

Zachary Hoffman

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EDUCATION

Liberty University: B.S. Computer Science, Mathematics Minor

GPA: 4.0

Relevant classes: Data Structures and Algorithms, Advanced C++, Discrete Math, Calculus III, Matrix and Linear Algebra, Database Design and Management

Lynchburg, VA

Aug. 2022 – May 2026

EXPERIENCE

SAVOYE North America

Software Engineering Intern

King of Prussia, PA

May 2025 – Present

- Built and updated **TCP interfaces** with third-party systems in Java 17/Spring Boot 3 and coordinated internal events via Kafka, improving cross-system reliability and state consistency
- Implemented **single sign-on (SAML/OIDC)** with Spring Security and Keycloak and transitioned the solution into **Dockerized** production builds, standardizing secure access across services and environments
- Developed **industrial-control (PLC) simulators** in Java with an event-driven, nonblocking architecture and fault/latency injection, enabling full-flow, production-like testing
- Delivered real-time features across **15 Spring Boot microservices** with a React/TypeScript frontend and WebSocket-based data streaming

Liberty University

Competitive Programming Club

Lynchburg, VA

Aug. 2022 – Present

- Placed **2nd** in the **2023 ACM ICPC Div. II Mid-Atlantic Region**, solving advanced algorithmic problems under time constraints

PROJECTS

Senior Capstone | *Python, React, Kafka, PostgreSQL, Docker, Prometheus*

Aug. 2025 – Present

- Architected and led development of a distributed, event-driven system for document ingestion, processing, and review workflows for an enterprise client
- Designed a Kafka-based event-driven pipeline coordinating OCR, hashing, and similarity services with fault tolerance, retries, and state recovery
- Engineered the React/TypeScript frontend and real-time data layer using Server-Sent Events (SSE) to stream live processing, logs, and system updates
- Established system-wide observability with Prometheus, cAdvisor, and structured logging, enabling real-time performance analysis (**160+ docs/min**)

Chess Robot 🏆 | *Python, OpenCV, PyTorch, Fusion 360*

Nov. 2024 – Present

- Designed and 3D-printed a 20-inch articulated robotic arm using Autodesk Fusion 360, optimized for precise chess piece manipulation
- Developed a real-time **computer vision** pipeline (OpenCV, PyTorch) for board detection and piece classification on a Raspberry Pi 4B

Machine Learning Racing Simulation 🏆 | *Python, NEAT-Python*

Oct. 2024

- Developed a NEAT-based model achieving **96%** of optimal lap time within 25 generations
- Built a **custom physics engine** modeling 10+ vehicle dynamics to simulate real-world driving conditions

TECHNICAL SKILLS

Languages: Java, Python, C++, TypeScript, SQL, JavaScript, CSS, HTML

Frameworks/Tools: Spring Boot, React, Kafka, MongoDB, Neo4j, Keycloak, Docker, Git, OpenCV, PyTorch, Arduino

Software: Linux, SQL Server Management Studio, Mathematica, Autodesk Fusion, ER Assistant