

Sae Na Na

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Work Experience

ASML, Wilton CT

Integration & Crash Architecture Lead

Jan 1, 2024 - Present

- Leading shift integration of the first product iterations from 50 cross-sector engineers and architects across Mechatronics, Mechanical, Software, Electrical, and Power Cabinet teams for a fast-paced product launch of the NXT:870B Reticle Stage
- Own the revolutionary crash architecture, generate & and manage requirements, and oversee implementation and verification
- Developed a model to simulate 3-phase Lorentz motor back EMF braking and impact on multiple-mass-spring systems

Mechatronics Engineer 3

Jan 1, 2022 - Dec 31, 2023

- Validating dynamics of mechatronic systems through simulation (discrete Simulink and continuous-time state space MATLAB models) and modal testing (fixture design, data acquisition, mode shape analysis, and system identification)
- Improved setpoint profiles by refining accel, jerk, and snap limits, and tuning PID feedback, feedforward controllers
- Co-authored 2 patents : On litho control process ([WO2022184375](#)), and on Back EMF braking (in process)

Mechatronics Engineer 2

Jan 13, 2020 - Dec 31, 2021

- Improved setpoint profiles by refining accel, jerk, and snap limits, and tuning PID feedback, feedforward controllers
- Resolved high-urgency customer and factory escalations, including international travel for on-site support in Taiwan and the Netherlands, regarding servo performance, sensor failure, calibration, and statistical process control (SPC) issues
- Developed a finite-state machine in CIF to analyze throughput of the Reticle Handler (multi-robot system) w.r.t initial conditions

MATLAB Simulink MEScope Spotfire Python CIF Back EMF braking Feedback and feedforward control Setpoint design Modal testing

Honda Aircraft Company, Greensboro NC

Hydraulics and Landing Gear Intern

May 29, 2018 - Aug 17, 2018

- Created a thermal model to define the wait time from landing to takeoff by analyzing flight test data and supplier data
- Developed Fault Isolation Trees to aid Production-floor troubleshooting using wiring diagrams on MS Visio
- Wrote a test plan to evaluate a sensor against DO-160 vibration requirements
- Supported change control by modifying CATIA drawings

CATIA MATLAB Visio

Education

2021 - 2025 **M.S. Mechanical Engineering, *Robotics and Controls*, Columbia University**, GPA : 3.9

Robot Learning Python , Computer Vision II Python , Evolutionary Algorithms C++ , Robotics Studio Solidworks

2016 - 2019 **B.S. Mechanical Engineering, Cornell University**, GPA : 4.0, *Summa cum laude*.

Feedback Control Systems, Formal Methods for Robotics, Autonomous Mobile Robots

Research

Undergraduate Research Assistant, Biorobotics and Locomotion Lab, Ithaca NY

Jan 24, 2018 - May 22, 2018

- Designed a knee stop for damage protection by iteratively simulating FEM to achieve a target deflection under a maximum load
- Manufactured composite-foam-and-rubber mechanical stops with 3D molds and robot feet via carbon fiber wet layup

Solidworks Carbon fiber layup

Undergraduate Research Assistant, Zehnder Research Group, Ithaca, NY

Jan 25, 2017 - May 23, 2017

- Ran tension tests on carbon-fiber tubes and processed material properties to evaluate a new manufacturing process
- Analyzed microscope and CT scans on ImageJ for manufacturing irregularities

Projects

Front Assembly Co-Lead, High-efficiency Electric Vehicle Team, Ithaca NY

Aug 21, 2017 - Dec 31, 2019

- Co-led a team of 5 to redesign and manufacture the steering system in Inventor and MATLAB within competition constraints
- Designed a topologically optimized load support web and a generatively-designed Direct Metal Laser Sintered brake pedal
- Constructed the CAD design of a strain gauge motor dynamometer and manufactured it via machining
- Designed a steering wheel by researching driver UX and 3D-print threads; in v2, studied print orientation and fits for phone dash

Autodesk Inventor Autodesk Fusion MATLAB Generative design Topological optimization