

Zahin Ritee

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EDUCATION

Columbia University, New York City, NY <i>M.S. in Mechanical Engineering (4.11)</i> Scholarships: GEM Scholarship	Sep '25 - May '26
Columbia University, New York City, NY <i>B.S. in Mechanical Engineering- Magna Cum Laude (4.104)</i> Scholarships: Barry Gold Water Scholarship '23, Class of 1990 Scholarship '22-'23, \$82.661K Columbia Grant	Sep '23 - May '25
Adelphi University, Garden City, NY <i>B.S. in Physics- Summa Cum Laude (4.00)</i> Scholarships: \$112K Presidential Scholarship, Dr. Edward Burke Award, Omicron Delta Kappa Emerging Leader, Physics Honor Society Inductee, Dean's Student Circle	Aug '20 - May '25

WORK EXPERIENCE

Fire Safety Research Institute, UL, MD, Mechanical Engineering Intern & GEM fellow <ul style="list-style-type: none">Implemented TDLAS in CAPA exhaust to measure water vapor in real time, using Python for data analysis and LabVIEW for laser and optical fiber control.Designed in Autodesk Inventor, integrated lasers and performed precision optical alignment.	Jun '25 - Aug '25
Engineering Design, Columbia University, NY, Teaching Assistant II <ul style="list-style-type: none">Set up and instructed weekly labs, graded lab reports and quizzes in SpeedGrader for 77 students.	Sep '24 - May '25
Brookhaven National Laboratory, NY, Summer Student intern <ul style="list-style-type: none">Completed training in Quantum Computing through the Virtual Co-Design Center for Quantum Advantage.	Jun '22 - Jul '22

RESEARCH EXPERIENCE

Nonlinear Controls, Columbia University, NY, Robotics and Controls <ul style="list-style-type: none">Implemented the Generalized Secant Controller on nonlinear systems; manuscript in preparation for publication.Helped develop speech-based command control with NLP	Sep '25 - Dec '25
Newman Lab, Cornell University, NY, Condensed Matter Physics <ul style="list-style-type: none">Conducted DFT calculations on Rb₃Sb and GaAs using Cornell HPC cluster.Assessed potential of Rb₃Sb as a source of spin-polarized photoelectrons.	Jun '23 - Aug '23
Non-Linear Optics, Adelphi University, NY, Super-Resolution Nonlinear Optics <ul style="list-style-type: none">Aligned multi-beam optical setup for quantum dot interference.Configured Spatial Light Modulator as diffraction mask to obtain super resolution in optical lithography.	Oct '21 - May '23

ENGINEERING PROJECTS

Robotics Studio – Legged Robot , Columbia University, NY <ul style="list-style-type: none">Designed and modeled a four-legged robot in SolidWorks; 3D printed and assembled all structural components.Integrated and wired all electronic components; configured a Raspberry Pi for remote operation using Python in Visual Studio.Programmed the robot's walking gait and obtained a stable speed of 5cm/s.	Sep '25 - Dec '25
Senior Design Project – Space Robot, Columbia University, NY <ul style="list-style-type: none">Designed and simulated a modular block-based construction robot in SolidWorks, performing FEA, motion studies, and Fusion 360 CAM for manufacturability.Fabricated components using CNC machining (Tormach, Fryer Mill, Lathe), 3D printing, laser cutting, and water jetting to assemble and test the robot.Conducted tensile testing and performance analysis to validate structural integrity and system scalability.	Sep '24 - May '25
Machine Design Project – Linkage Mechanism, Columbia University, NY <ul style="list-style-type: none">Led kinematic planning, 3D modeling, and linkage design in SolidWorks; performed motor analysis for selection, Fusion 360 CAM for toolpaths, and manufactured components using 3D printing and water jetting.Programmed and controlled the system in C++ with a PID controller, integrating wiring, sensors, signal processing, transmission design, and actuation tuning for optimized performance.	Sep '24 - Dec '24

SKILLS

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- Programming, Design & Simulation:** MATLAB, Python, C++, LabVIEW, SolidWorks, Fusion 360, Autodesk Inventor, FEA.
 - Manufacturing & Fabrication:** CNC Machining (Tormach, Fryer Mill, Lathe, Drill Press, Band Saw), 3D Printing, Laser Cutting, Water Jetting.