EE/CprE/SE 491 - sddec23-10

Developing a Deep Learning Model to Automatically Detect Microscale Objects in Images and Videos

Week 9 Report

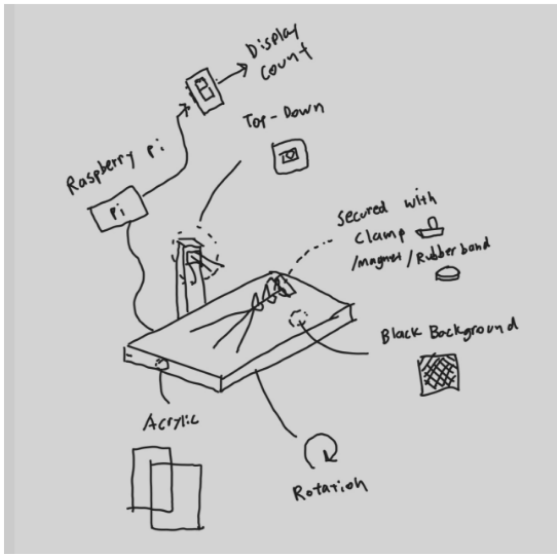
04/10/2023 – 04/17/2023
Client: Professor. Santosh Pandey
Group number: 10

Team Members:

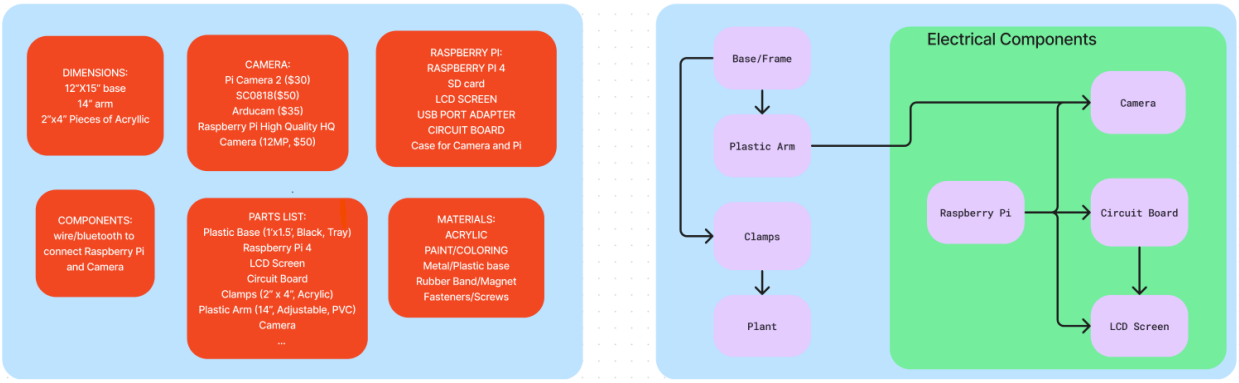
- Katherine Moretina
- Ethan Baranowski
- Chris Cannon
- Matthew Kim

Meetings- Client Feedback on Hardware System Diagrams

Hardware design drawing



System Level Diagram



Discussion Summary:
Client (Prof. Santosh Pandey) clarified intended design is to be patented for purchase by bigger farming corporations. This is contrary to what we were told at the beginning of the design phase, which is our target clients are farmers. We believe that we do not have the platform for testing creative optimizations to the current systems for parasitic cyst detection. Consequently, we will be attempting a fully automated design (besides plant placement and algorithm activation). This will hopefully satisfy the creative optimization because our design will be portable and easy to use, which will directly compete with the bigger companies products.

Detectron2 Implementation- All

Implementation put on pause for a catch up week wth labeling and design documententation

Labeling- All

- Continue labeling for the dataset. Every team member should have 30 images labelled. Which will leave 7 for the upcoming week, completing the labeling of the dataset.

Individual Contributions

Member	Tasks Completed	Hours This Week	Total Hours
Katherine Moretina	Attended all required meetings. Labeled all 10 images. Ran the Detectron2 demo on my computer.	2	38
Matthew Kim	Attended regular meetings. Try to brainstorm and generate ideas for the hardware design. Also worked on the presentation	2	30
Chris Cannon	Labeled images, design & planning.	7	31
Ethan	Continued task development and deployment for iterative progress on algorithm development. Additionally created tasks for TODOs in documentation. Helped draft Final documentation and presentation. Continued labeling images in dataset. Updated draft of Hardware Systems-Level Design Attempted Software Systems-Level Diagram	7	50

Plans for Coming Week

- Evaluate team member experiences with the Detectron2 algorithm and set plan for how to continue developing the algorithm.
- Continue labeling data with Labelme software for training set. (149 images total).
    - Develop standards of labelling - file naming, polygon shapes, general guidelines
- Investigate SIFT machine learning algorithm for possible simplified object detector that will help simplify algorithm training and implementation.

- Revisit Hardware Systems Designs for iterative improvements. Explore and discuss fully autonomous designs.
- Start Software Systems Design.