline the process of installing an operating system. We also started designing the filtering algorithm in matlab, using example ECG waveform data with added noise. We focused on how a combined hardware software filter could compete with a multi-level software filter design for filtering out noise and interference from muscle contractions.

Pending Issues

Waiting for the new board to arrive. Most of the filter design work is currently based on sample ECG waveforms available online, with random noise and interference we've added. Once we get the real ECG sensors, we may find the noise and interference are very different.

Plans for Upcoming Reporting Period

With the new board arriving with a board support package, we will focus on getting the operating system installed and interfacing with the analog to digital converter. We will continue work on the filter design, testing with a variety of ECG waveforms and added noise.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Zachary Glanz	Mostly correspondence and planning. Real progress was gated this week by delivery of a few components.	2	30
Andrew Jones	Researched parts of an ECG wave. Look through algorithm made in Matlab that filters out background signals to get the ECG wave.	2	26
David Kirpes	Started playing with data captures of ECG waveforms to see how filtering will affect it. We need to avoid observing the wrong signal through aliasing.	2	28

Justin Bader	Worked on filtering algorithm. Researched the plus's and minus's of using a hardware filter to complement our software filter. Found that it is probably going to be easier to do everything in a two layered software filter where one filter filters noise out and another filter filters out random muscle contractions that we are trying to avoid.	2	30
Kory Gray	Mainly just looking into a new board's data sheet a bit. Waiting for it to arrive before work can start on it.	2	26
Ryan Gallus	Focused on implementing the IEEE standards our team identified as applying to the project. Continued working on the filter design and researching similar designs for filtering ECG waveforms.	2	33