Microscope Manipulator for Zebrafish Analysis

Week – November 11th, 2005 – November 17th, 2005

Team Members : Joe Hippensteel – Team Leader
Evan Rogers – Communications
Chris Webster – BSAC
Jonathan Baran – BWIG

Client :

Robert Jeraj
Assistant Professor/ Department of Medical Physics
Phone: (608) 263-8619
Email: rjeraj@wisc.edu

Advisor :

Willis Tompkins
Professor / Department of Biomedical Engineering
Phone: (608) 263-1581
Email: tompkins@engr.wisc.edu

Problem Statement

Our goal is to develop required devices and techniques for a zebrafish embryo imaging and irradiation research project. The initial stage is developing and constructing a working prototype of a digital micromanipulator to move the Petri dish of zebrafish embryos at a reasonable speed and precision to be able to develop a composite image of the entire dish. Software is needed to operate the stage. The zebrafish must be localized during the initial scan using standard digital imaging techniques. This information will be used to irradiate the fish and determine the presence of cell apoptosis and inflammation due to this radiation.

Last Week's Goals

- Finish the software fusion
- Determine maximum operating speed (e.g. finish speed analysis)
- Discuss and decide upon other necessary components (radiation blocker, camera rig, better focus, etc.)
- Start to plan final report and presentation

Accomplishments

- Saw minimal movement in the various moving speeds.
  - Have yet to quantify this movement
- Determined new plan of attack
  - Develop new software based upon old code in VB and Matlab
  - Create simulation Petri dish to test programs
  - Create grid system for scanning accuracy
  - Research and report new scanning system (All portions)

This Week's Goals

- Finish code writing
- Determine quantitative maximum operating speed (e.g. finish speed analysis)
- Begin testing software and determine any incompatibility issues
- Discuss and decide upon other necessary components (radiation blocker, camera rig, better focus, etc.)
- Start to work on final report and presentation

Difficulties

- Understanding current code
- Ridding speed maximization pictures of background noise using Matlab
- Finding time to meet as a group due to hectic week

Activities/Accomplishments

Group Member	Weekly Accomplishments	Time (hrs)	Running Total (hrs)
Joe Hippensteel	Group meeting, HS-IRB meeting, micromanipulator research, progress report, BSAC discussion, problem statement revamp, code review, speed testing analysis	7	59
Evan Rogers	Group meeting, HS-IRB meeting, imaging research, code review, Matlab coding	6.5	57

Chris Webster	Group meeting, HS-IRB meeting , imaging research, code review, speed testing, speed testing analysis, BSAC discussion, problem statement work	6.5	57
Jonathan Baran	BWIG meeting, group meeting, HS-IRB meeting, code review and editing, VB research	6.5	59.5