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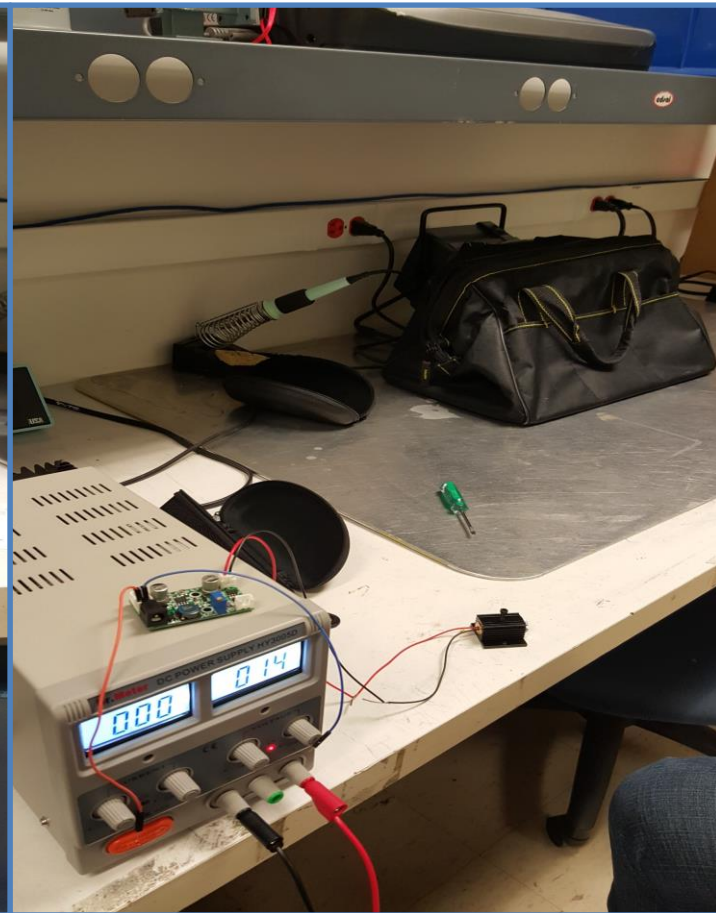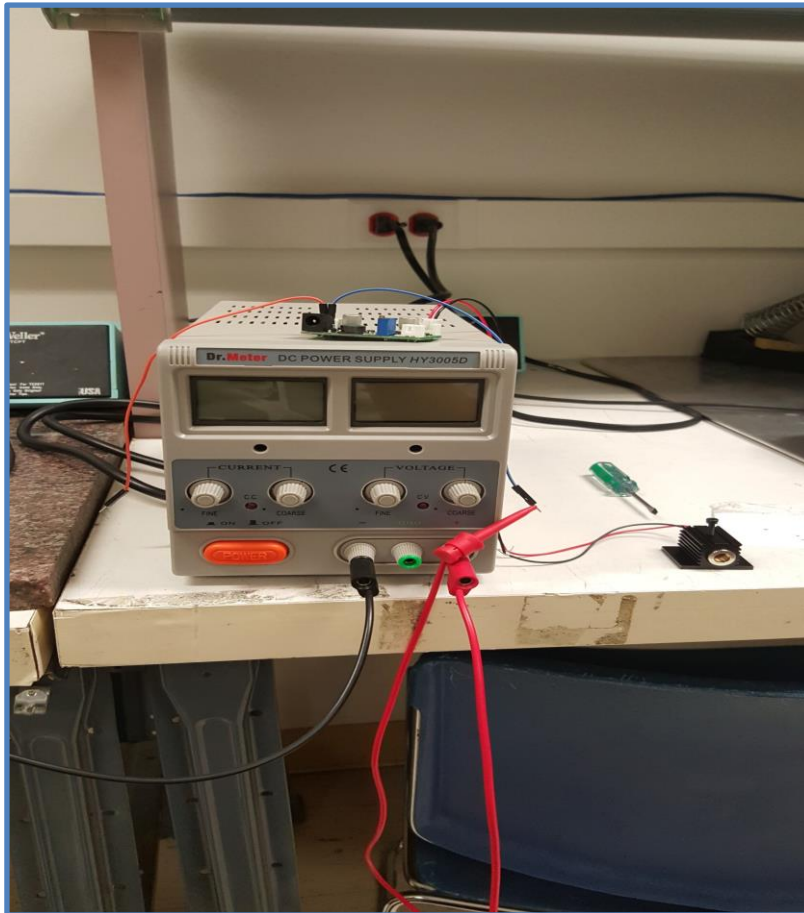Group 3S   Weekly Progress Report   Date: 3/7/16

