

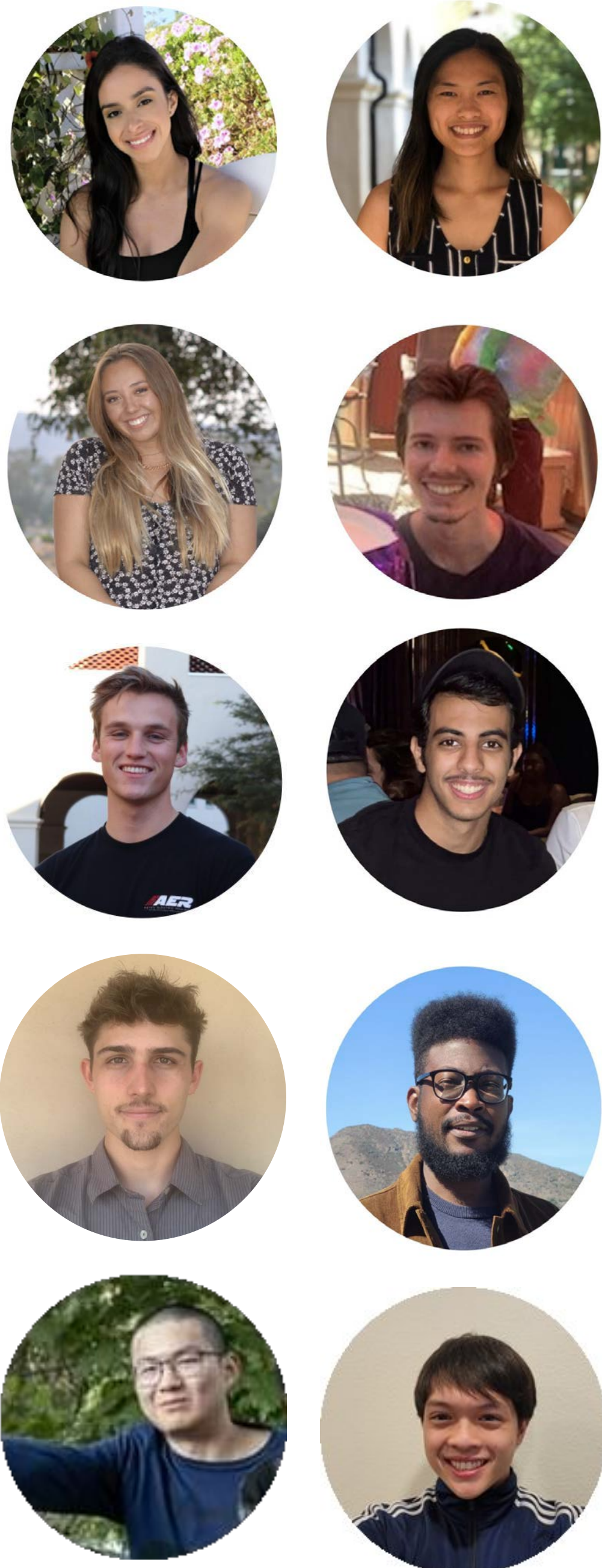
Electrically Integrated Linear Mating Cycle Test System

Instructors: Dr. Scott Shaffar (ME), Prof. Barry Dorr (ECE), Michael Lester (Machine Shop)
 Project 20, Team M08 - Akula Zub Technologies
 Sponsor: Masimo Incorporated, Irvine, CA.

Team Members

ME

ECE



ME Team, top to bottom:
 Nereyda Lopez Resendiz,
 Christine Maryfield, Jacob
 Prittie, Thomas Floisand,
 Han Tang

ECE Team, top to bottom:
 Belinda Nguyen, Mark
 Blair, Fahad Alsahli,
 Andrew Jefferson, Jeff
 Calimbahin

Problem Statement

Design and construct a device to be used by Masimo Inc. that will be used to test and cycle electro-mechanical connectors of varying size and shape while monitoring for their insertion and removal force as well as electrical performance. The device will be able to take two inputs, a male and female connector, apply variable insertion and removal forces, and record data on how the connector performs. This data will be easily displayed and collected through an onboard user interface consisting of an LCD screen and manual keypad.

