Requirements, Constraints, Engineering Standards

SDDec-04

Problem

- Limited lab space

- Only basic lab usage data available

- A website with lab usage can help students and staff
  - Contain lab schedule
  - Display current lab usage

- Use a camera with machine learning to determine capacity
  - YOLOv5

Requirements

- Create a website for displaying lab statistics and schedule information
  - Intuitive UI, easy to navigate
- Include all labs in Coover Hall
- Provide Canvas integration for application
- Have method for updating lab schedules each semester

Constraints

- Cost less than current LabStats implementation

- Capacity data on site must be current
  - Updated within 10 minutes

- Quick load times on ISU network
  - Website load time under 3 seconds

Engineering Standards

- ISO/IEC/IEEE 29119 (1-4)
  - Five standards for software testing
- ISO/IEC/IEEE 23026-2015
  - Website life-cycle requirements
- IEEE 1016-2009
  - Writing Software Design Descriptions (SDDs)

Intended Users and Uses

- Students
  - Able to view lab schedules
  - Able to see available seating in each lab
  - Able to view average hourly lab usage to plan out lab attendance
- Faculty
  - Provide tool to students (Canvas integration)
  - Schedule extra hours of lab availability for their class
- TAs
  - Announce supplemental Office Hour times in addition to scheduled time
  - Determine when students may be in lab to help at those times