

Maxwell Brooks

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Education

Virginia Tech

Bachelor of Science, Computer Science - Data Centric Computing (GPA: 3.38/4.00)

May 2027

Blacksburg, Virginia

- **Achievements:** Dean's List with Distinction, Dean's List
- **Coursework:** Data Structures and Algorithms, Machine Learning, Cryptography, Applied Combinatorics, Differential Equations, Theoretical Statistics, Discrete Math

Skills

- **Software Development & Programming:** Software Development, Python, Java, C, JavaScript, Powershell
- **Web Technologies & Frameworks:** HTML, CSS, React, FastAPI
- **Cloud, DevOps & Databases:** AWS, Git, SQL
- **Operating Systems & Tools:** Linux, Microsoft Office

Project Experience

AI Learning-Assistant

Oct 2025 - Jan 2026

- Engineered a Retrieval-Augmented Generation (RAG) system using Python and SQLite, improving AI response accuracy by 35% through custom text chunking and metadata-filtered vector searches.
- Optimized document processing workflows by implementing a FastAPI backend that asynchronously handles PDF-to-text conversion and embedding generation, reducing user wait times for document analysis.
- Developed an interactive, responsive user interface using HTML, CSS, and JavaScript, enabling seamless real-time communication between the frontend and a private LLM via JSON-based API calls.

InspireFly Satellite

Sep 2024 - May 2025

- Collaborated on a multidisciplinary team to develop and launch a CubeSat into orbit, designed to capture images and transmit them to a ground station
- Worked on the programming team, implementing and optimizing flight software in Python to enable communication between satellite components and ground station commands
- Responsible for ProvesKit implementation, git repo management, and class testing

Air Traffic Control Spatial Management System

Sep 2025 - Oct 2025

- Implemented a 3D BinTree spatial data structure in Java with flyweight, leaf, and internal nodes to support efficient aircraft storage and querying
- Developed recursive algorithms for collision detection and spatial intersection, including node splitting, merge-on-delete, and region-based pruning

Work Experience

O'Brien's Oyster Bar & Seafood Tavern | *Host and Server*

May 2025 - Aug 2025

- Delivered high-quality customer service in a fast-paced environment, managing seating flow, orders, and guest satisfaction while collaborating closely with team members
- Coordinated with kitchen and front-of-house teams to serve multiple tables efficiently, applying effective communication and problem-solving

Cape St. Claire Yacht Club | *Senior Sailing Instructor*

Jun 2022 - Aug 2023

- Supervised and instructed children ages 8-16 on sailing Optis and 420 sailboats
- Displayed leadership and collaborative capabilities by mentoring instructors and refining teaching processes for sailing techniques