

Pulse Oximeter Team

Progress Report #5

2/20/09 – 2/26/09

Team Members

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

Clients

Amit Nimunkar
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 handheld processing device to record and display patient data. The oximeter must be rugged, durable, inexpensive, and must deliver data to the handheld processing device as an analog signal.

Team Goals

Previous goals for this week

- Finish the PDS.
- Identify appropriate materials for the housing of the oximeter probe.
- Develop ways to minimize oximeter output errors due to variable forces applied to the probe.
- Find specifications for the spacing and angles between the probe's LEDs and photodiode.

Goals for next week

- Finalize design
- Develop and deliver the midsemester presentation

This week's accomplishments

- Revised the PDS.
- Identified principles for determining the separation of the LEDs and photodiodes.
- Developed several design alternatives for constructing a reflectance probe.
- Identified Plexiglas as a possible material for protecting the optical elements of the probe.

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

We did not encounter any unusual difficulties this week.

Activities

Date	Time	Team member(s)	Activities
2.20.09	2.5 h	Team	Discussed the project with Dr. Webster and Jonathan Baran.
2.20.09	1 h	Bogdan, Matt, Jonathan	Attended Ergonomics session
2.23.09	1.5 h	Jonathan	Researched LED and photodiode positioning systems and dimensions, brainstormed design options
2.23.09	0.75 h	Joe	Read part of <u>Design of Pulse Oximeters</u>
2.24.09	1 h	Bogdan, Joe, Jonathan	Attended microcontroller session
2.24.09	4.5 h	Jonathan	Worked on midsemester paper, developed options for optically shielding the LEDs and photodiodes
2.25.09	1 h	Bogdan	Researched materials
2.25.09	0.5 h	Jonathan	Revised PDS
2.25.09	1 h	Joe	Researched dimensions of pulse oximeter probes
2.25.09	2 h	Matt	Researched Plexiglas
2.26.09	2.5 h	Jonathan and Joe	Developed design alternatives
2.26.09	1 h	Joe	Researched
2.26.09	1 h	Jonathan and Joe	Visited Fontana to see different headlamp headband attachments
2.26.09	1 h	Team	Attended soldering session

Expenses

Items	Cost
4 photodiodes (2mm×2mm)	< \$20