Yohan Berg

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SUMMARY

Recent Master's graduate in Computer Science with a strong foundation in software engineering, system design, and AI/ML. Skilled in developing scalable software systems, developing reliable infrastructure, and integrating intelligent features into complex applications. Passionate about solving challenging engineering problems and AI.

Seeking a full-time software engineering role with opportunities to build impactful, high-quality software.

EDUCATION

Purdue University — *Aug 2020 - Dec 2024*
Master of Science in Computer Science — GPA: 3.57 (Graduate)
Bachelor of Science in Computer Science, Minor in Mathematics — 3.81 (Undergrad)

RELEVANT EXPERIENCE

ImpacterAI – AI Developer Intern — *Jun 2025 – Current*

- Expanded the **React** + **TypeScript** dashboard and lead management system to improve user visibility into AI-driven sales operations.
- Designed and implemented **HubSpot / Salesforce API** integrations, including authentication and webhook infrastructure for enterprise CRM support.
- Refactored backend architecture to adopt **LangChain**, documenting agent execution flow and unifying redundant components for better maintainability.
- Contributed to AI **prompting** and context generation, enabling file-aware contextual reasoning and more coherent agent responses.
- Collaborated across AI, product, and business teams in a fast-moving startup to research and integrate lead-enrichment APIs and refine multi-agent workflows.
- Tech Stack: React, TypeScript, Python, Flask, MongoDB Atlas, Redis, Docker

Teaching Assistant – CS252: Systems Programming — *Jan 2023 – May 2023 @ Purdue*

- Led weekly office hours assisting students in C programming, memory management, and system-level programming.
- Guided students through debugging techniques using **gdb** and **valgrind**.
- Provided project feedback on multi-threading, low-level memory management, and file systems.
- Monitored and resolved student inquiries on Piazza, ensuring high engagement and understanding.

TECHNICAL SKILLS

- **ML & AI:** PyTorch, OpenAI & Gemini API, AI Security, LangChain
- **Programming Languages:** Python, Typescript, C, C++, Java, Swift, C#, Bash
- **Databases & Big Data:** SQL, MySQL, MongoDB, Vector Databases, Data Preprocessing
- **Software Development:** Linux, Git, Docker, REST APIs, Cursor, React
- **Systems & Debugging:** GDB, Valgrind, Compiler Design, OS Internals

RESEARCH & DEVELOPMENT PROJECTS

AI for Cybersecurity (*Current – Johns Hopkins Certificate Program*)
- Advancing knowledge and essential skills to leverage AI in Cybersecurity domains such as Network Analysis, Cryptography, and Intrusion Detection

Gemini-Powered Agent for Tax Assistance (*April 2025 Kaggle Competition)*
- Led a group of 4 to plan minimum viable product, prioritize features, and track milestones.
- Developed an **Agentic LLM** using **Gemini** to autonomously query and compile tax information.
- Implemented **grounding** tools to allow the Agent to autonomously maintain up-to-date tax information and forms.

AI-Powered MySQL Predicate (*CS541 – Database Systems*)
- Integrated AI-powered predicates into **MySQL** to enable sentiment analysis-based queries.
- Implemented User-Defined Functions (**UDF**s) for AI integration.
- Explored Abstract Syntax Tree (AST) modification to reduce UDF overhead
- Selected ALBERT (positional embeddings) for lightweight performance and **TorchScript** compatibility.
- Led group planning, milestone tracking, and architectural design for the system's development

Traffic Impact of Road Accidents – ML Model Comparison (*CS573 – Data Mining*)
- Developed machine learning models to predict traffic accident severity using **Kaggle** datasets.
- Designed data preprocessing pipelines, feature extraction, and imbalanced learning strategies.
- Implemented models: Logistic Regression, SGD, Decision Trees, Random Forest, XGBoost, LightGBM, CatBoost, Balanced Bagging, Deep Neural Networks, Voting Classifier, and more...
- Optimized using hyperparameter tuning, K-fold cross-validation, and model evaluation.

Environmental Sound Classification using Deep Learning (*CS390 – Deep Learning Systems*)
- Built a **semi-supervised learning model** to classify wildlife sounds for environmental monitoring.
- Developed an **anomaly detector** to filter white noise, improving classification accuracy in imbalanced data.
- Ended up creating the "Goose Detector", clustering model primarily capable of distinguishing geese calls from ambient sounds and motor vehicles.

AI Poisoning – Security Research & Video Presentation (*CS529 – Security Analytics*)
- Researched and analyzed **adversarial attacks** on real AI models, focusing on **AI poisoning** threats.
- Produced an 20-minute technical video explaining ML security vulnerabilities, including Stable Diffusion vulnerabilities and the Nightshade AI poisoning tool.