

P10541: Micro-gloss Measurement System

SDII-Week 4 Update



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-Machining is 85% complete as of 3/30

- Parts remaining-
 - Polarizer frame
 - LED mount
 - F-stop adjustment rod
 - Field of View measurement piece

Target Completion Dates

- ▣ Polarizer frame- 4/2/10
- ▣ LED block- 4/8/10
- ▣ F-stop adjustment rod- 4/8/10
- ▣ Paint and final trim- 4/8/10

Action Items

-Light entering case through case edges

Solution- caulking seams and sealing lid with weather stripping

-Camera view of cylinder face is slightly off center

Solution- shimming roller angle blocks up

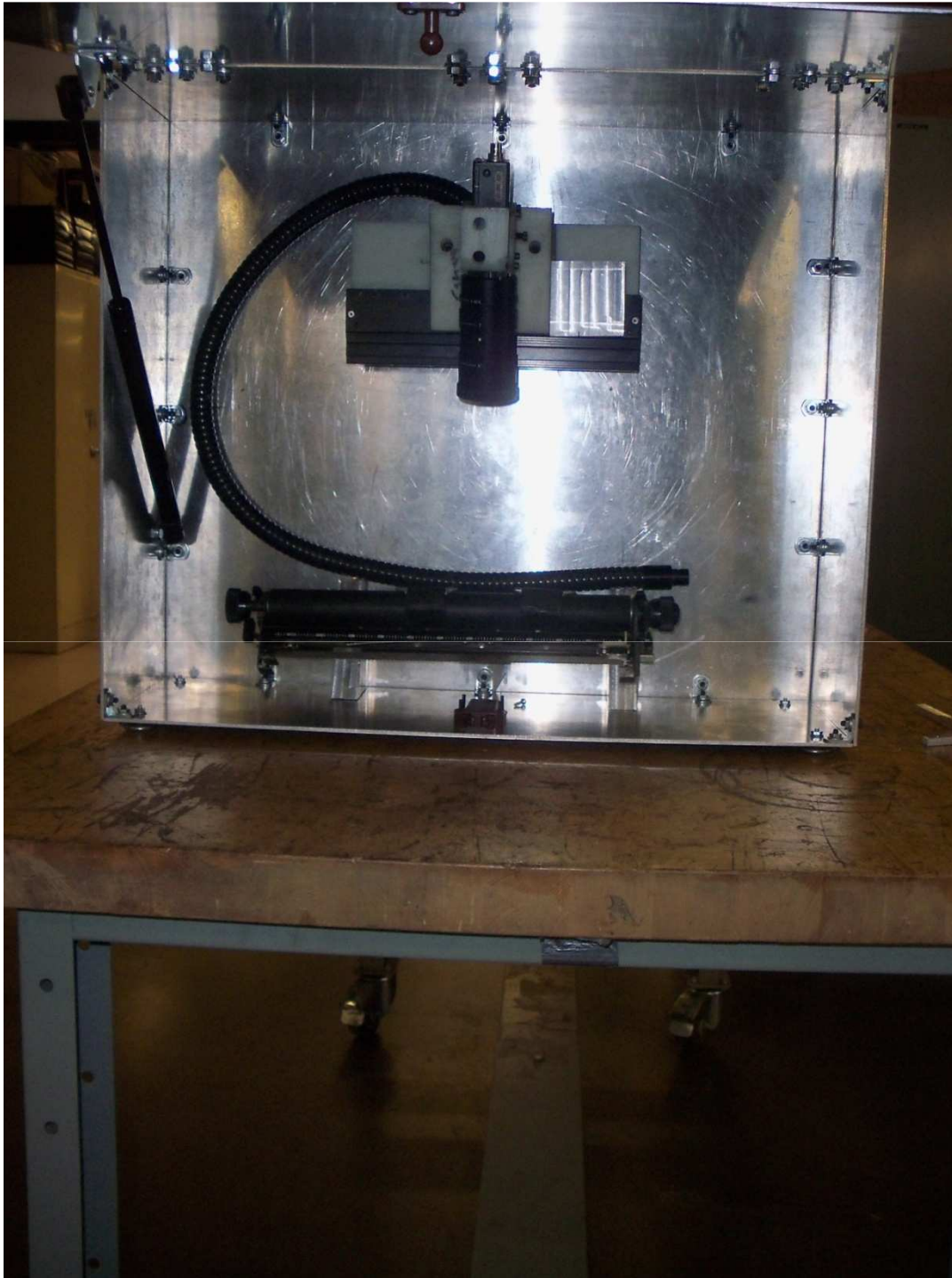
Design Changes

- Device height has been increased by a few inches because of camera connection interference with case walls.
- Case width has increased by an inch because of camera mount interference with lid.

