Christopher Browne

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EDUCATION

George Mason University, Fairfax, VA   **May 2027**

Bachelor of Science, Computer Science **(GPA** *3.97)*

> Relevant Coursework: *Data Structures, Object-Oriented Programming, Intro to Low-Level Programming, Intro to Computer Programming*

TECHNICAL SKILLS

Languages: Java, Python, JavaScript, C

Certifications: Java SE 8 Oracle Certified Associate (OCA), AWS Certified Cloud Practitioner

Frameworks & Libraries: Spring Boot, ReactJS, Flask, GraphQL, Material-UI, OpenCV, TensorFlow, Keras

Tools & Platforms: AWS (EC2, RDS, S3, CloudWatch, DynamoDB, Lambda), Docker, Postman, JWT, MongoDB, PostgreSQL

Core Skills: Full Stack Web Development, RESTful API Development, JWT Authentication, Cloud Deployment, Audio/Video Processing, Multi-threading, CI/CD, Real-time Systems

PROJECTS

GMU Course Planner: Full Stack Application | Java, Spring Boot, PostgreSQL, GraphQL, ReactJS, JWT, Postman, Docker, AWS | https://coursergmu.netlify.app

- Built a **full-stack web application** using **Spring Boot** and **ReactJS** for 100+ GMU students to evaluate course difficulty using real data from **RateMyProfessor**, integrating a **GraphQL API** and a multi-relational **PostgreSQL database**
- Developed a **secure backend** with **JWT authentication** and tested REST APIs using **Postman**
- Containerized the application with **Docker** and deployed on **AWS EC2**, leveraging **AWS RDS** for managed **PostgreSQL** hosting, **AWS S3** for static asset storage, and **AWS CloudWatch** for performance monitoring and logging.
- Optimized cloud deployment using **auto scaling groups** and **CloudWatch alarms**, resulting in 30% improvement in backend response time and reducing estimated hosting costs by ~20% compared to a static setup

Driver Drowsiness Detection System | Python, React, Flask, OpenCV, TensorFlow, Keras, Haar Cascades, NumPy, Material-UI

- Built a real-time driver drowsiness detection system using a **CNN model (95% accuracy)** trained on **2,500+ eye images**, integrated with **Haar Cascades** for face/eye detection
- Engineered a **full-stack web application** using **Flask REST API** and **React**, achieving real-time video streaming at 10 FPS with **<100ms latency** and an audio-visual alert system
- Architected a **multi-threaded video processing pipeline** with **thread-safe buffering**, **RESTful API endpoints**, and robust error handling for production-ready deployment
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MockMate: AI-Powered Interview Practice Platform | Java, Spring Boot, MongoDB, ReactJS, Okta OAuth2

- Built a **full-stack web application** using **Spring Boot** and **ReactJS** for AI-powered interview practice, integrating the Google Gemini API for intelligent conversation and Google Cloud Speech-to-Text for real-time voice transcription
- Developed a **secure backend** with **Okta OAuth2 authentication**, **MongoDB** for storing conversations, and **RESTful APIs** for real-time interview interactions
- Implemented **audio processing features** including noise suppression, echo cancellation, and **Opus codec optimization** for high-quality voice recording with live transcription and adaptive AI response generation
- Enhanced the user experience with a responsive UI, modern **CSS animations**, in-browser code execution, and AI-generated hints and follow-ups tailored to user input during coding interviews

EXPERIENCE

George Mason University, Fairfax, VA   J**anuary 2024 - Present**

Undergraduate Teaching Assistant

- Taught Python labs to 40–50 students, offering hands-on guidance and reinforcing coding concepts.
- Mentored students on assignments, debugging, and technical implementation.
- Supported class engagement by addressing questions on the Piazza discussion forum.

George Mason University, Fairfax, VA   **September 2023 - Present**

Athletic Event Staff

- Supported setup, breakdown, and operations for collegiate sporting events as part of a 6-person team
- Collaborated across departments to ensure smooth events and a positive spectator experience

HONORS AND AWARDS

- **Dean's List**: Fall 2023, Spring 2024, Fall 2024, Spring 2025 (George Mason University)