Microscope Manipulator for Zebrafish Analysis

Week – September 9th, 2005 – September 15th, 2005

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

Client:
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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. In addition, 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
• Research medical imaging techniques
• Determine if micromanipulator fabrication is necessary
• Meet with client and associates 9/15

Accomplishments
• Viewed working micromanipulator/microscope set-up at the PET division in the Waisman Center. Discussed requirements with client
associate Dr. Pyzalski.
- Received and reviewed functioning C and visual basic micromanipulator code supplied by Dr. Pyzalski.
- Met with Dr. Jeraj and associates to update and discuss project accomplishments and needs.
- Began to discuss PDS fabrication and mid-semester report tasks.
- Began to review literature on imaging techniques and commercial micromanipulators.
- Met with Prof. Tompkins during class period and gave brief overview of project requirements and goals.

This Week’s Goals
- Continue researching medical imaging techniques and commercial micromanipulators.
- Brain storm designs and determine design pros and cons.
- Get quote from micro-machining shop.
- Set-up and attend group meeting early in the week of 9/19-9/23.
- Begin PDS and dole out mid-semester report tasks.
- Meet with client’s associates on 9/22.

Difficulties
- Understanding all requirements of the project

Activities/Accomplishments

<table>
<thead>
<tr>
<th>Group Member</th>
<th>Weekly Accomplishments</th>
<th>Time (hrs)</th>
<th>Running Total (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe Hippensteel</td>
<td>Class time, commercial micromanipulator research, client meeting (1), progress report</td>
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<td>9.5</td>
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<td>Evan Rogers</td>
<td>Class time, imaging research, client meeting (2), email correspondence</td>
<td>5</td>
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<tr>
<td>Chris Webster</td>
<td>Class time, imaging research, client meeting (2)</td>
<td>5</td>
<td>9.5</td>
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<tr>
<td>Jonathan Baran</td>
<td>Class time, micromanipulator code review, commercial micromanipulator research, client meeting</td>
<td>5.5</td>
<td>10</td>
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