

Impedance Cardiography

Clients:

Prof. John Webster

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Team Members:

Kim Safarik (Leader)

Jacob Meyer (Communicator)

Terra Gahlman (BSAC)

David Schreier (BWIG)

Nov 13th to Nov 19th

Project Statement:

Impedance cardiography is a medical procedure utilized in order to noninvasively analyze and depict the flow of blood through the body. Traditionally, four electrodes are attached to the body, two on the neck and two on the chest, which take beat by beat measurements of blood volume and velocity changes in the aorta. However, this system suffers from degrees of inaccuracy, possibly due to the fact that the electrodes are placed too far from the heart. As a result, it is our collective goal to design an accurate, reusable, and spatially specific impedance cardiograph system that ensures accurate and reliable readings.

Current Design Goals:

- Finalize initial prototype
- Test initial prototype
- Begin ventricle placement research
- Begin poster

Project Status Summary:

During this week of design our team has finalized the initial prototype and begun to test it with our amplifier. This week our team went to Walmart and attained a silicone baking mat which we used for our electrode holding system. We then punched holes in this mat pulling the electrodes through them, securing them in the mat. However, during this process we realized the

silicone mat is a little more unstable than we had expected, ripping quite easily when it is loaded with even slight force. Therefore we have looked into an alternative material to reinforce the silicone. Also, in retrospect to this material flaw, we have decided to just permanently imbed reusable electrodes in the system. Tonight we plan to test our prototype electrode system with our amplifier and impedance circuit. After that we can perfect the total design.

Future Design Expectations:

- Begin working on ventricle detection aspect of the project
- Finalize poster presentation

Work Hours:

Name	Work Performed	No. of Hours/Task	Total Hours
Kim Safarik	Prototype Assembly	2 hrs	3 hrs
	Progress Report	1hr	
Terra Gahlman	Prototype consideration	1 hr	2 hrs
	BSAC meeting	1 hr	
Jacob Meyer	Communication	½ hr	2 hrs
	Materials/Prototype Consideration	1 ½ hr	
David Schreier	Website updates	½ hr	1 hr
	Protoype Consideration	½ hr	
Team	Aplifier Trouble Shooting	1 hr	11 ½ hrs
	Materials Gathering	1 ½ hr	
	Prototype Construction	1 hr	

Pictures:



Left: Silicone Mat with imbedded electrode

Right: Reusable electrode possibility

