Andrew (Hoang Thai An) Tran

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Education

Lehigh University Expected Graduation: May 2027
Bachelor of Science in Mechanical Engineering, Minor in Japanese GPA: 3.93

Coursework: Thermodynamics (I & II), Fluid Dynamics, Control System, Statics, Dynamics, Strength of Materials, Manufacturing (CNC, Injection Molding)

Working Experience

Johnson Controls May 2025 – Aug 2025
Mechanical Engineering Intern New Freedom, PA

- Designed and set up an oil seal testing rig to replicate the operating conditions of the prototype chiller, contributing to the development of a new oil seal capable of reducing leakage by 10%
- Engineered compressor modification that reduced oil leakage by **90%**; created Excel tool applying Darcy's equations to calculate pressure drop across piping for design validation
- Leveraged SAP to estimate the production cost of the new YK compressor designed for Middle East data centers, achieving a reduction of **24 man-hours**
- Utilized Tableau daily to analyze the root causes of oil leakage in the prototype YK compressor, resulting in a savings of **36 man-hours**

Lehigh University Sep 2025 – Present
Teaching Assistant, Tutor Bethlehem, PA

- Supported over 81 students in Thermodynamics I by organizing, grading homework, and hosting office hours
- Lead weekly tutoring sessions for groups of 12 students for Calculus II, improving average quiz and exam grades by **15%** through structured practicing and reviewing strategies
- Collaborate with faculty to streamline grading workflows, reducing turnaround time by 10% and enhancing feedback quality

Projects

Lehigh Formula SAE | *Brake Optimizer* Dec 2024 – Present

- Redesigned and conducted thermal and FEA simulations on front and rear brake rotors for the team's 2026 car, achieving a 5% improvement in cooling performance compared to the previous year
- Co-designed adjustable pedal box with chassis team, incorporating sliding features for driver accommodation while achieving 5% weight reduction and 15% improvement in force transfer
- Fabricated the composite floor using carbon fiber layup techniques to meet structural and strength requirements with a **10%** faster turnaround time compared to previous year

Real-Time Block Interception with Autonomous Vehicle | *Python, Control Theory* Nov 2025 – Jan 2026

- Developed a simulation for autonomous vehicle to intercept falling objects on inclined track with **98%** accuracy
- Implemented randomized test cases and real-time visualization to track acceleration, velocity, and distance error

Nomoto Ship Heading Angle PID Controller | *MATLAB, Simulink, Control Theory* Sep 2025 – Dec 2025

- Developed Nomoto second-order ship model based on published research and physical ship parameters
- Optimized PID controller using root locus and Bode analysis, reducing settling time by **400 ms** while maintaining physical constraints
- Validated system performance using closed-loop Simulink simulation

Technical Skills

Languages: Python, C++, MATLAB
Software: ANSYS (Mechanical & Fluent), Autodesk Fusion, CAM, LabVIEW, MS Office, PTC Creo, Tableau, SAP, Simulink, SolidWorks, SQL
Libraries: pandas, NumPy, Matplotlib