Team Members: Thomas Bock, Ammar Ahmed, Tan Hua, Yan Michael Golez

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Group Meeting Minutes:
- Techniques for getting dimensions from an image (Edge Detection)
- Revision of WBS
- Updating Gantt Chart
- 3-D printed mechanical parts
- Ordering Panels
- Core X-Y Assemble
- Testing Implementation of the Laser
- Functionality of multiple stepper motors
- G-Code instructions to stepper motors
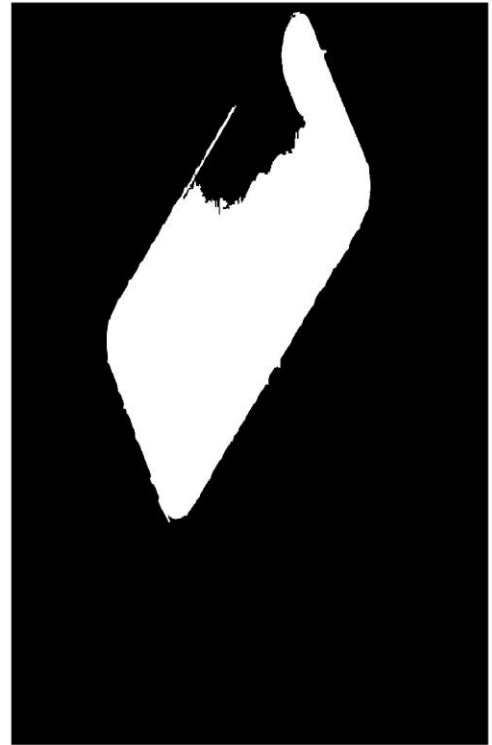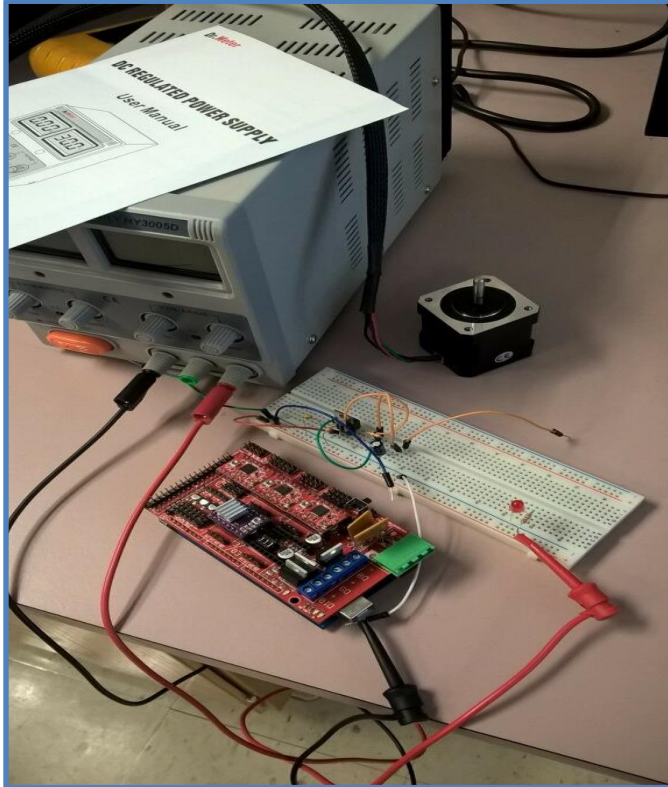- Platform Choice
- Plans for next week

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Summary of Team Tasks Assigned:

1. Mechanics
   a. Order/Receive Panels
   b. 3D Print remaining Parts
   c. Assemble XY Platforms
   d. Testing of components
2. Laser Diode
   a. PWM implementation on the laser driver
   b. Testing of the CNC Laser
3. Software
   a. Stepper Motors manage to move G-Code instructions
   b. Complete Software structure with tools and programs
   c. Ensuring the stepper motors working on multiple platforms
4. Computer Vision
   a. Work on algorithm for edge detection(needed for dimension detection)

