

Nitya Shukla

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EDUCATION

Cornell University, College of Engineering, *Ithaca, NY*

Aug 2023 – Dec 2026

Bachelor of Science in Mechanical Engineering | GPA: 3.97/4.00

Relevant Coursework: Statics & Mechanics of Solids, Dynamics, Mechanical Design, Thermodynamics, Circuits, Fluid Mechanics, System Dynamics, Mechanics of Engineering Materials, Engineering Probability & Statistics

WORK EXPERIENCE

aRoboticsCompany (aRC), Mechanical Engineering Intern, *Ossining, NY*

May – Aug 2025

- Designed 3-DOF robot arm, using iterative MATLAB scripts to identify optimal arm length and mass, reducing deflection to < 3 mm, and enabling adjustable positioning through implementation of quick-release pin
- Optimized camera optics, maintaining 90° FOV with 1" sensor format, and designed lock-lever mount on Autodesk Fusion 360 that lowered center of mass of camera by 8% to increase arm stability and ensure proper imaging
- Designed 4-wheel hoist cart to accommodate selected BLDC motor and updated antenna mount with FoS > 3
- Manufactured and assembled inductive test loop; fabricated stator units with 3D-printed jigs and power tools; CNC-machined L-brackets and torpedo components; drilled pipe connections; and fully assembled system

Cornell Engineering, Academic Excellence Workshop (AEW) Facilitator, *Ithaca, NY*

Jan – May 2025

- Led one-credit AEW course for 10 students in MATH 2930: Differential Equations for Engineers, reinforcing concepts through collaborative problem-solving and coordinating with course staff to support curriculum goals
- Created tailored worksheets and review presentations to enhance student comprehension and engagement

ENGINEERING PROJECTS

Cornell AutoBoat, Cornell Engineering Project Team, *Ithaca, NY*

Mechanical Design Lead

Mar 2025 – Present

- Lead team of 8 to design boat for annual RoboNation competition, delegating projects and guiding team members
- Simulate hull and ama stability using Orca3D Marine Design software through Rhinoceros 3D, implementing bilge keel and lowering center of mass of hull to raise peak righting arm by ~1 in and increase overall stability by 30%
- Analyze hydrodynamics with CFD in Ansys Fluent to inform design changes and reduce drag of hull and amas

Mechanical Engineer

Feb 2024 – Mar 2025

- Manufactured flat-bottom monohull prototype using fiberglass and epoxy resin through wet composite layup
- Designed and prototyped modular, dual-component enclosures with spring plungers and dovetail joints to securely house electrical components, enable easy removal from hull interior, and optimize accessibility of components

National Center for Adaptive Neurotechnologies (NCAN), Biomechanics Researcher

Aug 2023 – Sep 2024

- Consolidated ~170 musculoskeletal modeling parameters of lower extremity into SQL relational database and developed Python scripts to analyze demographic differences in parametric data through statistical testing
- Refined OpenSim scaling tool workflow, minimizing RMS error to < 1 cm through control point adjustment, and implemented MATLAB functions to extract muscle fiber lengths and Ia afferent firing rates from simulation output
- Received BASF Expanding Knowledge in Science Award at 2023 Westchester Science & Engineering Fair

NASA L'SPACE Program: Mission Concept Academy, Thermal Engineer

May – Aug 2025

- Collaborated with payload engineer to design Mars rover's thermal control system, integrating passive insulation, active heating and cooling, and system-level monitoring to manage extreme Martian temperatures
- Applied risk management and heat transfer principles to optimize thermal protection, integrating multi-layer insulation, aerogel panels, thermoelectric coolers, electric heaters, radiators, and pressure-controlled heat pipes
- Authored design review documentation with trade studies, heat flow maps, and verification and validation plans

SKILLS

3D Modeling and CAD: Autodesk Fusion 360; Rhinoceros 3D; Siemens NX

Simulation: Static Stress Analysis (Autodesk Fusion 360); CFD (Ansys Fluent); Hydrostatics & Stability Analysis (Orca3D Marine Design); Forward Dynamics, Inverse Dynamics, and CMC Simulations (OpenSim)

Software Skills: Python; MATLAB; Microsoft Office Suite; Google Workspace

Manufacturing Skills: Engine Lathe; Drill Press; Manual and CNC Mill; Miter Saw; Vertical and Horizontal Bandsaw; FDM 3D Printing; PPE