Derick Amalraj

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SUMMARY

Software Engineer with hands-on experience designing and developing innovative software systems and features from initial concept through testing and deployment. Motivated Self-starter focused on working with cross-functional teams to drive the development of industry-leading machine learning solutions while driving automation and enhancing reliability, stability, and performance at scale.

SKILLS

- **Engineering:** Fullstack Development, Machine Learning (Logistical Regression, Principal Component Analysis, Model Selection, Neural Networks, Monte Carlo Methods), Backend & Infrastructure, Cloud Architecture, Infrastructure Management, API Design, RESTful Web Services, Microservices, Testing & Code Coverage, CI/CD, DevOps, Software Quality, Scalability, Performance Optimization, Debugging, Reliability, Automation, Code Reviews, Documentation
- **Leadership:** Strategic Planning & Execution, Project Management, Process Improvement, Cross-functional Collaboration
- **Technology:** C/C++, CUDA/ROCM, Python, Groovy, Java, MATLAB, Haskell, VBA, JavaScript, TypeScript, LATEX, Git, Jenkins, VirtualBox, Docker, Jira, Helm, Kubernetes, Elasticsearch, Terraform, Proxmox, MongoDB, SQL, GraphQL, Unix Shell, VS Code

EDUCATION

- Master of Science in Computational Mathematics, University of Washington — June 2026
- Bachelor of Science in Computer Science & Mathematics with Honours, University of Toronto — September 2023

RELEVANT EXPERIENCE

Software Development Engineer 2, Advanced Micro Devices (AMD) — **April 2024 - Present**

- Implemented program-level CI health tracking for Server & Data center products while maintaining dashboards and KPIs on test stability, failure rates, and pipeline reliability across multiple programs for various products including Server CPUs from the EPYC Series, Consumer GPUs from the Radeon Series, and Data Center GPUs from the MI-300/350 Series.
- Improved simulation test efficiency by 40%+ for the MI355 GPU platform to reduce the time required for tests from 60 minutes to 15 minutes by managing test execution, scheduling, and resource management, increasing the number of nodes, and setting up a Python script for auto-scaling Proxmox Virtual Machines based on current utilization.
- Improved the performance of various unit tests and reduced the length of the checker from 2 hours to 15 minutes.
- Expanded pre-commit CI test coverage to multiple firmware components, such as BIOS loader, Power Management firmware, Security firmware, & AGESA, to enable early defect detection without degrading pipeline stability or throughput.
- Built and tested custom OS and test machines to ensure reliable deployment and maintainability using a custom CI/CD pipeline, and leveraged automated testing, pinpointing, and debugging broken test machines to identify targeted fixes.
- Effectively execute software test sets on simulations of embedded devices, using Python, PowerShell, and shell scripts.
- Refactored and redesigned the internal CI infrastructure with a focus on modularity and reusability to consolidate non-combinable code to accommodate the growing testing needs of the CI team and inbound requests.
- Collaborated with architects, developers, engineers, and internal teams to identify process improvements, including new Teams channels for enhanced collaboration, develop onboarding documentation, and create architectural diagrams.
- Received 3 AMD Spotlight awards for infrastructure management and post-silicon/onboard testing.

Teaching Assistant, University of Toronto — **January 2023 - December 2023**

- Provided high-quality education materials, mentorship, tutorial instruction, and superior instructional support to 20+ students from varying academic backgrounds each semester to ensure successful course completion.
- Developed and implemented new enhancements to learning experiences impacting 10 different courses, ranging from Calculus and Linear Algebra and Field Theory, to introductory courses in Computer Science.
- Wrote a VBA script in Excel to automatically send emails containing students' grades and comments, which generated hours of time savings each week during the grading process.
- Effectively broke down complex math, linear algebra, computer science, and calculus topics into digestible components and real-life scenarios based on the technical abilities and learning needs of each individual student.
- Collected and communicated student feedback to instructors to promote the development of interactive lesson plans.

ADDITIONAL EXPERIENCE

- **Software Engineer Intern, Advanced Micro Devices (AMD)** — **May 2021 - August 2022**

SELECT PROJECTS

Path-Tracer

- Engineered a path tracer in C that enables users to input and transform specific data points into light path representations.
- Integrated ray tracing algorithms and various techniques for analyzing shadows, reflections, and global illumination, such as texture mapping, anti-aliasing, triangle meshes, and nonlinear transformations.
- Cut rendering time by 30% while preserving image quality by integrating Monte Carlo sampling/bounding volume hierarchies for ray-tracing acceleration.