Nicholas A. Gavalas
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EDUCATION

Cornell University, College of Engineering, Ithaca, NY **Expected May 2027**
Bachelor of Engineering, **GPA: 3.78**; Major Mechanical Engineering; Minors: Business, Aerospace Engineering
The Bronx High School of Science, New York, NY **September 2019 - May 2023**
Selected Coursework: Physics: Mechanics, Electricity & Magnetism, Waves & Quantum Mechanics; Statics & Mechanics; Newtonian Dynamics; Thermodynamics; Mechanical Systems; Fluid Dynamics; Systems engineering; Aerodynamics & Aeronautics; Differential Equations; Linear Algebra; Data Science; Fluid Mechanics; Finance; Marketing; Accounting

SPECIALIZED SKILLS

Technical: MATLAB, FEA, SolidWorks, ANSYS , Autodesk Inventor, Autodesk Vault Machining, Fusion, Excel, Rapid Prototyping, CNC machining (CAM), Adobe Illustrator, InDesign, Java, Python, Soldering & Electrical Design, Kicad, Harness design, RCA, Robotics Engineering, and control systems; Language: English (native), Greek (fluent); Spanish (basic)

ENGINEERING EXPERIENCE

Brakes System designer*, Cornell Racing,* Ithaca, NY **Summer 2025 – Present**
- Developed and validated (with on car data) a steady state thermal model, that was used to determine thermal stresses in a static structural model to reduce brake rotor mass (20% weight reduction in both front and rear rotors)
- Developed an asymmetric flange design, using iterative design (2d Ansys structural) to minimize rotor flange area
- Designed caliper testing campaign to lead to a 20% gain in front piston area and an 8% weight reduction in the system
- Redesigned cars brake line plumbing system to reduce pedal compliance and make brake bleeding easier

Engineering Intern, *Raglan LLC, Wilmington, NC* **May 2025- August 2025**
- *Designed and prototyped an enclosure for a swappable 3.2 KW hour battery under strict weight constraints*
- *Designed, manufactured, tested and implemented the low voltage wiring harness for a V-22 & H-47 Capable 6x6 UTV*
- *Produced various low voltage components and an all-new dashboard for an electric 7k Munitions handling system*
- *Designed ergonomic modular multipurpose workbenches for efficient R&D and shop design*
- *Drafted, designed and finalized data sheets for all company products for confidential and public marketing purposes*
- *Set up a dynamometer to obtain data to tune an NCSV on Raglan's proprietary Unidrive software*
- *Worked with machinists to develop efficient part design for mass development of strategic remanufactured panelwork*

Team Member, *Cornell Racing,* Ithaca, NY **Fall 2024- Fall 2025**
- Designed, manufactured and tested a dynamometer enclosure made to withstand high impact collisions
- Redesigned wheel retention system, for weight optimization, leading to a 40% weight reduction in the part
- Designed and implemented multipurpose cutting-welding jigs for steering column

Technical Project Manager, GAIA, Ithaca, NY **Fall 2023 – Spring 2025**
- *Wrote the 2024-2025 Problem Statement, a full guide to competing in the GAIA competition (in collaboration with World bicycle relief) , the creation of an instrumented bicycle used to collect on site testing data and fatigue life analysis in rural Zimbabwe*
- *Refined & Rewrote MATLAB Scripts for a generator, creating a more cost-effective, magnet reducing design*
- *Prepared & Hosted lectures on electrical & mechanical engineering, in relation to wind turbine design*

RELEVANT ACADEMIC PROJECTS

Open Design Project, MAE 2250, *Cornell University* **Spring 2025**
- 3d Modeled and manufactured a new linkage mechanism for an umbrella creating a more rigid and lighter design
- Used excel and statics to determine optimal lengths for linkages

Final Design Project, *ENGRI 1170,* Cornell University **Fall 2023**
- *Used Simulation to determine optimal gear ratios, wheel sizes & weight distribution for an RC drag / tug of war car*
- *Led 3d modeling and manufacturing efforts, creating a full SolidWorks 3d model with accurate CG's and moments*
- *Drafted a full technical report detailing design considerations, iterations, and testing procedures*
- *Used Iterative design principles to refine initial design, maximizing acceleration, tow capacity & repairability*

LEADERSHIP EXPERIENCE

Team Manager & Advisor, *ECS,* Ithaca, NY **Fall 2023 – Fall 2024**
- *Oversaw the design of a cut-price wind controller, to provide rural Peruvian families with stable electricity*
- *Advised team in structure, recruitment, and function, creating a stable self-sustaining team*
- *Edited club grant submissions and applications, leading to the teams first source of independent funding*
- *Coordinated on-site deployment of wind turbine controller, leading to successful prototype deployment*

ACTIVITIES/INTERESTS

NYC First: Assisted teams in robot development and troubleshooting, inspected robots to make sure they met safety standards; Emerson Design Studio: (Mill & Lathe machinist); Bright minds hour of science: volunteer educator; Hiking; Sailing;