Design Overview

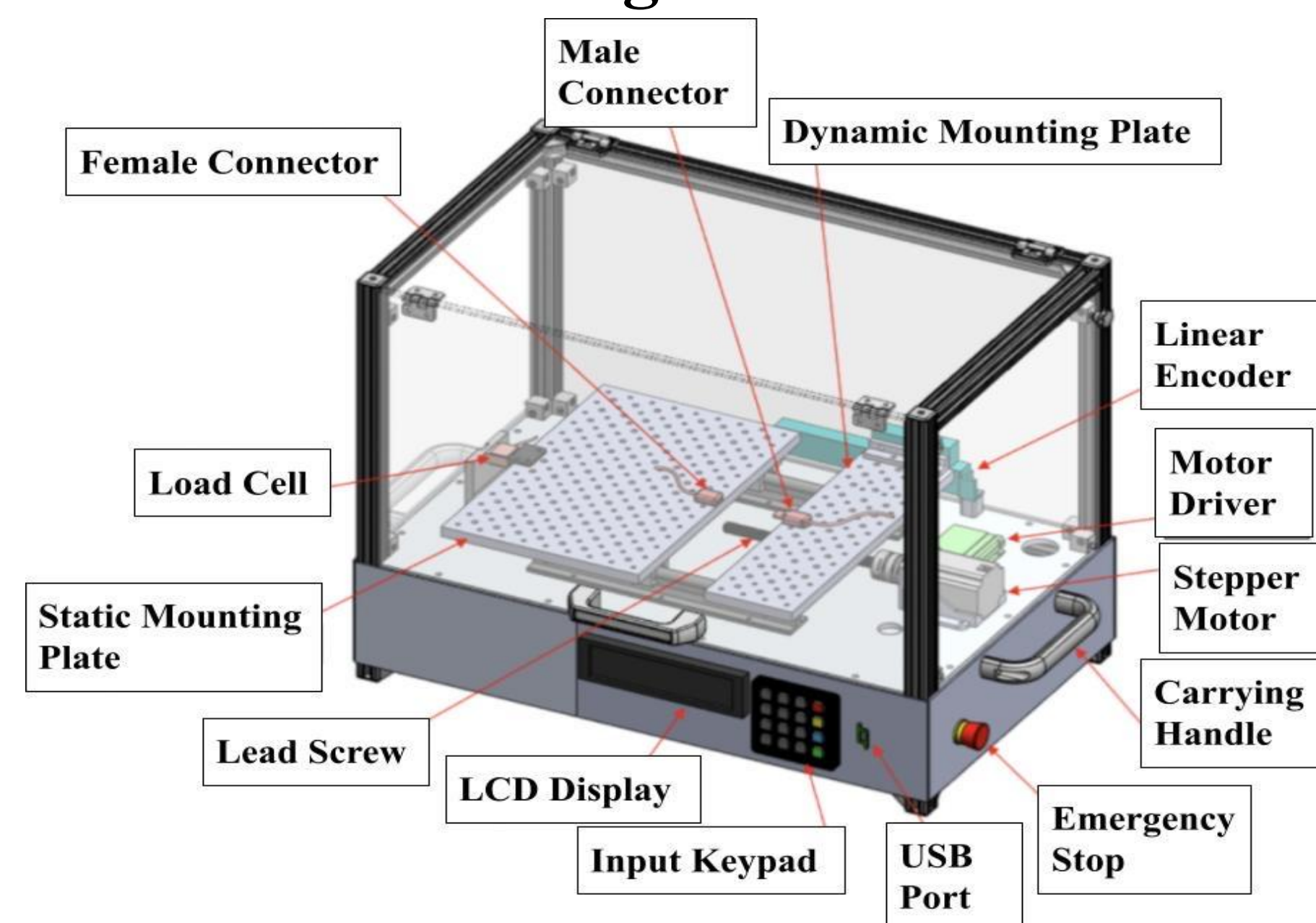


Fig. 1: Device CAD Assembly

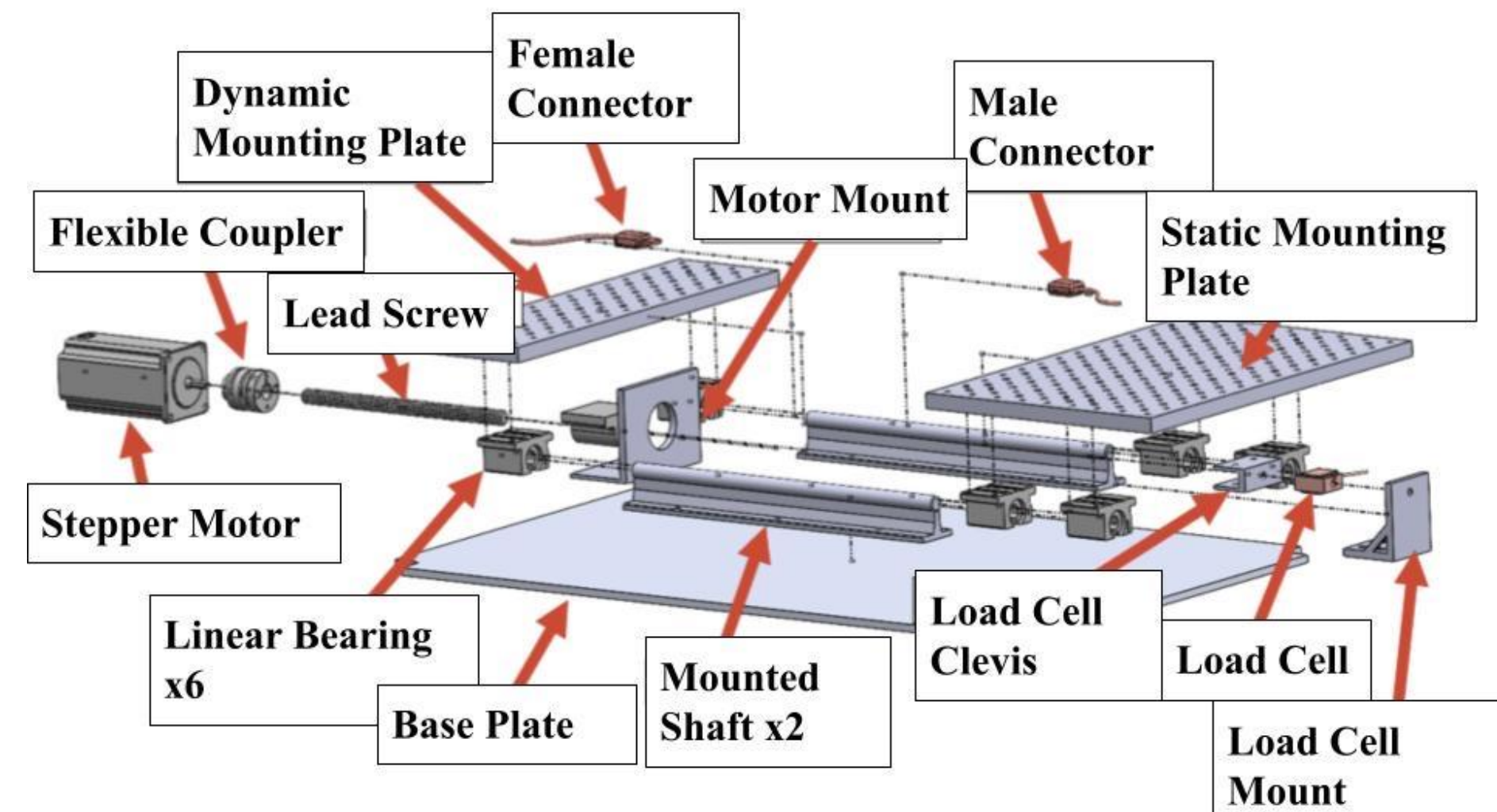


Fig. 2: Drivetrain CAD Assembly

System Description

The device consists of several subsystems, each of which became the focus of a different group member. The system description diagram below breaks down the seven main subsystems of the machine, the controls, connector mounting, force and resistance measuring, drive train, power regulation, enclosure, and lid.