Device Photos







Electrical

Image over-saturation issue not yet solved.
(camera not currently available for testing)

Electrical parts testing is 100% complete

Parts Assembly is 10% complete. Assembly will be done after enclosure is complete.

Target Completion Dates

- ▣ Suggested solution for over saturation issue
- ▣ (to be tested): 4/16/10

- ▣ Electrical components integrated: 4/9/2010

Action Items

Image over saturation Issue not solved yet.

(camera not available for testing)

Suggested solution: Extract pixel values from the frame grabber to create a histogram. Over/under saturation can be determined and then adjusted by controlling the F-Stop.

No red LED is available to use in the project

No budget available to purchase the red LED.

Green and Blue LEDs only used and device designed and wired for future upgrade

Action Items (cont)

Current regulator not working

(used to get constant current through the LED/constant lumens)

20m lmns variation without the regulator.

Not needed if a histogram is created and saturation is controlled.

Cost ~\$20.

Molex connectors, LED indicator out of stock

LED Indicator purchased from Radio Shack.

Connectors cost \$2 and shipping \$9 if ordered from other vendor. Solutions: Check Gold Crest Store, or solder the wires to the pins directly.

Software

Algorithm programming is 65% complete as of
3/31

▪Parts remaining-

- Interpolating functions at equal x distances
- Baseline creation and correction
- Calibrating analysis to the reference sample
- Statistics