Summary of Team Accomplishments:

1. Mechanics
   a) Panel is in progress of delivery
   b) 3D Printing Parts are obtained
   c) Core X-Y platform is in progress of being assembled
2. Laser Diode
   a) Power Supply Was used effectively
   b) Testing of 445nm 2W laser diode
   c) Output power of 2W on the Blue Laser Diode
3. Software
   a) Stepper motor was able to run individually
   b) Complete structures is the combination between Marlin and Ramp 1.4
   c) Stepper Motor can run on zeroPi and Arduino Mega 2560
4. Computer Vision
   a) The algorithm for edge detection was accomplished

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<u>Tasks Assigned for Next reporting period:</u>

1. Mechanics
    a. Order/Receive Panel
    b. 3-D Print Remaining Parts
    c. Assemble X-Y Platform
    d. Begin testing
2. Laser Diode
    a. PWM implementation on the laser driver
    b. Testing of the PWM in conjunction with the laser driver
3. Software
    a. Stepper motors work simultaneously
    b. Resolve the conflicts between program versions
    c. Perform a complete process from design to execution
4. Computer Vision
    a. Resolve the issue by finding the algorithm for filling the gaps or drawing a box around the detected object

<u>Issues:</u>

1. Light can cause an issue on the image processing.
2. Implementation of PWM.
3. The stepper motor was still not fully following G-Code instructions

Individual Summary (cont.)

Name: Thomas Bock

Tasks Assigned for this reporting period:
1. Order/Receive Panel
2. 3D Printing Remaining Parts
3. Assemble XY Platforms
4. Testing

Accomplishments this reporting period:
1. Panel is in progress of delivery
2. 3D Printing Parts are obtained
3. Core X-Y platform in in progress of being assembled

Issues:
1. It is cost prohibitive to order a panel of that size for machining. So a new panel style that can be broken up into pieces will need to be designed
2. I have been gone in Texas for most of the work time this week, therefore no testing was done
3. A revision to the 3d printed carriage pieces has been made to make them smaller, weigh less, and be easier to print. Due to this the pieces need to be reprinted

Tasks Assigned for Next reporting period:
1. Finishing all necessary parts.
2. Collaborate with the design of laser housing.
3. CAD design of Laser Housing

Individual Summary (cont.)

Name: Jan Michael Golez

Tasks Assigned for this reporting period:

1. PWM implementation on the laser driver.
2. Prototype Laser Diode: Regulate the current current for functionality.

3. Testing of the CNC Laser

Accomplishments this reporting period:
1. Understand how to use the power supply effectively
2. Began testing the 2W 445nm Blue Laser Diode in conjunction with a DC Regulated Power Supply(HY3003D/HY3005D) .
3. The Laser Diode was able to output 2W by having an output current of 1A with 2V.

Issues:
1. Implementation of the PWM module was not accomplished. More research is needed
2. Need Research done on the Laser Driver and Laser Diode to further verify the intensity and power of the Laser Diode.

Tasks Assigned for Next reporting period:
1. PWM implementation on the laser driver
2. Testing of the PWM in conjunction with the laser driver

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Weekly Progress Report

Individual Summary (cont.)

Name: Tan Hua

Tasks Assigned for this reporting period:
1. Stepper motors manage to move as G-code instructions
2. Complete software structure with tools and programs
3. Ensuring the stepper motors working on multiple platforms

Accomplishments this reporting period:
1. Stepper motor was able to run individually
2. Software structure is the combination between Marlin and Ramp 1.4
3. Stepper motor can run on zeroPi and Arduino Mega 2560

Issues:
1. The stepper motor was still not fully following g-code instruction
2. G-code generator didn't work sometimes due to the connection.
3. Switching between Mac and Windows causes the conflicts between the programs.

