Title: Progress Report 9

Date: 04/03/2025

Client: Dr. Andrew Ross
Advisor: Dr. Megan McClean
Team:
- Student 1: Ana Toscano
- Student 2: Rini Anand
- Student 3: Gabriela Cecon
- Student 4: Sofia Yeates-Delahoz

Problem statement:

Design and develop a prototype that securely supports, stabilizes, and precisely maneuvers needles during image-guided minimally invasive radiology procedures to enhance ergonomics, reduce operator fatigue, and improve accuracy and patient outcomes

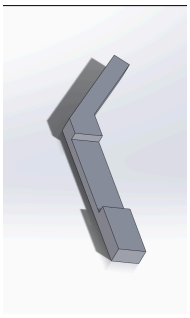
Brief status update

After the “Show-and-Tell” event, our group got advice and feedback from TAs and upperclassmen to aid in our design. We are currently implementing and fabricating a new prototype for upcoming testing.

Difficulties / advice requests

None to report.

Current design



A preliminary CAD model was developed with SolidWorks and printed at UW-Madison Makerspace. Then a test tube holder was cut to fit. After that, a hole was drilled into the plastic pieces and hot glued onto the metal. Foam was also hot glued onto the end.

This Week's Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Ana Toscano	3/20 - 4/03	- Research about market analysis - Drafted part of Executive Summary - Modified the CAD model	3	3	26
Rini Anand	3/20 - 4/03	-Research about metal to plastic adhesives -Drafted Fabrication Plan -Drafted part of Executive Summary -Printed and fabricated new prototype	4	4	26
Sofia Yeates-Delahoz	3/20 - 4/03	-Drafted part of Executive Summary -Made edits to CAD model -Research silicone materials	3	3	25
Gabriela Cecon	3/20 - 4/03	- Research on adhesives - Adjusted the CAD model - Brainstormed testing plan	3	3	25

Major team goals for the next week

1. Submit Executive Summary Draft (this document is submitted to receive awards for this design)
2. Create Testing Plan
3. Update Fabrication Plan
4. Find time to test with UW radiologists

Next week's individual goals

- Ana Toscano
    - Create Testing Plan
    - Finalize material choices
    - Start testing
- Rini Anand
    - Create Testing Plan
    - Update Fabrication Plan if needed
    - Email Client about testing with phantom
    - Start testing
- Gabriela Cecon
    - Write testing plan
    - Decide on adhesive and soft material
    - Finish prototypes for testing and start protocol
- Sofia Yeates-Delahoz
    - Finish fabrication of prototype
    - Make edits to Executive Summary
    - Finalize material that will secure the prototype to the needle

Timeline

Task	Jan	Feb				March				April				May	
	30	6	13	20	27	6	13	20	27	3	10	17	24	1	8
R&D															
Preliminary Design	X	X	X	X											
Final Design					X	X									
Prototyping							X	X		X					
Testing															
Deliverables															
Progress Reports	X	X	X	X	X	X	X	X		X					
Prelim presentation				X											
Final Poster															
Meetings															
Team	X	X	X	X	X	X	X	X		X					
Client		X			X		X								
Advisor	X	X	X	X	X	X	X	X		X					
Website															
Update	X	X	X	X	X	X	X	X		X					

Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
Needle Holder Jaws	3D-printed PLA needle holder jaws	UW-Madison Makerspace	N/A	N/A	N/A	03/19/2025	2	$0.28	$0.57	N/A
Test Tube Clamp	Labs Stoddard Test Tube Clamp, Stainless Steel with Finger Grips, 6" Length	SUCOHANS	SUCOHANS-TBC-Unique-Identifier	N/A	N/A	03/19/2025	10	$1.43	$14.28	https://a.co/d/iC2k5td
Needle Holder Jaws #2	3D-printed PLA needle holder jaws	UW-Madison Makerspace	N/A	N/A	N/A	04/01/2025	6	$0.12	$0.73	N/A

TOTAL: $15.58