

Mohammad Traore

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EDUCATION

Syracuse University

B.S. Mechanical Engineering, Minor in Computer Science

Syracuse, NY

Expected May 2026

Relevant Coursework: CFD Applications, Machine Design, Thermodynamics, Control Systems, Dynamics of Mechanical Systems, Design Practice, Synthesis of Mechanical Systems, Data Structures, Systems & Network Programming

EXPERIENCE

Mechanical Design Engineer – JMA Wireless

September 2025 – Present

RF Radome Wind-Load Optimization

Syracuse, NY

- Designing parametric radome cross-sections and wind-tunnel test fixtures in SolidWorks targeting $\geq 10\%$ wind-load reduction, producing manufacturing-ready drawings with GD&T callouts and safety factors ≥ 2
- Conducting steady and transient CFD analyses in ANSYS Fluent with inflation-layer meshing and mesh-independence studies; predicting drag coefficients (C_d) validated against wind-tunnel data within $\leq 10\%$ error
- Built MATLAB pipeline to acquire, process, and visualize wind-tunnel data, applying machine learning to compute Reynolds numbers and C_d values for direct CFD comparison
- Delivering weekly technical briefings to stakeholders summarizing performance trends, design iterations, and engineering risk assessments

Energy Analyst – Industrial Training Assessment Center

January 2024 – August 2025

Manufacturing Energy-Use Diagnostics & Optimization

Syracuse, NY

- Conducted energy audits for small-to-medium manufacturing facilities, identifying system inefficiencies and recommending data-driven operational improvements
- Delivered optimization recommendations that reduced a client facility's annual utility costs by $\sim 9\%$ and improved equipment productivity by 12% through load balancing and process scheduling adjustments
- Analyzed energy consumption data with statistical modeling and machine learning in Python and Excel; synthesized findings into client-facing technical reports

Undergraduate Researcher – SYFY Lab

August 2024 – January 2025

Soft Material Deformation & Flow Dynamics Simulation

Syracuse, NY

- Developed computational models to simulate soft-material deformation and flow, investigating polymer-liquid mechanics at the intersection of capillarity, elasticity, and hydrodynamics
- Applied 3D printing to fabricate custom fixtures for material shaping and experimental testing

SKILLS

Engineering Software: SolidWorks, ANSYS Fluent (CFD), AutoCAD, Fusion 360, LabVIEW, Arduino

Programming: MATLAB, Python (TensorFlow, NumPy, OpenCV), C, Java, R, Haskell, Racket, L^AT_EX, EES

Technical Skills: GD&T, FEA, CFD Meshing, Machine Design, Fatigue/Stress Analysis, 3D Printing, Composite Handling

Professional: Technical reporting, cross-functional collaboration, stakeholder presentations, data-driven decision making

PROJECTS

Self-Driving Car Simulation | *Python, TensorFlow, NVIDIA CNN Architecture*

October 2025 – Present

- Collected and engineered steering-angle training data from Udacity's simulator; preprocessed and augmented images via ROI cropping, normalization, noise filtering, and geometric transformations to improve dataset quality and model generalization
- Trained an end-to-end CNN based on NVIDIA's autonomous-driving architecture to predict steering commands directly from raw camera images, achieving full autonomous vehicle control in simulation

Go-Kart Two-Stage Reverted Speed Reducer | *SolidWorks, MATLAB*

January 2025 – May 2025

- Designed a two-stage reverted gear reducer in SolidWorks; performed static shaft stress analysis (DET/von Mises), AGMA gear analysis, Goodman fatigue analysis on the countershaft, and L_{10} bearing life calculations with all safety factors ≥ 2
- Sourced all hardware from McMaster-Carr with full cost breakdown (\$2,109.89); produced complete CAD assembly, GD&T manufacturing drawings, FBD-based force analyses, and a design risk assessment

3D Model – Salad Spinner Full Assembly | *SolidWorks, AutoCAD*

Fall 2024

- Reverse-engineered a complete salad spinner by disassembling, measuring, and replicating all 18 individual components in SolidWorks with precise dimensional accuracy and multi-part fits
- Produced a 12-sheet engineering drawing package with orthographic views, exploded assemblies, section cuts, detailed dimensioning, GD&T callouts, and a full Bill of Materials

Digital Signal Processing & Fourier Analysis | *MATLAB, LabVIEW*

Fall 2024

- Acquired and analyzed a 750 Hz sine wave sampled at 25 kHz (12-bit ADC); characterized clipping, quantization noise ($\pm 2.44 \times 10^{-3}$ V), and aliasing via Nyquist diagrams; applied FFT to square and sawtooth waveforms
- Implemented and compared low-pass, high-pass, and band-pass filters; derived Fourier series coefficients analytically via integration by parts and validated against experimental MATLAB partial-sum reconstruction results