Microscope Slide Scanner

Date: 11/21/24

Client: Teri Stewart
Advisor: Dr. James Trevathan
Team: Lia Lejonvarn (Team Leader)
         Amanda Kothe (Communicator and BSAC)
         Hamad AlDhaheri (BPAG)
         Xavier Snider (BWIG)

Problem statement

The team has been tasked with finding a more efficient way to scan microscope slides using digital scanning. The client's department already has a scanner but it takes a while to scan one slide and the images are not of the best quality. Therefore, we must find a way to enhance the user quality of their digital scanner as well as the images themselves. The department has also asked our team to create software capable of housing the images. This project will benefit multiple labs who send in slides for processing including the primate lab and SMPH.
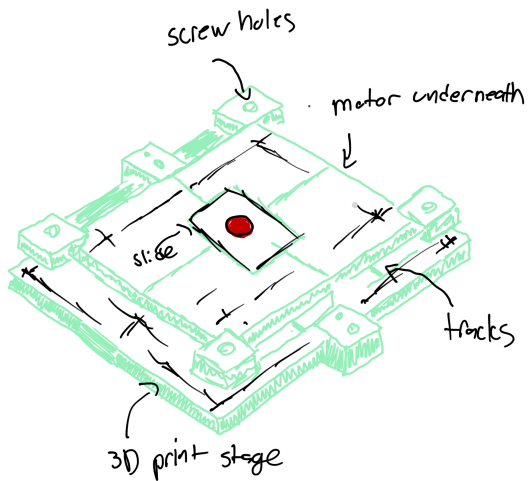
Brief status update

The team has acquired the bulk of their materials and are continuing to fix errors with micro-manager as well as prototyping their movable stage.

Difficulties / advice requests

The team would like help with connecting the stepper motors and fixing errors seen in micro-manager.

Current design: Slide Glider

Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
Motor	Stepper motor with full step increment of 0.9 degrees and shaft radius of 4.994mm	Nema		McMaster		11/18/24	2	87.41$	$174.82	Stepper Motor, with Square Body, NEMA 17, 62.3 in.-oz. Maximum Holding Torque | McMaster-Carr
Pulley	Corrosion-resistant Timing Belt Pulley with a trapezoidal teeth shape and a diameter of 25mm as well as shaft diameter of 6mm	Lily-bearing		McMaster		11/18/24	2	13.67$	$27.34	Corrosion-Resistant Timing Belt Pulley, XL Series, Hub, 2 Flanges, 9.5mm Maximum Belt Width, 25mm OD |

									McMaster-Carr
Belt	A belt with trapezoidal teeth big enough to encase the microscope moving mechanism as well as the belt pulley	Mcmaster	Mcmaster		11/18/24	2	8.4$	$16.8	
							TOTAL:	$218.96	

Major team goals for the next week

1. Create 3D print to hold stepper motors
2. Connect stepper motors
3. Work on software

Next week's individual goals

- Amanda:
    - Make solidworks part for stepper motor holders
    - Start working on final deliverables
    - Continue communicating with client and advisor
- Lia:
    - Fix micro-manager errors
    - Help set up stepper motors
    - Start working on final deliverables
- Xavier:
    - Help with the attachments
    - Help solder once we have the board
    - Start work on poster
- Hamad:
    - Assist in completing the prototype
    - Assist in fixing any software issues
    - Start working on Final Deliverables

Timeline

Task	Sep			Oct				Nov				Dec		
	13	20	27	4	11	18	25	1	8	15	22	29	6	11

Project R&D														
Empathize														
Background…														
Prototyping														
Testings														
Deliverables														
Progress Reports	X	X	X	X	X	X	X	X	X	X	X			
Prelim presentation				X										
Final Poster														
Meetings														
Client	X	X		X		X		X		X	X			
Advisor	X	X	X	X	X	X	X	X	X	X	X			
Website														
Update	X	X	X	X	X	X	X	X	X	X	X			

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- Amanda:
    - Fabricate automated stage
    - Continue to work with software
    - Continue communicating with client and advisor
- Lia:
    - Prototype with materials
    - Continue to set up software
- Xavier:
    - Prototype with materials
    - Finalize orders
    - fabricate
- Hamad:
    - Assist in software testing and setting up.
    - Assist in prototyping.
    - Build a spreadsheet of all costs.

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Amanda	11/6	Team meeting	2	2	13
Lia	11/6	Team meeting	2	2	13

Xavier	11/6	Team meeting	2	2	13
Hamad	11/6	Team meeting	2	2	12