Deval Patel | Software Engineer

devalrocket@gmail.com • (647)-470-7505 • deval-patel • Deval Patel

Experience

Qualcomm
Embedded ML Software Engineer May 2022 - Present

- Led eNPU (embedded neural processing unit) driver design in **C** for Qualcomm's LPAI (low power AI) automotive chip through HPG-based modifications for multi-master DSP support, enabling faster iteration development and 3 months ahead of pre-silicon schedule.
- Achieved cross-platform support (mobile, automotive, IoT, XR/VR) for the eNPU driver through code refactoring and streamlining, resulting in a simpler, unified codebase.
- Optimized eNPU driver code for ultra-low latency (2-3 microseconds) on an **RTOS**, achieving industry-leading performance and real-time processing.
- Reduced eNPU driver TCM memory footprint by 50% through LPI/non-LPI code separation.
- Performed pre-silicon verification on FPGAs identifying and rectifying driver issues, accelerating SoC bring-up and reducing development time.
- Built a system for high fidelity eAI model profiling (hardware vs. software scheduling) to identify latency bottlenecks in customer models. Automated this workflow using a custom **Python** script invoking **ADB** shell commands (model/binary deployment, test execution, CSV data collection, Excel report generation).
- Delivered a well-received presentation to internal and external teams on next-gen automotive chip driver development, enhancing their understanding of new architecture and functionalities.

University of Toronto
Teaching Assistant for Operating Systems/Software Design/Intro. to CS Jan 2020 - May 2022

- Led 2 hour practical sessions communicating troubling concepts and guiding 30 students through exercises while encouraging a positive and collaborative environment.
- Solely created major assignments with **Python** and **Java**.
- Created automarking test suites using **PyTest**, **JUnit** and **Bash** resulting in a 200% increase in marking efficiency.

Projects

TA Application System
Lead Developer Jan 2021 - May 2022

- Migrated an existing **HTML** application to **React** and created reusable components resulting in a reduction of duplicate code.
- Added REST API endpoints allowing contracts to be generated, downloaded, signed and uploaded using **ExpressJS** and **PostgreSQL** resulting in a 200% reduction of manual labour.
- Developed **SQL** queries enabling instructors to parse student applications by grade, time availability, and many other filters.

Carden
Co-Creator/Developer Jan 2021 - May 2021

- Created an appealing website using **React** and **MaterialUI** allowing users to create and send interactive e-cards at the time of a global pandemic.
- Stored and retrieved user data, media and e-cards using **MongoDB** and **AWS S3**.

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Education

University of Toronto
HBSc. Computer Science Specialist - GPA: 3.52 September 2018 - April 2022

Skills and Technologies

Software Tools: Docker, AWS, Make/Cmake, gdb

Front-end: HTML, CSS, React, Express, Vue

Programming: C/C++, Python, JavaScript, Java

Back-end: REST, SQL, MongoDB, Neo4J