Johan Lakshmanan

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Education

University of Massachusetts, Amherst — Amherst, MA
Bachelor of Science in Computer Science — 3.75 — *Aug. 2023 – May 2026*
- Relevant Coursework: Data Structures, Algorithms, Software Engineering, AI/ML, Search Engines, C++

Experience

Quantitative Developer Intern — Jun. 2025 – Present
Fidelity Investments — *Boston, MA*
- **Scaled trading capacity by 30%** by piloting a **model-driven trade-routing** system for hedge fund clients through Fidelity Service Bureau, saving **$5M+ across 300+ clients**.
- Improved algorithm selection on **25M+ trades** by developing machine learning models (**Contextual Bandit, Python, Kdb+/Q**) with the **Vowpal Wabbit** library, integrated into Fidelity's NEO framework and trader UI.
- Achieved **+20% prediction accuracy** via multi-epoch training and feature optimization on TCA data.
- Leveraged **Linux**, **Docker/Kubernetes**, and **Jenkins CI/CD** for reproducible debugging and validation.

Software Engineering Intern — May 2024 – Aug. 2024
Waters Corporation — *Milford, MA*
- Developed a full-stack automated renewal quote system using **Python**, **REST APIs**, and a responsive UI, reducing manual workload by **100+ hours monthly**, streamlining sales operations.
- Integrated AI automation with **C# (UiPath)**, optimizing invoice processing in **SAP S/4HANA** workflows, leading to **25% faster processing** visualized in **Power BI** and **Tableau** dashboards.
- Utilized **Agile** practices and **JIRA** in bi-weekly sprints to develop algorithms through efficient **CI/CD** processes.
- Built **SharePoint–Intune** integration with **JavaScript APIs**, saving 15 hours weekly in client data processing.

Embedded Systems Researcher — May 2021 – Aug. 2022
MIT Lincoln Laboratory — Beaver Works Summer Institute (BWSI) — *Cambridge, MA*
- Built a secure bootloader for Stellaris microcontrollers (**C/Assembly**), validated via **MATLAB + TI CCS**
- Awarded **1st place** in Penetration Testing and **Honorable Mention** in Embedded Security Challenge.
- Designed penetration testing frameworks in **Python/SQL**, patching **16+ vulnerabilities**.
- Applied **compiler toolchains** and **CUDA/TensorFlow profiling** to validate firmware robustness.

Projects and Clubs

BUILD UMass | *Full-Stack Software Development* — Feb. 2024 – Present
- Led full-stack development of a consulting platform using **MERN stack** (MongoDB, Express, React, Node.js).
- Rebuilt **RESTful APIs** with pagination, caching, and profiling for a **30% performance gain** in data flow.
- Documented system design patterns in **Confluence** repositories to support debugging and deployment cycles.

Team Unlimited Robotics | *Java - FTC SDK, Android Studio, REV Robotics* — Apr. 2020 – Sep. 2023
- Led team to a **top-3** finish in the MA State Competition, placing **1st for robot design**.
- Secured sponsorship from **Schneider Electric**, presenting innovations at the **Las Vegas Innovation Summit**.

Dusty | *Python - OpenCV, Keras, Scikit* — Sep. 2022 – Jan. 2023
- Designed a plant disease detector with **CNNs**, achieving **82% accuracy** with a dataset of **20,000 images**.
- Developed deep learning pipeline with **Keras**, optimizing model performance with **F-1 score of 81%**.

Technical Skills

Languages: Java, Python, C/C++, SQL, Kdb+/Q, JavaScript, TypeScript, Go, HTML/CSS
Frameworks: React, Node, Express, Django, JUnit, RESTful APIs, Material-UI, FastAPI, Pandas, Matplotlib
Technologies: Git, Docker, Kubernetes, Jenkins, Google Cloud, AWS, Visual Studio, VMware, Linux
AI/ML: Contextual Bandits, Neural Networks (CNNs), Deep Learning (Keras, TensorFlow), Feature Engineering, LLMs
Hardware: Embedded Systems Validation, RTL, Verilog, Low-Level Debugging, System Validation

Awards

Collegiate Penetration Testing Competition 3rd Place Globally — Jan. 2024
National Cyber Scholar with Honors | *Top 2% of competitors nationwide.* — May 2023