

Positioning device for ophthalmic scanning laser systems

Team 23: “Ocular Imaging” Team

Client: Carol Rasmussen

Advisor: Professor Tom Yen

Team Members: Thomas Fleming (Leader)

Daniel Frost (BSAC)

Vidhya Raju (BWIG)

William Stanford (Communicator)

September 26 to October 2, 2008

Last Week’s Goals

- Look into automotive mechanics suppliers for positioners that might be less expensive than industrial ones.
- Assuming that it is unlikely to find a prebuilt stage within our price range, we should decide on a platform design that we could reasonably build to meet our needs.
- Attempt to come up with a few preliminary designs for a user interface, both electronic and mechanical in nature.
 - If we cannot seem to find a commercially available stage, we may have to divide the team into two subgroups, one to focus on platform design and the other to focus on user interface.

Summary of Accomplishments

- We found a promising x-y mobile stage with screw driven fine adjustment and a 150 lb. load capacity from McMaster-Carr (www.mcmastercarr.com, part #5179A29) for \$244.38
 - We would then fix a ball bearing pivot point to the front side of this stage, fix wheels to the back side, and attach an apparatus to allow for hand adjustment and a lock.
- We looked further into buying a power car seat frame to use as our base, but found that because of the movement in only one direction in the horizontal plane, we would have to buy two units which would get too heavy and costly to be feasible.
- We’ve also continued to look into buying two individual screw driven stages and fabricating our own moving platform from them.
 - This would restrict the amount of time we’ll have to focus on refining the user interface for the device, as well as being rather costly
 - The stages we found within our price range can also be found from McMaster-Carr (www.mcmastercarr.com, part #9222T11).

This Week's Goals

- Start working on the mid-semester presentation.
- Come to a conclusion as to what type of platform will be most feasible and how we intend to rotate that platform about a fixed frontal point.
- Discuss the possibility of a user interface that is simpler than using each of the individual hand cranks, and the costs of parts necessary for such an interface.

Project Difficulties

- none

Activities

- 9/26/08 **Team** Met with Prof. Yen to discuss our initial search into industrial positioners. He suggested that we look into McMaster-Carr for less expensive parts. He also suggested exploring power car seats a little further. ~1 hour
- 9/26/08-9/30/08 **Vidhya and Dan:** Looked further into costs and benefits of obtaining a power car seat frame to use as our base x-y motion platform. **Tom and Will:** Looked into McMaster-Carr's catalog for both x-y motion options and rotational options. ~2-3 hours/person
- 10/1/08 **Team** Met to discuss the results of our searches. Decided that the car seat platforms may be too difficult to work with and too costly for our budget. Decided that we'd lean toward the cross-slide table if we can find a good way to fix it for rotation about the front. ~2 hours

Project Schedule

Preliminary Project Schedule	
Dates	Activities
Sept. 19-25	Assess our monetary situation and choose what materials we can buy pre-assembled and what materials we'll have to fabricate for a platform
Sept. 26-Oct. 2	Decide upon a user interface style (e.g. joystick, buttons, screws, etc.), and whether that interface will be electronic or mechanical. Research prices for necessary components.
Oct. 3-10	Decide on team roles for device fabrication (platform vs. user interface), and finalize designs for each aspect of the device. Begin preparation for mid-semester presentation.

Oct. 10-17	Order necessary parts and begin fabrication. Finalize mid-semester presentation preparation.
Oct 17-24	Receive necessary parts for platform (x-y and rotation). Determine whether it is reasonable to focus part of our efforts on simplifying the user interface at this point.

Expenses

- **None**