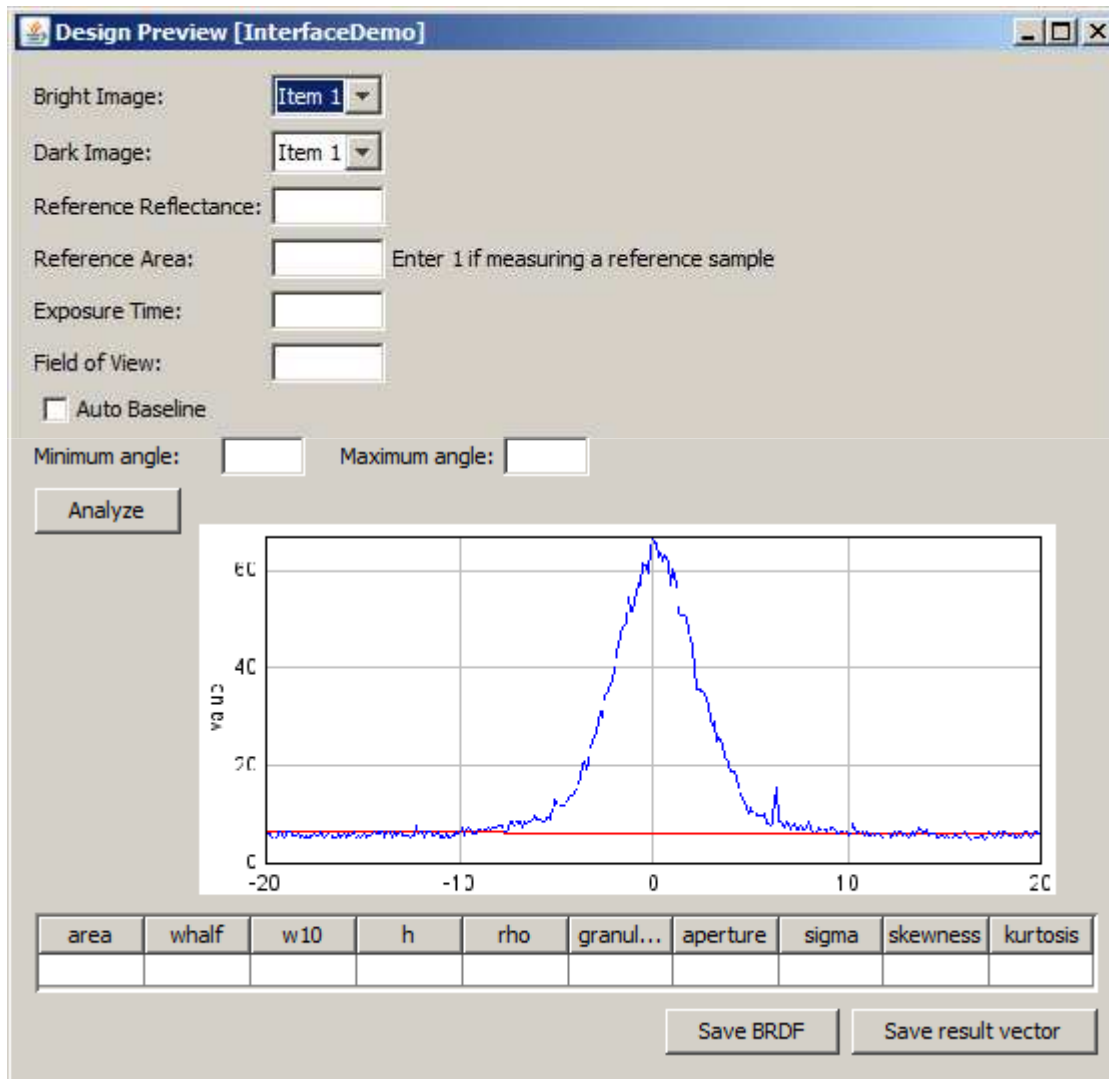
Target Completion Dates

- ❑ Algorithm completion: 4/3/10
- ❑ Interface: 4/11/10
- ❑ Results reporting: 4/11/10

Changes from MathCAD and Problems

- ❑ Some lines in MathCAD code would generate