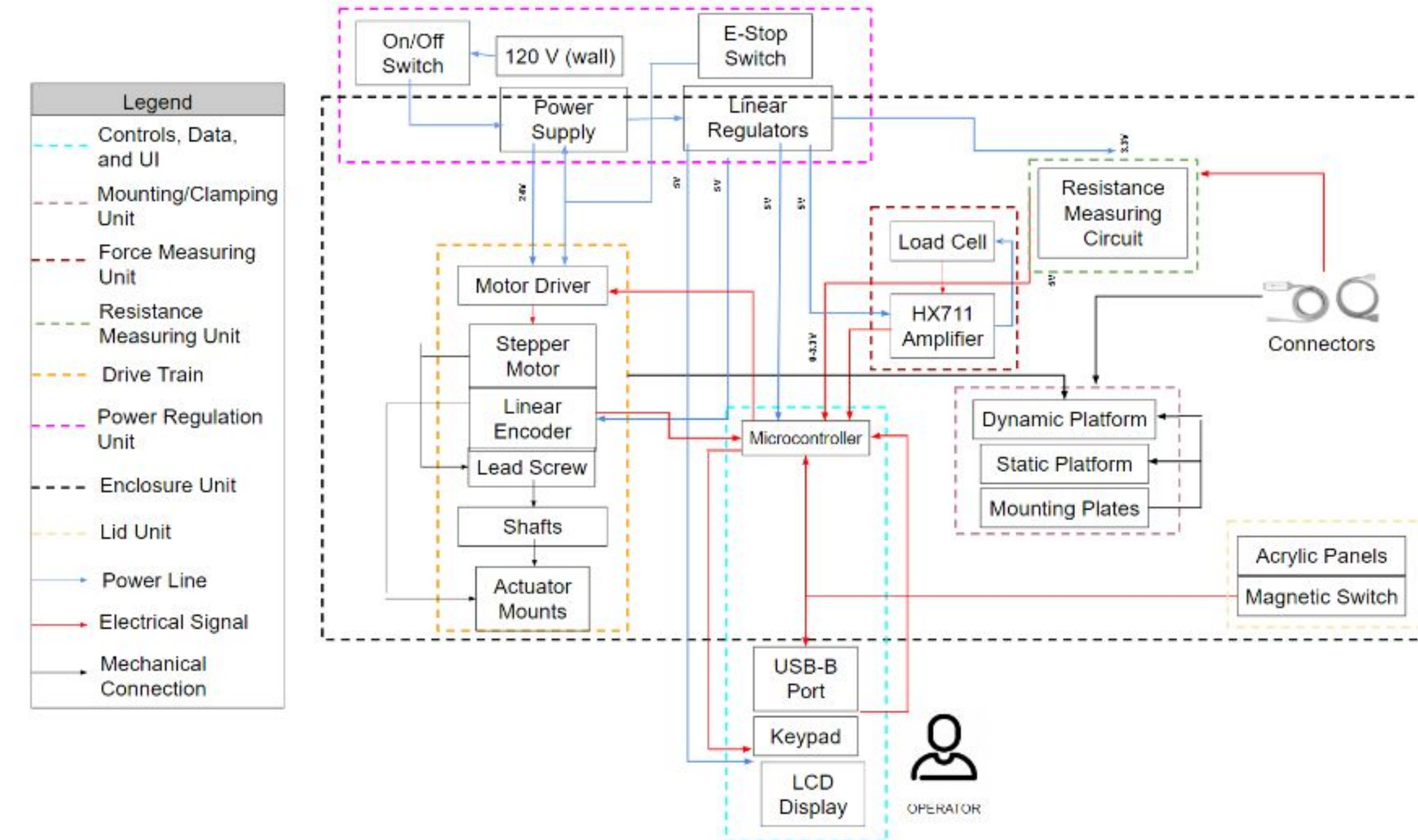


Fig. 3: System Description Diagram

Manufacturing and Assembly



Fig. 4: Frame Assembly

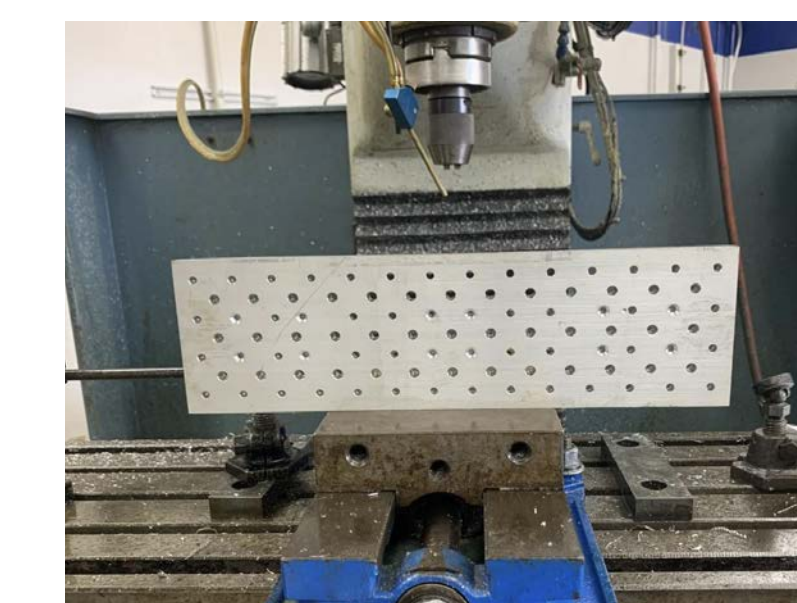


Fig. 5: Plate Manufacturing

