Thomas J. Howell

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Education

- **Duke University** — Durham, NC
  B.S.E in Mechanical Engineering, Aerospace Engineering Certificate — *Expected May 2022*
  B.A. in Computer Science
  - GPA: 3.98/4.00 (Dean's List with Distinction)

Skills

- **Languages:** MATLAB, Python, C/C++, Java, SQL, Git, HTML/CSS, Typescript, LaTeX
- **Technologies:** GitLab, Jupyter Notebook, Angular, SolidWorks, Fluent

Experience

- **Afloat, Inc.** — Richmond, VA (remote)
  Software Developer — *August 2020 - Present*
  - Employ Git workflow and CI/CD in GitLab for continuous and collaborative software development
  - Oversee all front-end Angular development and UI/UX design for web application
  - Interface front-end components with server architecture and provide maintenance services
  - Deploy and maintain solidity smart contracts on Ethereum blockchain
- **Aeroelasticity Research Group** — Durham, NC
  Undergraduate Researcher — *August 2021 - Present*
  - Employ computational fluid dynamics in Fluent to study transonic buffet for a NACA 0012 airfoil
  - Analyze the impact of operating conditions and modeling choices on buffet onset and limit cycle oscillations
  - Process and interpret simulation results using Python and MATLAB to gain insight into physical trends
- **Rolls-Royce Defense Aerospace** — Indianapolis, IN
  Manufacturing Engineering Intern, Rotatives — *May 2021 - August 2021*
  - Designed and built a SQL Server database from scratch to prevent consumable shortages
  - Programmed a Python executable for user-friendly ODBC database connections
  - Implemented real-time, interactive data visualizations using SQL queries with Power BI
  - Streamlined compressor wheel gage management to cut costs on labor and machine time
- **AME Lab for Statistical Machine Learning** — Durham, NC
  Undergraduate Researcher — *May 2020 - Present*
  - Apply and contribute to machine learning algorithms in Python and R for causal inference
  - Created and maintain a website to document the algorithms and their usage
  - Automated data cleaning to the specifications of each algorithm with Jupyter Notebook

Relevant Coursework & Projects

- **Pac-Man Artificial Intelligence**
  - Creatively developed a game-playing AI agent for Pac-Man using object oriented programming in Python
  - Applied concepts in informed search, probabilistic inference, and reinforcement learning
- **Cache and Memory Simulator**
  - Wrote a program in C to simulate the behavior of an LRU cache given a trace file of memory accesses
  - Designed the simulator to accept cache configuration parameters, including size, associativity, and writing policy
- **Motorized Kayak Hydrofoil**
  - Designed and 3D modeled a kayak hydrofoil in SolidWorks in a team of 4 students
  - Informed design choices using principles of fluid mechanics and aviation
  - Implemented radio control for electrically driven hydrofoil motion