actual functions, which Java can't do.
 - Solution: Static linear interpolation function hardcoded
- ❑ One line of MathCAD “trickery” skipped

Interface Changes



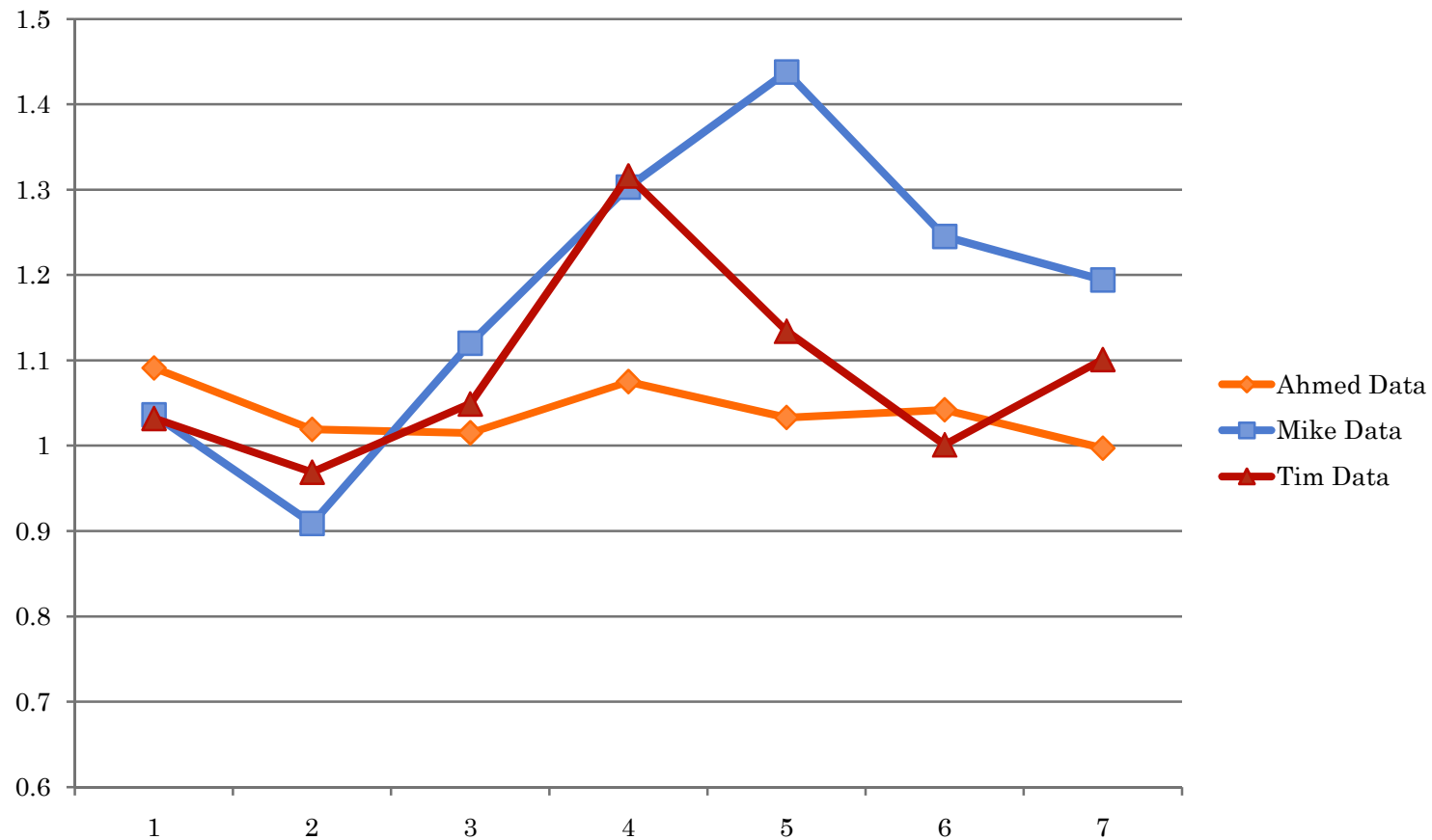
Added “Auto Baseline” options.

