

Moez Amini

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Objective

Mechanical engineer with hands-on experience in precision mechanical design, manufacturing, system integration, and reliability engineering for high-performance electromechanical systems. Experienced in prototype validation, test development, and data-driven characterization to deliver robust, manufacturable hardware in fast-paced engineering environments. Seeking roles in mechanical design, advanced hardware development, and system integration.

Education

Cornell University — College of Engineering

Bachelor of Science in Mechanical Engineering

Aug 2022 – May 2026

Master of Engineering in Mechanical Engineering (Early Admit)

Beginning Jan 2026

*Graduate coursework begins Spring 2026; approximately half completed alongside the B.S., with the remainder taken part-time while working full-time.

Skills

Mechanical Design & Manufacturing

Siemens NX, SolidWorks, Fusion 360; GD&T, tolerance analysis, root-cause analysis, DFMEA, DFM; precision alignment, fixture design; CNC machining, additive manufacturing (3D printing), laser cutting; prototyping and manufacturing processes

Systems, Hardware & Instrumentation

System-level integration and test of complex hardware; troubleshooting and issue resolution; pneumatics, cryogenics, high-field magnets, linear induction motors; instrumentation, sensor integration, MEMS systems; optical alignment; cleanroom procedures

Analysis & Simulation

ANSYS (Workbench, Fluent, Maxwell), NX Simulation; finite element analysis (FEA); hand-calculation validation

Programming, Data & Tools

Python, MATLAB, C++, Java, LaTeX; LabVIEW; Linux, Git, Docker; data acquisition and analysis; statistical analysis and visualization; Teamcenter, BOM generation, ECN/ECR workflows

Languages

English, Persian/Dari, Turkish

Work Experience

Cornell University — Mechatronics Teaching Assistant (MAE 3780) · Ithaca, NY

Jan 2026 – Present

- Support students in gaining hands-on, system-level engineering experience with microcontrollers, transistors, sensors, actuators, and closed-loop control systems; assist with debugging and validation of hardware-software interactions
- Troubleshoot electromechanical hardware, wiring, and software issues in real time during laboratory sessions

ASML — Mechanical Design Engineer Intern · Wilton, CT

May 2025 – Aug 2025

- Led feasibility study on integrating optical transceiver solution to replace direct-to-connect cables in high-acceleration reticle stage, improving system reliability and reducing overall mass and cost in DUV&EUV lithography machines.
- Designed and built a high-precision 4-DOF test fixture to evaluate optical transceivers under nanometer positional changes and high accelerations, assessing performance, misalignments, failure risks, and identifying data-driven patterns
- Developed a functional prototype for transceiver integration on the DUV reticle stage, optimizing manufacturability and mass/volume while contributing to a 30% cost reduction and supporting ASML's PFAS-free initiative.
- Coordinated with cross-functional teams and suppliers to evaluate design tradeoffs and establish testing procedures.

Cornell Hyperloop Project Team — Sub-Team Lead · Ithaca, NY

Sep 2022 – Nov 2024

- Managed subsystem integration and led design reviews for a 50+ member team, ensuring mechanical interfaces, requirements, and configuration states remained consistent across mechanical, electrical, and software assemblies.
- Led design, fabrication, and full documentation of pneumatic and magnetic braking systems, emphasizing configuration accuracy, manufacturability, and system-level safety for a high speed magnetic levitation pod.
- Designed, built, and tested the pneumatic braking system from the ground up; performed structural and thermal FEA (supported by hand calculations) and analyzed test data to identify failure modes and guide design improvements.
- Developed an automated emergency braking system to maintain reliable operation under fault conditions.

Canyon Magnet Energy — Electro-Mechanical Engineer Intern · Stony Brook, NY

May 2024 – Aug 2024

- Researched, designed and built a Dynamo-type HTS Flux Pump from scratch within two months, achieving the capability to pump up to 700 Amps into HTS magnet coils under cryogenic conditions (77K).
- Designed and fabricated a cryogenic test enclosure, defining instrumentation layouts and thermal pathways to evaluate coil behavior, operational limits, and failure modes under varying test conditions.
- Supported HTS coil-winder development by verifying tolerances and repeatability and documenting design updates.

Cornell Engineering Instructional Labs — Lab Assistant & Intern · Ithaca, NY

Dec 2023 – May 2025

- Tested, calibrated, and documented mechanical and electromechanical lab equipment (rotor balancing, beam vibration, hot-wire anemometer), verifying performance and safety requirements and ensuring proper configuration for lab use.

Selected Projects

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- **YooHoo! Guard — Child Safety Wearable (Senior Design)** — Led system integration and mechanical design of a sealed, wearable enclosure integrating pressure, optical, GNSS/LTE, and IMU sensors; developed CAD, material selection, and DFMEA to validate safety, reliability, and manufacturability.
 - **Small Wind Turbine Blade Design** — Designed, fabricated, and experimentally validated a low-Re wind turbine blade using blade element theory and wind-tunnel testing.
 - **Little Red Rover Autonomous Maze Navigation** — Implemented and integrated LiDAR sensing, particle-filter localization, and A*/RRT planning in ROS; debugged system-level failures and sensor data consistency to achieve reliable autonomous maze escape.
 - **Cube Craze Autonomous Robot — “Black Pearl”** — Designed and built an autonomous robot for Cornell’s 2025 Cube Craze competition in two weeks, with custom drivetrain and intake mechanisms and integrated power electronics, sensing, and control logic under strict competition constraints.

Extracurricular Activities**Cornell Technology Commercialization Innovation - Engineering Commercialization Consultant**

Spring 2025

- Evaluated faculty-developed technologies for technical and commercial feasibility by assessing risks, constraints, and potential failure modes; delivered structured recommendations on licensing strategy, market fit, and startup development pathways.

Cornell Professional Academic Advising Lead (PAAL) - Selection Committee Member

2023–2024

- Selected as the undergraduate representative to review nomination packages and collaborate with faculty in evaluating and selecting advising award recipients.

References

Available upon request.