Ashley Miller

(973)-369-8444 | am6555@columbia.edu | linkedin.com/in/ashleymiller20 | millerashley.github.io/portfolio

EDUCATION

Columbia University — New York, NY
MS in Biomedical Engineering, GPA: 4.0/4.0 — *Expected Jan 2026*
Coursework: Drug & Gene Delivery, Soft Tissue Biomechanics, Numerical Methods, Quantitative Physiology, Computational Physiology, Developmental Biomechanics, Robotics Studio, Human-Centered Design & Innovation, Computational Neuroscience: Circuits in the Brain, Cellular Bioengineering & Therapeutics

Cornell University — Ithaca, NY
BS in Engineering Physics, GPA: 3.5/4.0 — *Aug 2020—May 2024*
Coursework: Mathematical Physics, Mechanics, Electricity & Magnetism, Quantum Mechanics, Statistical Thermodynamics, Circuits, Nuclear Engineering, Object-Oriented Programming & Data Structures, MATLAB, Cell Biology, Orthopedic Biomechanics
Teaching Assistant: Introduction to Controlled Fusion (Spring 2024)

TECHNICAL SKILLS:

- **CAD & Fabrication:** Autodesk Inventor, Fusion 360, AutoCAD, Engineering Drawings, Design for Manufacturing, 3D Printing, Laser Cutting, Manual Mill, Manual Lathe, Soldering
- **Simulation & Analysis:** Ansys (Mechanical, HFSS, Fluent, Circuit Designer), Genesys, PyBullet
- **Programming & Data Analysis:** MATLAB, Java, Python, Excel, Minitab
- **Embedded Systems & Electronics:** Raspberry Pi, Sensor Integration, Circuit Design

ENGINEERING EXPERIENCE

Werfen — Norcross, GA
Systems Engineering Intern — *Jun 2025—Current*
- Perform assay protocols and handle real blood samples on automated transfusion analysis platforms as part of formal verification and validation testing for new clinical products.
- Analyze assay performance data using Minitab, gaining firsthand experience with regulated testing workflows and lab-based systems engineering.

TTM Technologies — Syracuse, NY
Radiofrequency (RF) and Microwave Engineering Intern — *Jun 2023—Aug 2023*
- Conducted tolerance analysis on connector launch products using AutoCAD and HFSS, optimizing designs for manufacturability while satisfying customer specifications. Compiled and visualized results in Excel for presentations.
- Tested RF components by measuring S-parameter data with a network analyzer, performing a data reduction, and comparing performances against specifications in Excel.
- Confirmed a key manufacturing error in a product by building a 3D model and simulation, extracting S-parameter data, and demonstrating a close correlation between test and simulation results, increasing quality control.
- Optimized component performance for a via and power divider employing Genesys, AutoCAD, and HFSS in tandem.

Cornell Electric Vehicles Project Team — Ithaca, NY
Drivetrain Lead — *Jan 2023—May 2023*
- Led a team of 20 students in the first organized, team-wide jigging and assembly projects spanning all mechanical subsystems using detailed technical planning to achieve precise alignment and seamless system integration.
- Collaborated with five fellow team leads to select a motor, leveraging calculations to analyze torque, RPM, racetrack characteristics, and alignment with performance objectives.
- Motivated improvements in written and verbal communication skills by promoting engineering documentation, collaboratively writing technical reports, and guiding design review presentations.

Drivetrain Subsystem Member — *Oct 2020—Jan 2023*
- Designed critical drivetrain components such as sprockets, rear brake mount, rolling resistance tester, and rear axles. Conducted verification and validation of designs with in-depth stress analysis in Ansys, ensuring optimal performance.
- Evaluated holistic efficiency of vehicle through comprehensive calculations, providing insights into its theoretical performance; developed Excel tools to elucidate and document calculations for future team members.

RESEARCH EXPERIENCE

Adie Research Lab, Cornell University — *Jun 2023—May 2024*
- Engineered innovative mechanical components for the ARF-OCE (Acoustic Radiation Force-Optical Coherence Elastography) system to accommodate a 65 MHz increase in ultrasound frequency, create a more versatile design, and accelerate the transition from a counter-propagating design to an epi-illuminating design, bringing benchtop setup closer to healthcare settings.
- Researched applications of finite element modeling to reconstruct mechanical properties of phantoms, predict effects of acoustic radiation force, and simulate alternative components and configurations for an enhanced ARF-OCE system.
- Developed an ARF simulation model in Ansys and rigorously validated simulations through experimental data, viscoelasticity models, and benchmark mechanical property testing equipment.