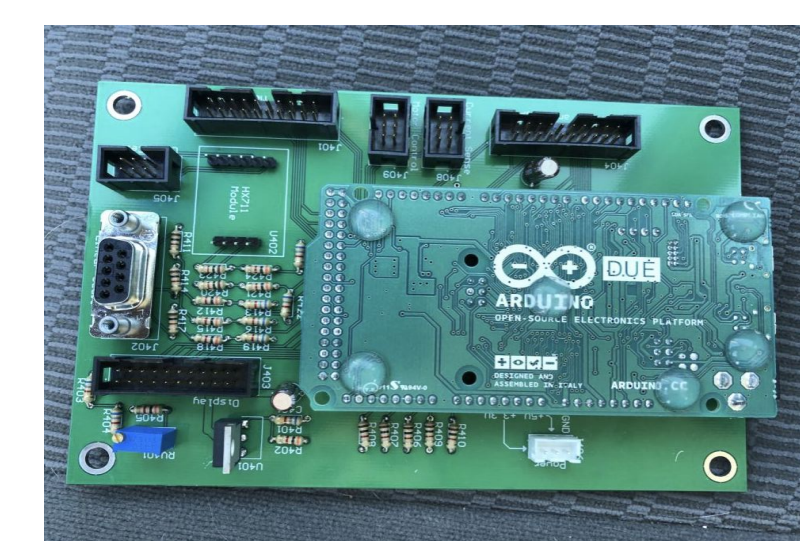


Fig. 6: Arduino Breadboard

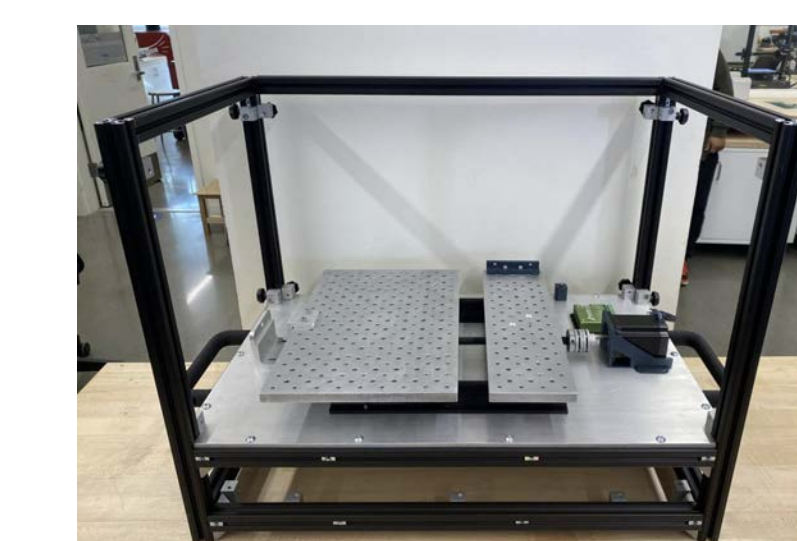


Fig. 7: Plate and Motor Assembly

Testing

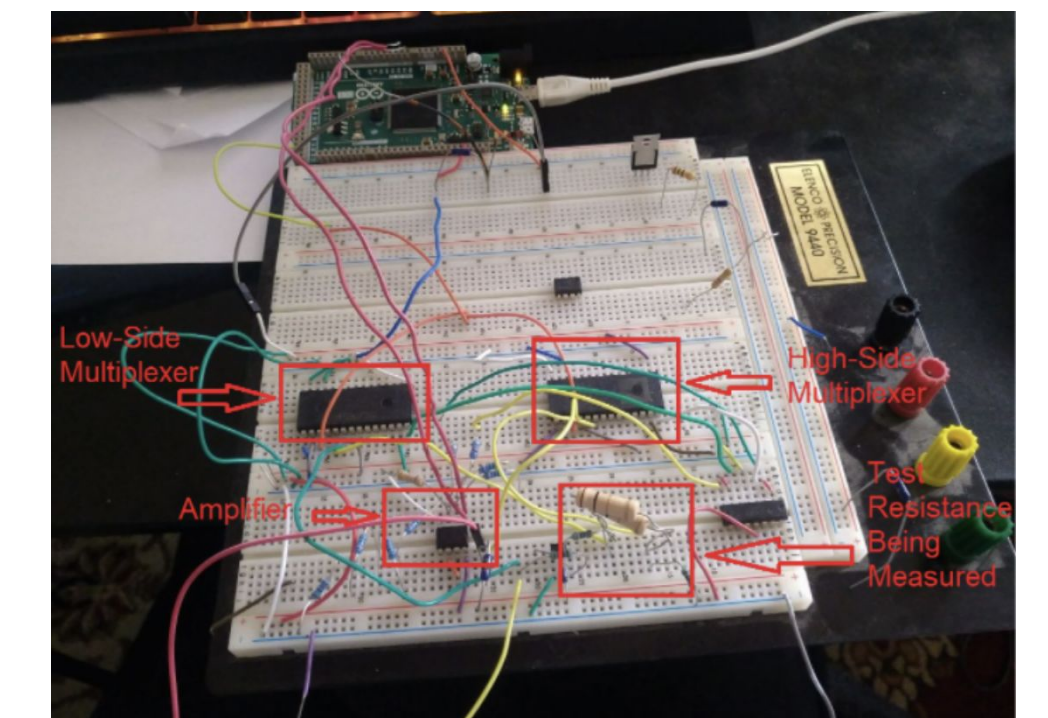


