Subject: Automated Microbial Analysis Update

Hello Scott,

We have made some good progress towards the overall design of the project. We have partitioned the workload into Mechanical, Electrical and Computer Science sub groups to help with organization.

**Mechanical**

We have finished ordering the preliminary mechanical components for the project and have started assembly. The entire design has come together fairly well with only a few minor setbacks (usually due to 3D print tolerances). Overall we are looking at a completed design this coming finals week and will be ready to test by winter break. During this time Jorian will be inspecting the design for any revisions that need to be made and possible optimizations.

**Electrical**

Since the last email, Mack has been working hard to refine the delta motion. The custom PCBs that hold the stepper motor drivers have been designed, ordered, and tested. A 2nd revision, with thermal improvements, as well as readjusted component footprints, has already been designed and ordered. The new design is smaller but more effective than ever. Furthermore, the buck converter for the vacuum pump has been ordered and tested. We found the buck converter to be working as expected. Everything looks very promising for implementation of the vacuum pump to sterilely move our cultural samples from one end of our project to the other. The next step is to design a PCB to hold our relay, which will allow us to turn the vacuum pump on and off via software.

**Computer Science**

Over the last few weeks most of the time spent on this portion of the project has been centered around increasing the accuracy of the computer vision software and is close to being ready to begin testing of live samples. Zach has also begun researching and experimenting with the design of the graphical user interface. We are also in the process of implementing some of the movement functionality from the Raspberry Pi and hope to have a moving robot by the end of the holiday break.

In the coming weeks we will continue our initial designs for the system and all of the updates we have provided in this email, as well as any future updates can also be viewed on our GoogleSite. We will all be available by email during the holiday break to answer any questions you might have.

Thank you,

Zach Bendt

Jorian Bruslind

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