

Mechanical engineer (MSc) with project experience in FEA, acoustic simulation, material modeling, machine design and controls, backed by strong numerical and programming skills. Seeking a design, test or simulation engineering role.

EDUCATION

University of Kentucky	Lexington, KY
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- **MSc, Mechanical Engineering**, December 2025. Project: *POD Analysis of Turbulent Pipe Flow and Relaminarization*.
- **BA, Mathematics**, May 2019. In-major GPA 3.6.
- **Additional undergraduate ME coursework** (Fall 2026): Machine Design (ME 344), Controls (ME/AER 440).
- **Relevant coursework**: Machine Design with ANSYS Workbench (ME 514), Engineering Acoustics, Plasticity.

TECHNICAL SKILLS

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- **Simulation / CAE**: ANSYS Workbench (Static Structural, Acoustics, nonlinear materials, optimization), SIDLAB, FEA
 - **CAD**: Rhino. **Controls / hardware**: Simulink, Arduino, servo actuation, time-of-flight sensing
 - **Programming**: MATLAB, Python (NumPy, Plotly, Flask), C++, Fortran, SQL, R, Linux, LaTeX
 - **Methods**: static and fatigue design (Shigley), reduced-order modeling (POD), constitutive modeling, DOE

ENGINEERING PROJECTS

Ball-on-Beam Control	ME/AER 440 team project	Fall 2026
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- Derived the plant dynamics and built the Simulink model for controller design. Hardware: servo linkage (about 4:1), bearing pivot, 300 mm twin-rail beam, VL53L1X time-of-flight sensor, Arduino; 3D CAD assembly published online.

Motor Shaft and Drivetrain	ME 344 design project	Fall 2026
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- Sizing shaft and drivetrain components for a 40 HP, 1750 RPM motor with static and fatigue safety-factor analysis (Shigley); design alternatives iterated in Excel, documented with free-body diagrams, CAD and a report.

Turbulent Pipe Flow ROM	MSc project	2020 – 2025
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- Built an object-oriented MATLAB framework for classic and snapshot Proper Orthogonal Decomposition of FFT-decomposed DNS data ($Re = 5,300$, swirl rates 0–3).
- Reduced about 5 TB of simulation data to low-order energy modes, showing how large-scale structures change as rotation suppresses turbulence.

Multichamber Muffler	Engineering Acoustics	2023
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- Designed a muffler with chambers, baffles, perforates and fiberglass absorber; simulated 0–1000 Hz transmission loss in ANSYS Acoustics, checked against a 1D transfer-matrix model (SIDLAB), and compared with measured insertion loss.

Viscoplastic Solder Model	Plasticity	2023
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- Implemented Anand's viscoplastic model in Python (forward Euler) to predict rate- and temperature-dependent stress in solder alloys; compared with published test data to check the ANSYS material model.

FEA Optimization	ME 514, ANSYS Workbench	Fall 2024
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- Optimized a compliant microgripper to maximize motion amplification with stress at or below 15 MPa; analyzed thread load sharing in a bolted joint with friction.

EXPERIENCE

Wayfinding Assistant	UK HealthCare	Jul 2023 – Present
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- Built a wayfinding map web app (Flask, Python, SQL) to route hospital visitors (also held this role 2019–2020).
- Built a desktop lookup tool (AutoHotkey v2, HTML interface) that fuzzy-matches text copied from Epic against the department phone directory and ranks the closest matches, speeding up call routing.

Research and Teaching Assistant	University of Kentucky	2020 – 2023
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- Turbulence research with 11 PhD researchers at the University of Maryland and the University of Oxford; attended the AIAA Aviation Forum (2022).
- Taught ME 311 Experimental Design II (DOE, statistics in R), ME 330 Fluid Mechanics I and ME 321 Thermodynamics II recitations.