Fig. 8: Resistance Measuring Test

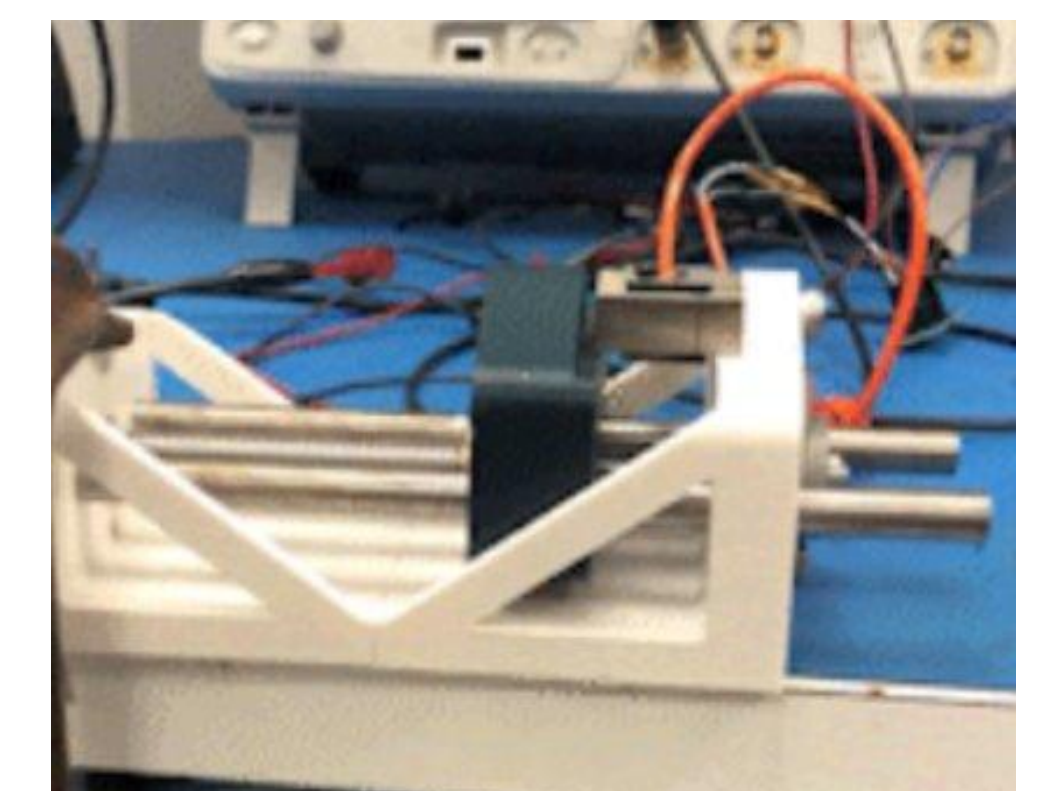


Fig. 9: Load Cell Test



Fig. 10: User Interface Test

Acknowledgements

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