

# Sae Na Na

📞 (607) 280-4691    📧 [sn2943@columbia.edu](mailto:sn2943@columbia.edu)    [in linkedin.com/in/SaeNaNa](https://www.linkedin.com/in/SaeNaNa)    [🔗 saenana.github.io](https://saenana.github.io)

## 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