

Development of an ultrasound probe holder for arterial function testing (Probe Holder)

Client: James H. Stein, MD

Dept. of Medicine, Cardiology
UW School of Medicine and Public Health
Phone: 263-5131
email: jhs@medicine.wisc.edu

Team: Leon Corbeille (BWIG)

Neal Haas (Communicator)
Peter Kleinschmidt (Leader)
Lein Ma (BSAC)

Progress Report for Week 3: February 13 – February 19

Problem Statement:

To aid in the ultrasonography of arterial reactivity, a simple, stable, adjustable probe holder is needed. The stabilization provided by such a holder could potentially improve probe imaging quality and diagnostic effectiveness. The device should be able to be finely adjusted with 6 degrees of freedom, and free the hands of the technician for the duration of the study.

Last Week's Goals:

- Schedule meeting with mechanical engineering professor for expert advice (Frank Fronczak)
 - No response yet, will look to schedule for next week
- Perform more thorough patent search/other research. Identify potential IP issues
- Continue conceptual brainstorm
 - Look for other positioning methods. Pre-existing devices, simple to construct, etc.
- Continue feasibility studies of ideas as they are formulated
- Begin process of obtaining Shop access for all members if not done so already.

Summary of Accomplishments

- Refined ideas for mounting devices.
 - Snake arm identified as potential most flexible at low cost
- To offer fine-tuned control, costs will increase significantly. Micropositioning devices (eg for optics, microscopes) can be very pricey, starting at ~\$200 per linear direction.
- Working to integrate ideas of motion control into practical device
- Still trying to get more advice from engineering contacts, but have yet to make successful contact.
- Projected an initial budget for construction of \$300 if not integrating micropositioning. If ultra-fine control is added, cost will be significantly higher.

This Week's Goals

- Define semester goals for fine tuned ability of prototype.
- Refine design concepts and potential material suppliers
- Begin formulation of design proposals
- Begin preparation of mid-semester design presentation
- Begin outline and preliminary work on mid-semester design report
 - Divide tasks and responsibilities

Project Difficulties:

None to report

Team Activities

Members	Activity	Time Spent	Total
Team	Advisor Meeting, Brainstorm Session	3.00 hr.	9.00 hr
Lein	BSAC Meeting, Research	1.50 hr	5.00 hr.
Leon	Research	1.00 hr	4.00 hr.
Peter	Progress Report, Manufacturing and Micropositioning Research	1.50 hr	4.50 hr.
Neal	Communications, Micropositioning Research	2.00 hr	3.25 hr.

Project Timeline

Task	Jan.		February				March				April				May	
	23	30	6	13	20	27	6	13	20	27	3	10	17	24	1	8
Project Development																
Brainstorm/Design Development																
Finalize Design																
Prototyping																
Deliverables																
Progress Reports																
Mid-semester Paper																
Mid-semester Presentation																
Final Paper																
Final Poster																
Meetings																
Client																
Advisor																
Website																

Budget/Expenses

No expenses incurred