

JASON MCCAULEY

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Education

Stevens Institute of Technology

Expected Graduation: May 2025

Bachelor of Software Engineering

Hoboken, NJ

- Edwin A. Stevens Scholar, Presidential Scholar — **GPA: 3.97**
- Courses: Agile Software Development, Object-Oriented Programming, Data Mining and Applied Machine Learning, Web Programming, Software Testing and Quality Assurance, Software Modeling and Simulation, Database Management

Work Experience

Stevens Institute of Technology

Jun 2024 – Aug 2024

Undergraduate Research Assistant

Hoboken, NJ

- Developed a **data preprocessing pipeline** in **Python** to extract, clean, and structure molecular simulation data from **.xyz files** into **Pandas DataFrames** for **machine learning** analysis
- Built and optimized a **Random Forest Classifier** using **scikit-learn** to predict chemical reaction outcomes, achieving an accuracy of **90%** through **hyperparameter tuning** and **cross-validation**
- Created **visualization dashboards** with **matplotlib** and **seaborn** to analyze feature distributions, improving interpretability of complex molecular datasets

Projects

CerebralTalk | *Source Code*

Flask | ReactJS | Machine Learning

- Engineered a real-time **EEG signal processing system** using **Flask** and **MongoDB** that accurately classified **five distinct thought patterns** with support for dynamic channel selection and multiple ML classifiers
- Built a responsive **ReactJS** frontend with **Material-UI** components for EEG channel selection and real-time visualization of classification results, paired with a thoroughly **unit-tested** Flask backend
- Developed under **Agile methodology** with F&S Digital, creating a scalable architecture that processed **64-channel** EEG data while achieving up to **57% classification accuracy**

BANDIT | *Source Code*

NodeJS | ExpressJS | Socket.IO

- Built a **real-time multiplayer** word game using **Socket.IO** for live game synchronization and **MongoDB** to manage multiple word dictionaries and game states across **concurrent player sessions**
- Engineered a **secure authentication** system with MongoDB-based user management, storing **encrypted passwords** and player statistics while implementing **RESTful APIs** with **XSS protection**
- Developed a responsive frontend using **Handlebars** templating and **jQuery UI**, including a draggable chat interface and **real-time game board** updates, with comprehensive client-side input validation

Spotify Clean Playlist Bot | *Source Code*

Python | Object-Oriented Programming | Design Patterns

- Architected an **object-oriented** Spotify playlist converter using the **Decorator pattern** for extensible logging, featuring autonomous track searching and playlist management via **Spotify Web API**
- Implemented error handling and **track matching algorithms** to identify clean versions of explicit songs, with system documentation including class, sequence, and use case **UML diagrams**

Autonomous Navigation Robot | *Source Code*

C++ | Embedded Systems | IoT

- Developed an autonomous navigation system on **Arduino** using **C++** and ultrasonic sensors with **MQTT protocol** for real-time position tracking, achieving obstacle avoidance with less than **60mm precision**
- Placed **8th out of 100+ teams** at Stevens Innovation Expo by integrating **path planning algorithms**, Wi-Fi connectivity, OLED display feedback, and servo motor control for efficient navigation

Online Boutique Microservices | *Source Code*

Google Cloud Platform | Docker | CI/CD

- Orchestrated deployment of an **11-service** e-commerce architecture using **GKE** (Google Kubernetes Engine), implementing containerization and CI/CD through **Docker**, **Cloud Build** and **Skaffold**, while configuring **RBAC policies** and **SSL certificates** for secure service communication

Technical Skills

Languages: Python, Java, HTML5, CSS, JavaScript, C++, SQL, MATLAB

Developer Tools: Jira, Postman, Git, GitHub Actions, GCP, Docker, Kubernetes, Visual Paradigm

Libraries/Frameworks: NodeJS, ExpressJS, jQuery UI, MongoDB, ReactJS, Flask, PostgreSQL