Ryan Heise

West Lafayette, IN

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Education

Purdue University **GPA: 3.5/4.0** **August 2020 – December 2024**

B.S. in Computer Science & Minor in Mathematics *West Lafayette, IN*

Relevant Coursework: Data Structures & Algorithms, Analysis of Algorithms, Graduate Statistical Machine Learning, Operating Systems, Compilers, Systems Programming, Computer Security, Computer Architecture, Cryptography

Experience

CS252 (Systems Programming) | *Undergraduate TA* **January 2023 – May 2023**

West Lafayette, IN *C, C++, LaTeX*

- Led two lab sections, guiding students in implementing advanced C++ projects, including malloc, a standard shell, and a web server, fostering skill development and project success
- Designed effective assignments and exams to enhance student comprehension of course material

CACI | *Software Engineering Intern* **May 2022 – August 2022**

Lisle, IL *Proxmox, Ghidra, PostgreSQL*

- Implemented and deployed honeypot servers to capture and analyze attacker behavior at scale
- Engineered a data pipeline processing over 100 million packets to extract feature sets for machine learning models
- Configured Linux routing and iptables to isolate and sanitize networks for secure malware analysis

Youndle LLC | *Co-Founder* **August 2020 – August 2021**

Valparaiso, IN *Django, React, AWS*

- Developed a React/Django app that streamlined the communication between small businesses and local teenage workers
- Deployed the app on AWS EC2 with PostgreSQL RDS for scalable, secure hosting and maintenance
- Selected for the Purdue Boiler 2021 startup accelerator, iterating MVP features and validating market fit

Projects

Mini Java Compiler | *C++, Lex, Yacc* **May 2023**

- Built a compiler translating a Java subset to optimized 32-bit ARM assembly using Lex & Yacc for AST construction
- Abstracted parsing operations into modular abstract classes for efficient, maintainable code generation

AI Video Editor | *Python, PyTorch, OpenAI API* **April 2025**

- Generated 100,000+ YouTube views with an automated deep learning video editing pipeline
- Used Whisper, ChatGPT, S3FD, TalkNet, and FFmpeg for transcription, highlights, tracking, detection, and rendering

Full Stack Football Application | *Python, Django, React, Nginx* **August 2024**

- Developed a Django/React full-stack web app with Django REST API to manage my family's annual football league
- Deployed the app on a Raspberry Pi using Gunicorn, Nginx, and custom network configuration

Secure Voting System | *Python, Digital IDs, Asymmetric Cryptography* **October 2024**

- Designed modular election system using homomorphic encryption for secure, local vote tallying
- Utilizes digital IDs and asymmetric cryptography to ensure end-to-end verifiability, voter privacy, and scalability

Active Learning Research Project | *PyTorch, Numpy, Pandas* **December 2023**

- Developed an active learning framework to evaluate sampling and querying strategies across diverse models and datasets
- Compiled findings into a survey-style report, comparing performance metrics and recommending optimal approaches

Custom C++ Web Server Built on Raw System Calls | *C++, Linux* **December 2021**

- Engineered a C++ server with raw system calls and socket programming to serve HTML and image files over HTTP
- Utilized both multiprocessing and multi-threading designs to optimize concurrency and throughput

Technical Skills

Languages: Python, C++, JavaScript, C, HTML, CSS, Java, x86 & Arm Assembly
Technologies/Frameworks: PyTorch, PostgreSQL, NumPy, Pandas, Django, ReactJS, Unix, AWS, Google Cloud
Awards & Certifications: AWS Partner Technical Accreditation; 1st Place Purdue Hello World Hackathon (Out of 55); 2nd Place Purdue Data Mining Competition (Out of 93)