Aaron Dyer

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Summary

Driven by a passion for sustainability and equity through engineering innovation, I specialize in developing optimized, low-power firmware solutions. My experience utilizing Real-Time Operating Systems (RTOS) – including custom/proprietary systems, ThreadX and FreeRTOS– has provided consistently impressive results, as demonstrated below. Notably, I spearheaded the development of an AI-powered prototype during the HP AI Hackathon, leveraging GPT-4 to refine AGILE story point estimations and enhance project schedule predictability.

Technical Skills

- *Programming Languages:* C++, C, Python – Developed and maintained embedded software solutions with a focus on efficiency and performance.
- *Real-Time Operating Systems (RTOS):* Proficient in ThreadX, custom/proprietary RTOS designs, and FreeRTOS, specializing in maximizing system performance, strict resource allocation, and precise real-time scheduling for critical applications.
- *Resource Optimization & Power Efficiency:* Expertise designing and implementing low-power firmware solutions (dynamic voltage and frequency scaling and intelligent sleep modes) in printer firmware and software.
- *Hardware-Software Co-Design:* Demonstrated success in integrating multi-level software and firmware layers to create high-performance embedded systems.
- *AI Technologies:* Experienced with GPT-4 and Large Language Models (LLMs) for predictive analytics and process optimization and automation - a field I'm actively exploring and applying!

Experience

(June 2022-Present) HP Print

- Developed and maintained core printer firmware, resulting in a significant (over 40% reduction) improvement in customer experience and review scores, directly impacting user satisfaction.
- Designed and personally implemented Energy Star compliant printer power firmware, achieving a 50%+ reduction in average power consumption – contributing to environmentally responsible solutions.
- Developed a robust embedded web server in TypeScript, enabling seamless user interface control and multilingual support.

HP AI Hackathon – Project Lead & Innovation Contribution

Led a team of peers to top prize in an AI rapid-prototyping competition. Our solution sharpened AGILE story point estimation in JIRA; our prototype trained on archived JIRA data from legacy projects/epics, leveraging GPT-4 to improve AGILE story point estimations and project schedule predictability. This project demonstrated expertise in AI technology application, project leadership, and a commitment to curiosity in tech innovation.

Tools & Technologies

- Proficient in Embedded Systems Development: Electrical & Computer Engineering fundamentals including Power Systems, Computer Architecture (ARM, x86, RISC-V), and FPGA Digital Circuit Design.
- Experienced in debugging legacy systems and optimizing performance in resource-constrained embedded environments.

Programming Languages & Environments:

- *C++*: Advanced proficiency, including object-oriented programming, data structures, and algorithms. Used extensively in embedded systems development. *(5 yrs)*
- *C:* Strong foundation in low-level programming, memory management, and systems programming. *(5 yrs)*
- *Python:* Demonstrated experience developing scripts and automation tools. *(3 yrs)*
- *JavaScript, HTML/CSS, TypeScript:* Solid understanding of web development fundamentals, including responsive design and accessibility. Experience implementing TypeScript programming for large-scale JavaScript applications, focusing on code maintainability and scalability. *(2 yrs)*

Hardware & Embedded Systems:

- *Assembly Language:* x86, ARM, etc. foundations, experience with real-time memory and thread debugging for performance optimization and low-level hardware interaction. *(5 yrs)*
- *Verilog/SystemVerilog:* Familiar with hardware description languages for designing and simulating digital circuits.
- *Bash/Linux:* Strong command-line skills for system administration, scripting, and automation. Experience developing in Linux distributions (esp. Debian, Red Hat, Pop!OS, Ubuntu), Windows, and Mac environments.

Other Technologies:

- *Networking:* Understanding of containerization, Docker, Kubernetes, and virtualized compute environments.
- *Version Control:* Experienced in using Git for collaborative development, experience delivering code to CI/CD systems for OTA firmware updates.
- *FPGA Development:* Experience in college developing digital computer architecture designs with Altera FPGAs.

Education:

University of Washington - 2022
Bachelors of Science, Electrical and Computer Engineering
Concentration in Embedded Computing Systems