



Team 519: PLC Controls Lab

Grant Hoffmeyer, Onyx Oh, Mason Walters, Jack Vranicar

Acknowledgements

Sponsor: Dr. Camilo Ordoñez, Ph.D
Advisor: Dr. Shayne McConomy, Ph.D

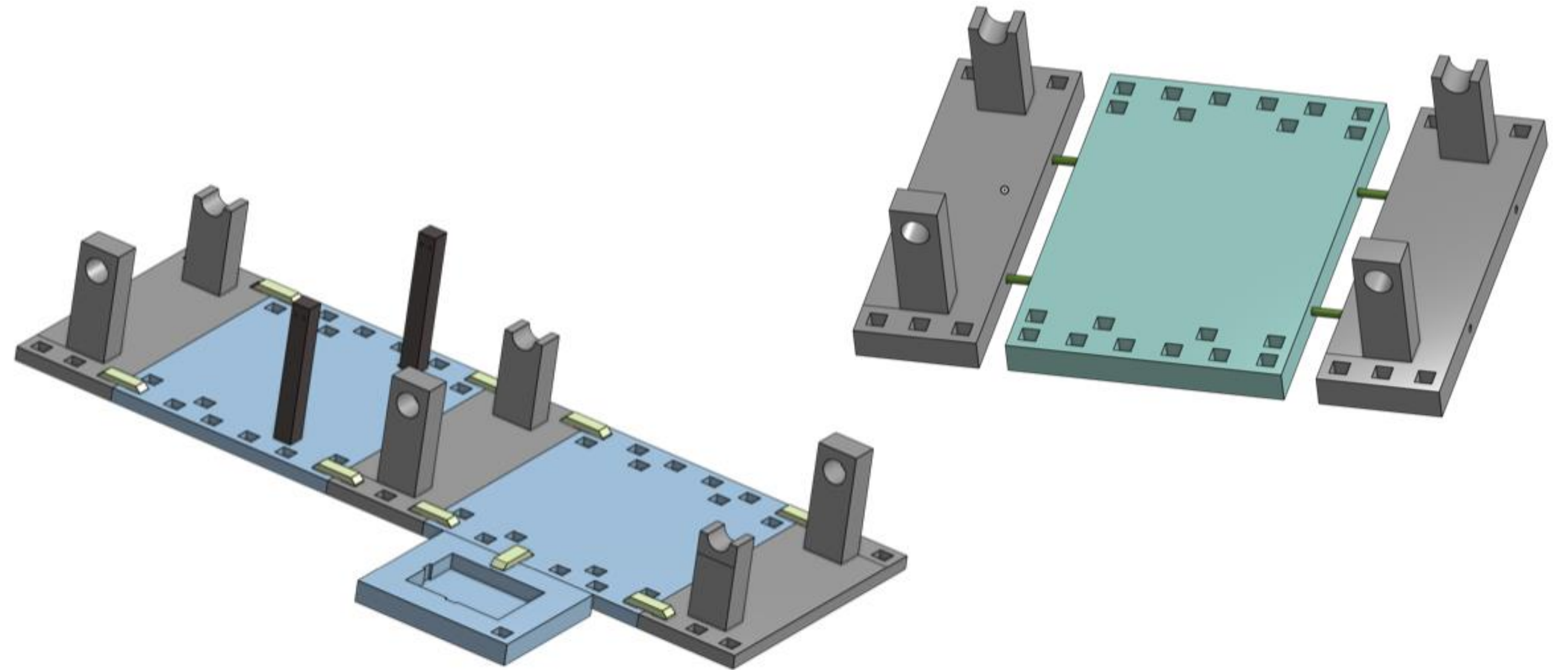
Objective

The objective of this project is to develop curriculum for Mechanical Engineering students at the FAMU-FSU College of Engineering to address the current lack of Programmable Logic Controller (PLC) training.

Motivation

Programmable Logic Controllers (PLCs) play a vital role in industrial automation, yet the FAMU-FSU College of Engineering does not cover their applications. With the rise of automation and smart manufacturing, there is a growing demand for engineers with PLC experience. They are widely used in transportation, robotics, and manufacturing. Integrating PLCs into the Introduction to Mechatronics course will equip students with Ladder Logic programming skills, enhancing their technical abilities and broadening their interest in industrial automation. This curriculum design ensures graduates to be well-prepared for technological advancements, making them more competitive in the job market.

