Design Check-In

Senior Design-006

Reza Choudhury, Kate Endersby, Claire Haas, Max Tanruther

CyVital – Bioinstrumentation for BME 3500

What is CyVital?

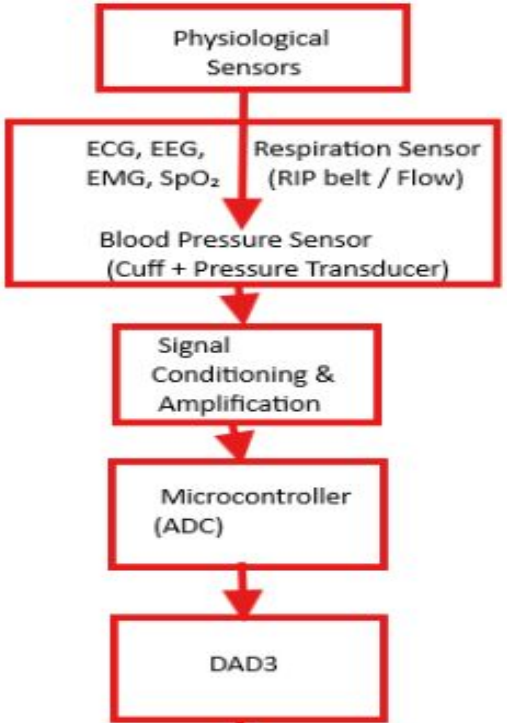
- A lab unit that streams biosignals to a simple GUI for teaching

CyVital in Practice:

- Students connect sensors to a volunteer
- Sensor readings shown live
- Data interpreted in lab
- Select sections of the data to export to excel file for later analysis

Why CyVital Matters:

- Lets students visualise abstract biomedical concepts for interactive learning



Human (Desirability)

Opportunities

- Professor needs to be able to teach many students
- Student needs to learn how to use common sensors in the healthcare setting
- TA needs to resolve difficulties that come up in lab

Trade-Offs

- Students will not use software they may find in the healthcare environment
  - Software has key elements of proprietary systems
  - Software can be further developed to replicate more advanced features

Economic (Viability)

Opportunities

- BIOPAC, the commercially available version, is about 100x more expensive than our current solution
  - BIOPAC is around $10k, our solution costs less than $100
- Cost to repair is cheaper
  - Option for in-house repairs
- BIOPAC built for learning/accessibility

Biopac Student Lab Software

Trade-Offs

- Complex repairs must be done in-house
- Difficult to get sensors as high-quality as BIOPAC

Technical (Feasibility)

Opportunities

- Demonstrates signal processing, circuit design, and software development
- Students uses the same sensors one would find in the hardware environment
- More efficient than commercially available software

Trade-Offs

- Only one semester to implement the design
- Hands-on assembly is needed
  - Saves monetary cost
  - Costs man-hours
- Learning curve for the first-semester
  - Use course feedback to improve design

Plus-Delta Table

	Plus	Delta (Progress)	Delta (Understanding)
Technical (Feasibility)	- 2 PCB designs - Data Analysis GUI implemented	- Develop oscilloscope polling code	- Research healthcare software for additional features
Economic (Viability)	- B.O.M. completed - Plan to order PCBs this week	- Complete safety trainings for case manufacturing	- Research alternatives for hardware
Human (Desirability)	- Functionality of all sensors determined - Met with TA to ask about further needs	- Meeting with BME students scheduled	- Study BME course flow - Read educational studies on new curriculum development

Questions?

Thank you!