Tasks Assigned for Next reporting period:
1. Stepper motors work simultaneously
2. Resolve the conflicts between program versions
3. Perform a complete process from design to execution

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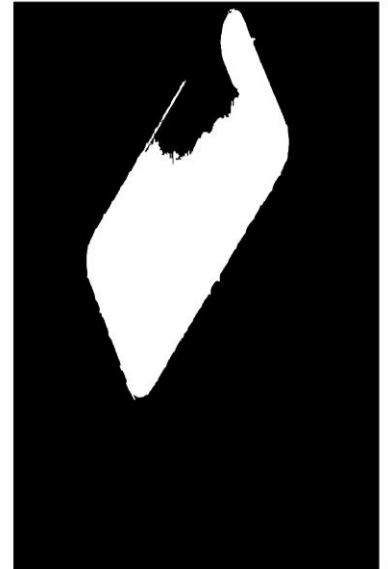
Individual Summary (cont.)

Name: Ammar Ahmed

Tasks Assigned for this reporting period:
1. Work on the algorithm for edge detection (needed for dimension detection)

Accomplishments this reporting period:
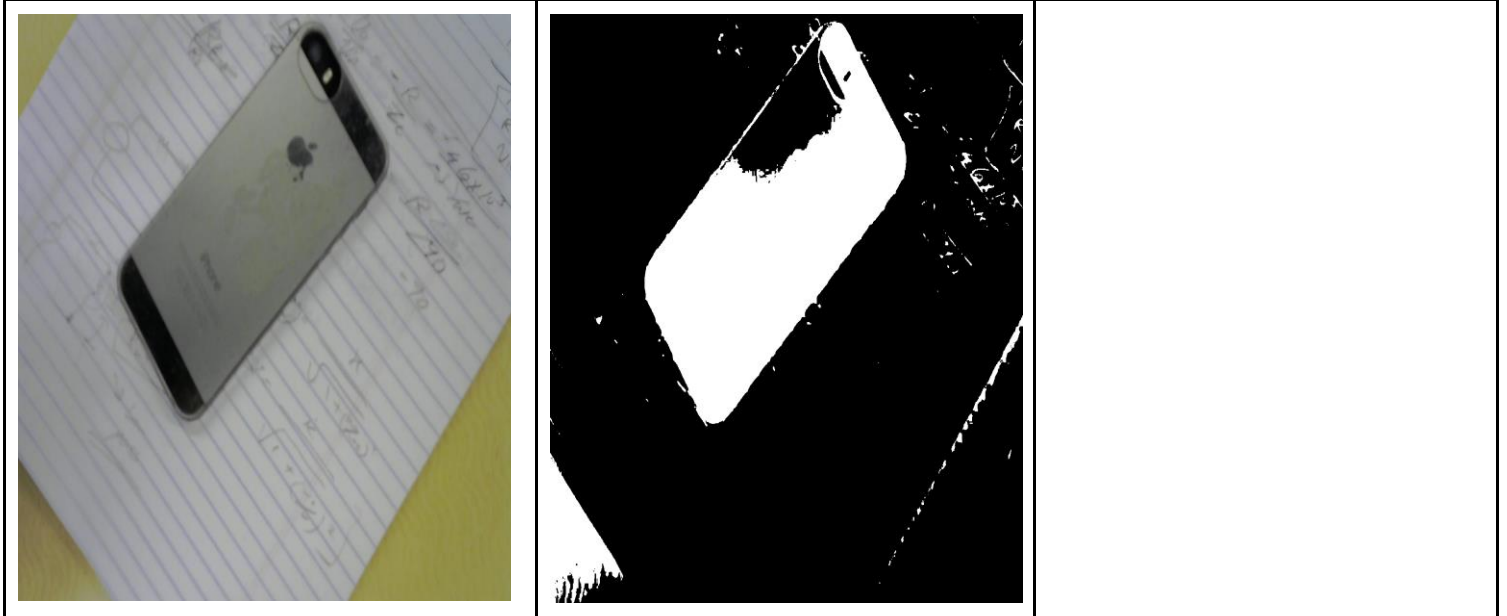1. The algorithm for edge detection was accomplished.

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Issues:

1. Light can cause an issues on the image processing. As it can be seen from the pictures, the original image was converted to binary and there was noise in the picture (second picture). After filtering out the noise in the picture, some of boundaries of the phone were gone because of the resolution of the image which could also a light issue.
2. There were gaps in the detected object.

Tasks Assigned for Next reporting period:

1. Resolve the issues by finding algorithms for filling the gaps or drawing a box around the detected object.