

Pulse Oximeter Team

Progress Report #2

1/30/09 – 2/5/09

Team Members

Bogdan Dzyubak – Communicator
Joe Helfenberger—BWIG
Jonathan Meyer—Leader
Matthew Parlato—BSAC

Clients

Amit Numunkar
Jonathan Baran

Advisor

Dr. John Webster PhD.

Problem Statement

The purpose of this project is to develop a low-cost pulse oximeter for use in developing countries. It will be integrated with an innovative medical technology platform which uses a laptop to record and display patient data. The oximeter must be rugged, durable, inexpensive, and must deliver data to a laptop as an analog signal via a USB interface.

Team Goals

Previous goals for this week

- Research how pulse oximeters are built.
- Identify existing pulse oximeters on the market, and identify relevant patents.
- Finish PDS.
- Complete relevant BME 310 and BME 462 labs to familiarize ourselves with pulse oximetry.

Goals for next week

- Finish preliminary research.
- Clarify which circuits are necessary in the final device (i.e. an LED driver circuit, etc.)
- Develop initial circuit draft.
- Begin brainstorming.
- Acquire the international standards for pulse oximeter performance: ISO 9919:2005 Medical electrical equipment - Particular requirements for the basic safety and essential performance of pulse oximeter equipment for medical use.

This week's accomplishments

- Identified pulse oximeter designs.
 - Conducted relevant BME 310 and BME 462 labs to familiarize ourselves with pulse oximetry.
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Project Schedule

The table below is a Gantt chart of the projected timeline. Dark colors are used for completed stages, and light colors for incomplete stages.

Tasks	January		February				March				April				May	
	23	30	6	13	20	27	6	13	20	27	3	13	17	24	1	8
Project Development																
Research	█	█	█	█												
Brainstorm				█	█											
Design					█	█	█	█								
Prototype									█	█	█	█	█	█	█	
Deliverables																
Progress reports	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Midsemester presentation								█								
Midsemester report									█							
Final presentation															█	
Final report																█
Communication																
Advisor Meetings		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Client Meetings	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Website		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Difficulties

For AMA approval, our device should comply with the standards set forth in ISO 9919:2005 Medical electrical equipment - Particular requirements for the basic safety and essential performance of pulse oximeter equipment for medical use. Unfortunately, we have not yet found access to it for under \$150.

Activities

Date	Time	Team member(s)	Activities
1.30.09	.75 h	Team	Discussed the project with Dr. Webster. Met the ECG team, whom we will be loosely collaborating with.
1.31.09	3 h	Team	Conducted the BME 310 pulse oximetry lab, identified topics we need to research.
2.1.09	1.5 h	Joe	Set up website
2.1.09	0.5 h	Matt	Researched pulse oximeters

2.2.09	1.5 h	Joe	Researched pulse oximeters
2.4.09	2 h	Bogdan	Researched pulse oximeters
2.4.09	0.5 h	Jonathan	Researched standard specifications
2.5.09	3 h	Jonathan	Researched competing designs and teams, power reduction options, and reflectance pulse oximeter advantages and disadvantages.
2.5.09	3 h	Team	Conducted portions of the BME 462 photoplethysmography lab.

Expenses

We have not yet accrued any expenses.