P10541: Micro-gloss Measurement System

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Definition of Project

- microgoniophotometer
- gloss measurement device

Evaluate the gloss characteristics of a sample/surface by projecting a beam of light on the material, and measuring the intensity of the reflection as well as the width/spread of the reflected light.
Customer and Faculty

Customer and inventor
- John Arney
- Professor from Center for Imaging Science (CIS)

Faculty Guides
- Dr. Marcos Esterman (KGCOE, ISE)
- Gerry Garavuso (project mentor)
Current Device

- Multiple parts, not a single package
- Difficult to setup, easily disturbed
- Time consuming to operate
- Takes operator a few hours to learn how to use properly
- Multiple software programs used to capture, evaluate, and produce data
Improvements

- Customer needs
  - Simply construction and packaging
    - Single box/package
- Simplify operation
  - Paper loading
  - Image capture
  - Software
- “One-button” operation
  - From paper load to data results
  - Minimize complexity and training period
Team roles

- ME - enclosure design, sample loading mechanicals, other hardware mechanical design needs support

- EE - integration and automation of the system hardware (camera, sample loading and manipulation, automation of polarizer movement)

- CE - Simplify Java program, initiation of system routine, user interface, and integration of hardware automation (actuating hardware, image analysis, data result output)
Current Progress

- **Week 1**
  - Meet team and faculty
  - Discuss values and norms
  - Overview of device purpose/operation
  - Discuss knowns, unknowns, concerns
  - Brainstorming ideas and solutions

- **Week 2**
  - Learn to operate device
  - Establish customer needs
  - Define target specifications
  - Begin project planning documentation
  - Update EDGE and logbooks
Issues Preventing Deliverables

- No serious issues currently
  - Team member and faculty availability
  - New to senior design process
    - What to expect
    - Project development process
    - EDGE website
  - Understanding device operation
Preliminary Schedule

- **Week 3**
  - Continue to develop customer needs and target specifications
  - Work with device to become more familiar with operation
  - Address concerns regarding integration of hardware and software
  - Finalize schedule for the quarter

- **Week 4**
  - Prepare for design review
  - Concept development and design
  - Continue updating EDGE and documentation

- **Week 5**
  - Documentation and deliverables (ongoing process)
  - Discuss final concepts and design with customer
  - Finalize system concept and design
  - Present system level design