Conveyer Belt Final Design



Key Goals



Create and produce 3 labs involving PLCs

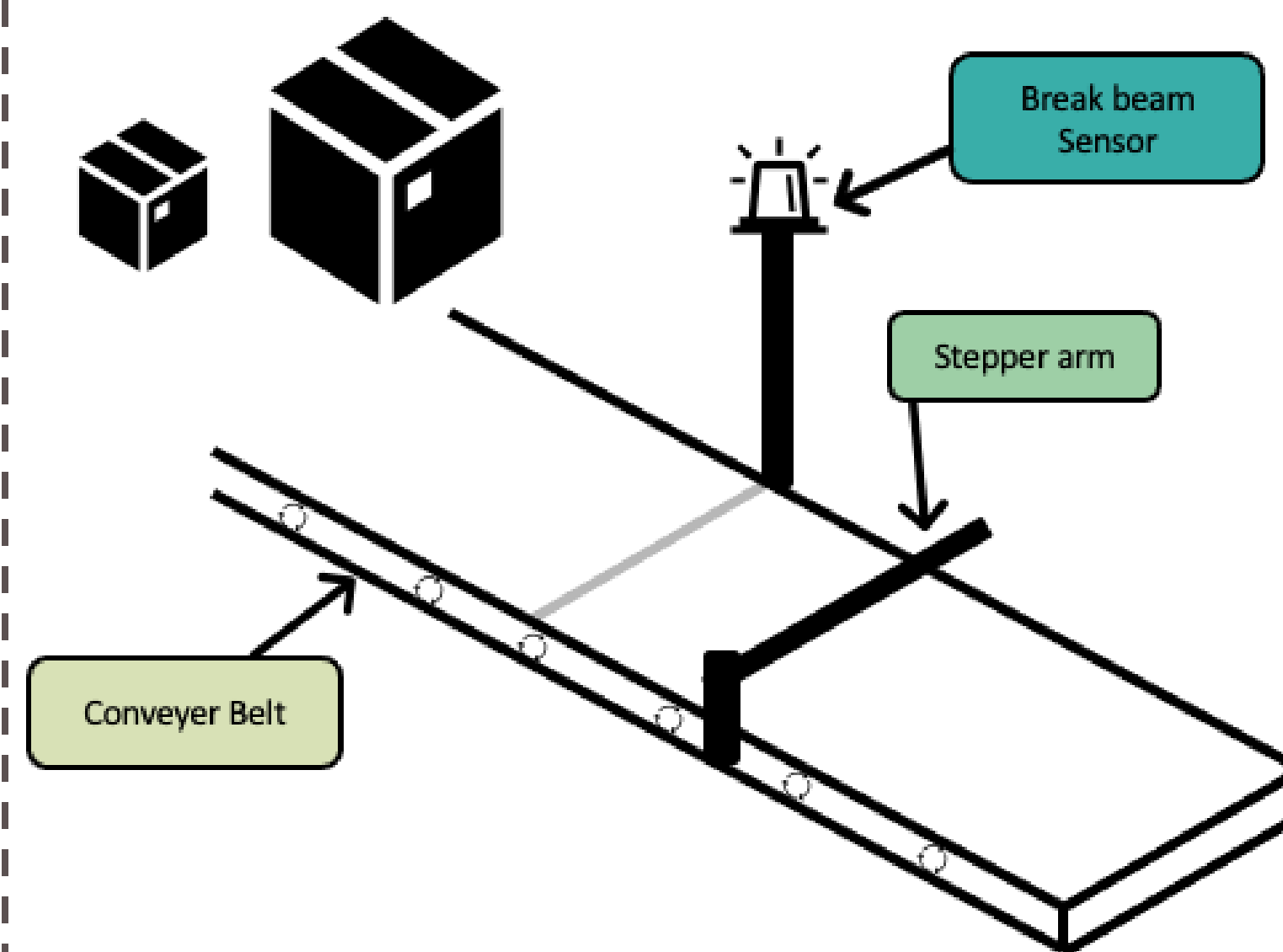


Provide student performance milestones

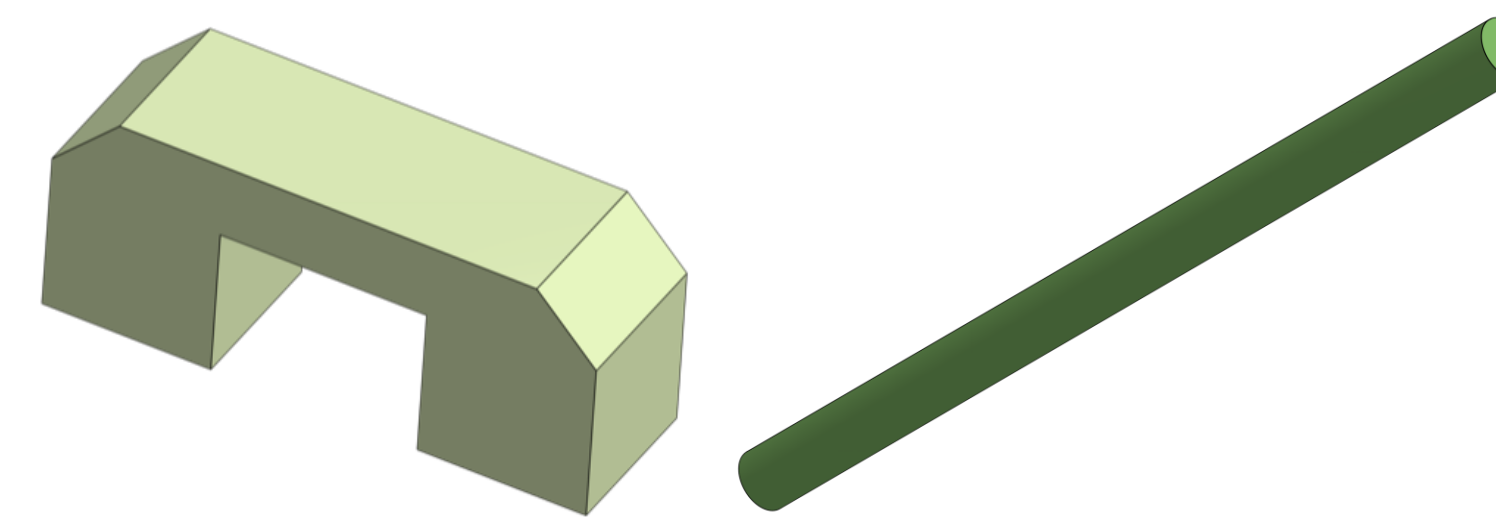


Emphasize the importance of PLCs in the industry

System Design



Versatile Design



This 3D printed clip design is meant to keep multiple parts together, allowing for a versatile design. The base plates will have squares of the same dimension, which will allow the clips to click into the squares. The dowel rods are meant to keep the main base plates together underneath. The rods ensure that the baseplates will not fold when the system is being moved.

Arduino PLC



Curriculum Design

- Lab 1: Ladder Logic simulation via MATLAB
- Lab 2: Conveyer Belt I
- Lab 3: Conveyer Belt II