

Jack Hansen

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Profile:

Passionate and motivated engineer with a strong foundation in system modeling and control theory. Seeking to apply my expertise in optimization and automation to develop the transportation systems of tomorrow.

Education:

TU Delft, Delft, Netherlands

Candidate for Master of Science in Multi-Machine Engineering, May 2027

GPA: 7.93

Northeastern University, Boston, MA

Bachelor of Science in Mechanical Engineering, May 2025

GPA: 3.762 | Honors: Dean's List

Relevant Coursework:

- Dynamics
- Thermodynamics
- Heat Transfer
- Mechanics of Materials
- Materials Science

Studies Abroad:

- Sustainable Transport, Netherlands, 2024
Studied at TU Delft under Prof. Peter Furth of Northeastern University
- Fluid Mechanics, Panama, 2024
Studied in Panama City and various field sites under Prof. Carlos Hidrovo of Northeastern University
- NUIN, Ireland, 2020
Studied at University College Dublin

Extracurriculars:

- Electric Racing Club, lead bodywork engineer
- American Society of Mechanical Engineers (ASME), member
- Jazz + Fusion Ensembles, pianist

Technical Skills:

Engineering/Control Software:

- SolidWorks
- AutoCAD
- Model Predictive Control
- PID Control

Manufacturing Skills:

- Computer Aided Manufacturing
- CNC Milling
- Additive Manufacturing
- Composite Layups

Coding Languages:

- Python

- Matlab/Simulink

- C++
- Arduino
- LaTeX

Lab Skills:

- Mechanical Testing
- Environmental Testing
- Materials Formulation

Misc:

- Adobe Suite
- MS Office
- French Proficiency

Work Experience:

SharkNinja, New Product Development Engineering Co-op August-December 2024

- Developed a new handheld cleaning device for mass production
- Created mathematical models to define and optimize design parameters
- Modeled components using Solidworks, ensuring manufacturability and consumer usability
- Iteratively prototyped to validate key product features
- Designed test procedures to assess product performance and measure the efficacy of design improvements
- Collaborated with cross-functional teams to drive the product development process and ensure alignment across engineering, Industrial Design, and Product Development teams

Boyd Corp, Engineering Co-op July-December 2023

- Developed and coded a custom application to perform automated data analysis, facilitating increased production efficiency and ensuring alignment with stringent customer standards
- Engineered and crafted precision fixtures, redesigning ineffective models and contributing to a significant overhaul of production processes
- Produced precise, toleranced drawings for all fixtures, employing GD&T principles
- Collaborated seamlessly with manufacturing personnel to communicate design intentions
- Qualified unconventional manufacturing techniques and materials to reduce development time and manufacturing cost
- Diagnosed production faults and recommended effective solutions

Hexcel/ARC Technologies, Engineering Co-op June-December 2022

- Formulated, tested and analyzed filled thermoset resins to meet customer specifications under tight deadlines
- Conducted programming and testing training on new production equipment in R&T department
- Programmed and implemented critical testing procedures onto production equipment for use in company-wide tensile testing
- Designed and fabricated durable testing fixtures for high-priority contract under tight deadline
- Aided in development of new production method for legacy product that resulted in a decrease in labor time and processes by 30%, improved product quality, and increased profits by 25%
- Provided progress updates at high-level engineering meetings

Projects:

Wind Turbine Blade Stabilization System- 2026

- Engineered a customized PID-controlled stabilization system to manage thrusters for the installation of a 70-ton wind turbine blade.
- Dynamically modeled and simulated the complex physics of the structure and control algorithms using MATLAB and Simulink.
- Designed, built, and programmed a scaled physical prototype utilizing Arduino to validate the control logic and thruster response.

Traffic Engine & Congestion Pricing Simulation- 2026

- Developed a comprehensive traffic simulation engine using Python to accurately model metropolitan vehicle flow across Dublin.
- Analyzed and evaluated the efficacy of various congestion pricing strategies, utilizing mathematical models to optimize traffic distribution and reduce gridlock.

Rotterdam Metro Routing Optimization- 2025-2026

- Developed and implemented optimization scripts to algorithmically determine the fastest possible route to visit every station on the Rotterdam Metro network.
- Leveraged this routing data to apply for the Guinness World Record for the "Fastest time to visit all stations of the Rotterdam Metro."

Electric Racecar Bodywork- 2020-2023

- Lead bodywork engineer for Northeastern Electric Racing
- Headed a team of 15+ engineers, delegated tasks and scheduled work
- Designed aerodynamic bodywork for the race car
- Created CAM toolpaths and machined foam mold
- Created composite fiberglass layup to form the bodywork

Whipper Trebuchet- 2023

- Dynamically modeled and simulated physics to optimize design
- Produced precision drawings and machined parts

BrainTrainer- 2021

- Designed and built a device to help Alzheimer's patients retain brain function
- Conducted research with user groups to influence design
- Created Arduino code and circuit diagrams for the device
- BrainTrainer was selected for the 2022 ASEE Conference

Portfolio: <https://jackhansen.carrd.co/>

References:

- 1) **Dr. Carlos Hidrovo**
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- 2) **Dr. Brooke Barnes**
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