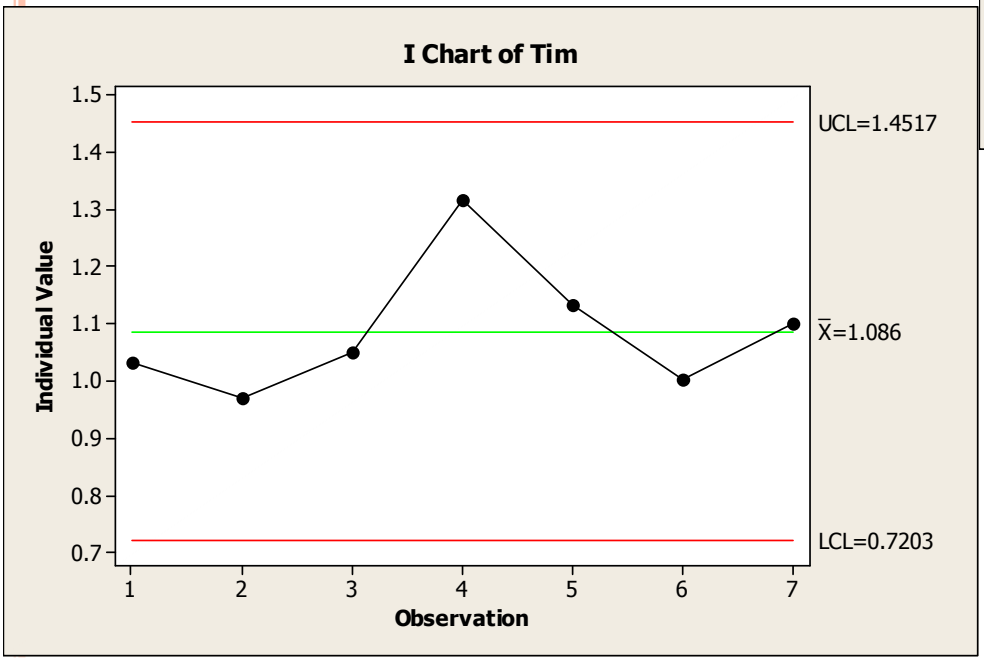
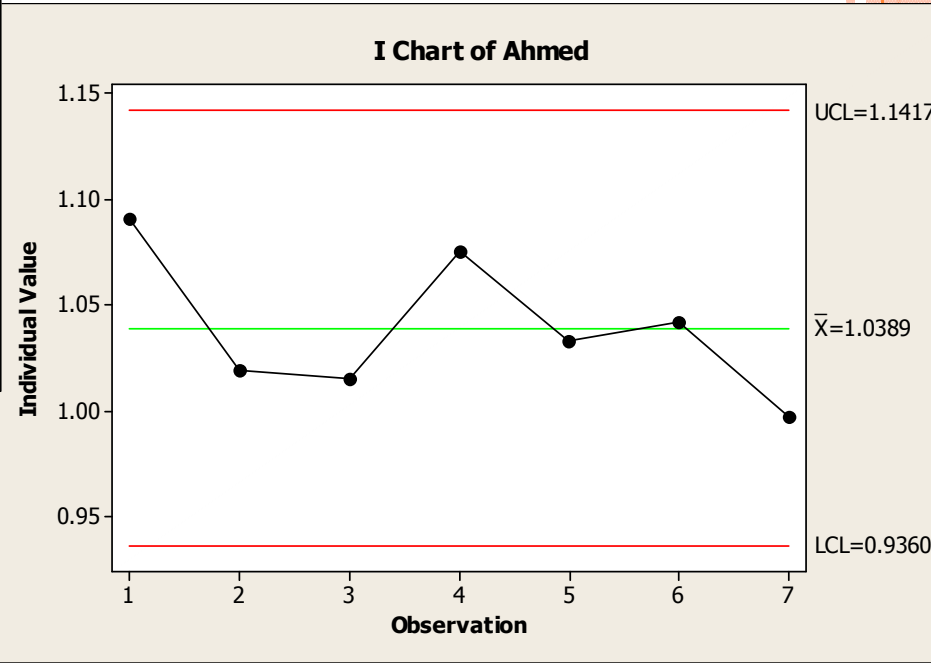
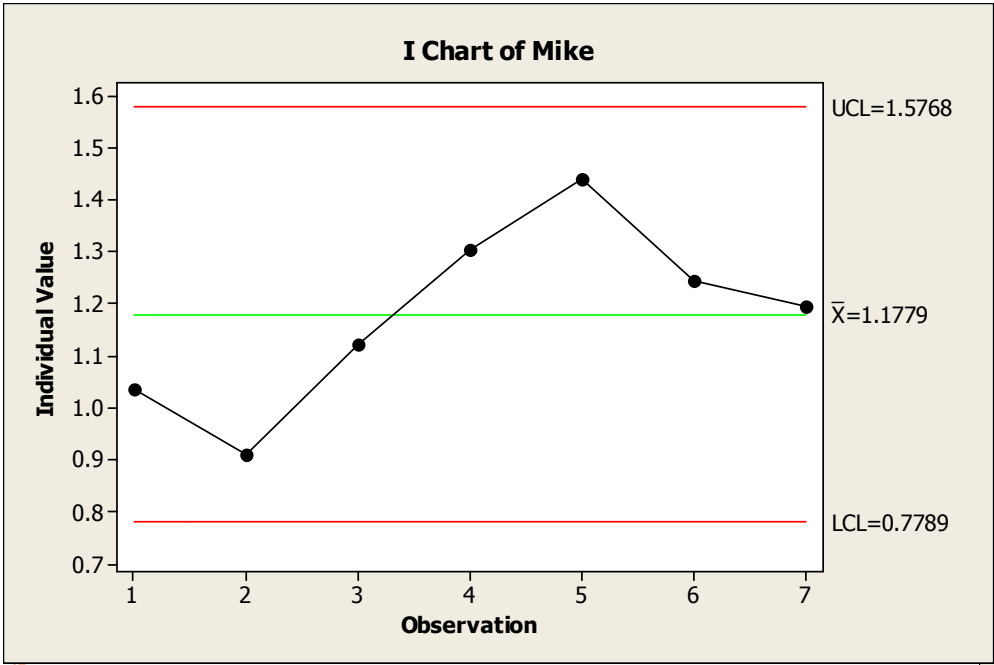
Possible Future Problems

- ❑ Conversion of camera lens settings to parameters for the algorithm.
 - Iris → Exposure
 - Zoom → Field of View
- ❑ Conversion of linear interpolation section of MathCAD code is less direct than other parts.

Old Device Data

(To check consistency and then compare to new device)





Summary of Future Action Items

- ❑ Finish machining and assembly
- ❑ Initial testing and refinement
- ❑ Data collection
- ❑ Final testing and refinement
- ❑ Complete design diagrams
- ❑ Complete procedure development
- ❑ Poster and technical paper