Victor Soto Castro

vmsotocastro@gmail.com | www.victorsotocastro.com | (919) 408 – 6046

EXPERIENCE

Graduate Research Assistant – *CMU Robomechanics Lab* 09/2025 - Present

- Leading mechanical design and prototyping of an 8 kg magnetic wall-climbing robot with a novel articulated spine for ferrous-surface transitions
- Designed and fabricated high-torque joints with 180:1 gear reduction, integrating worm gear transmission and 3D-printed PPA-CF material

Mechatronics Engineer – *Nielsen Kellerman* 08/2023-07/2025

- Owned end-to-end development of a recirculating wind tunnel, from CFD analysis and mechanical design through fabrication, assembly, and validation; now tests 40 anemometers/day in production
- Designed, fabricated, and validated 2 pneumatic assembly presses with safety interlocks (hard stops, hand sensing), increasing production throughput from 220 to 500 parts/day
- Independently developed 20+ custom fixtures, including locating, workholding, go/no-go gauges, to improve assembly efficiency and simplify production workflows
- Reverse engineered brass heat-set insert press via photogrammetry, validated with FEA and tolerance stack-ups, achieving zero defects in production
- Created GD&T drawings, BOMs, and PDM workflows for 5 legacy PCB test systems, enabling on-demand replacements and spare-parts inventory
- Wrote python scripts for data parsing and SPC to improve QA traceability

Deployment Engineer – *RightHand Robotics* 07/2022 - 06/2023

- Installed, integrated, and troubleshot robotic piece-picking systems across 10+ on-site customer deployments, achieving a 100% deployment success rate
- Conducted performance metric analysis of robots through detailed log data collection and communicated results through custom dashboard with deployment managers and customer success teams

SKILLS

Principles: DFMA, GD&T, Tolerance Analysis, Sheet Metal Design, Root Cause Analysis
Software: ANSYS, SolidWorks, LABVIEW, MATLAB, MuJoCo, PADS, COMSOL Multiphysics
Prototyping: Lathe, Mill, Water Jet, Laser cut, Additive Manufacturing (FDM, SLS, SLA)

EDUCATION

Carnegie Mellon University, College of Engineering 08/2025 - 05/2027
M.S. Mechanical Engineering | GPA: 4.0
Relevant Courses: Robot Dynamics and Analysis, Numerical Methods, Mechanics Modeling, Thermal Systems Design, and Electromechanical Design

Tufts University, School of Engineering 07/2018 - 05/2022
B.S. Mechanical Engineering | Cum Laude
Tufts Research Scholar | QuestBridge Scholar | Golden Door Scholar | HSF Scholar

LEADERSHIP

Mentor – *QuestBridge* 08/2023 – Present

- Mentored 6 undergraduate engineering students across 4 universities, providing career planning and professional development guidance that helped graduating mentees achieve a 100% full-time job offer rate