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Experience

Onicon Largo, FL

Senior Firmware Engineer 2021 – present

- Wrote firmware for high-accuracy water energy meters in C for TI MSP430 and STM32 processors. The firmware has been 100% error-free for customers. Created quality control application in Python to eliminate previously embarrassing order and manufacturing process errors before shipment. Created powerful and easy to use common Python library for interfacing with our products. Created cross-platform common hardware abstraction library for company products reducing time to market and testing. Created common bootloader using that library on two different architectures without need to change the code. Mentored fellow engineers in best practices, caught future mistakes before they occurred, and taught improved design and architecture best practices. Helped simplify product designs and vastly increase re-use of software and decrease development time and costs.

Tampa Microwave Clearwater, FL

Senior Software Engineer 2019 – 2021

- Created base platform for all future Manpack & Fly Away satellite terminal products from legacy PIC24 firmware to a from-scratch Yocto embedded Linux on a new board with an i.MX6UL CPU. Developed the bootloader, device tree, kernel, OS, and the port of the legacy firmware into a C and C++ Linux application. Performed schematic review and board bring up. Architected application to eliminate severe multi-configuration overcomplication by creating a single firmware that supports many product variants using a pointer to implementation design facilitating easy addition and removal of models with code re-use. Built software department infrastructure including a git server and an automated CI/CD build server while instituting industry best practices. Convinced SATCOM to allow Tampa Microwave to use a custom embedded Linux application. Used Atlassian bug tracking.

Hivelocity Tampa, FL

Senior Software Engineer 2018 – 2019

- Architected software and infrastructure for rapidly deployable bare metal servers. Mentored teammates on programming best practices, advanced Python skills, and efficiencies. Absorbed many new technologies including a JavaScript/React customer portal; legacy Flask and Django REST API servers; and Docker, Mantl, Jenkins, and other deployment stack tools.
- Developed paramount profit/loss and inventory analysis reports used daily by the executive team to access trends, insights, and business needs in existing and developing markets.

Med X Change Bradenton, FL

Senior Software Engineer 2017 – 2018

- Brought expertise to a Windows .NET team to complete an all-new Linux-based 4K medical video recorder. Built using OpenEmbedded (Yocto), Python, Qt, and gstreamer. Used Qt QML for the user interface with embedded python to handle business logic. Combined the development speed and ease of Python with the rapid GUI creation of Qt QML. Architected video encoder backend to seamlessly support both new and old video capture devices automatically in order to avoid future technical debt. Provided knowledge and training to the team for technologies new to them.

Older Work & Locations Seattle, San Jose, Philadelphia, Tampa

Software Engineer 1996 - 2017

- Created Ubuntu-ARM and custom Android OS digital signage products. Created Python REST integration API. Fixed bugs in a Ruby on Rails site. Added and pushed features to ngrok, an open source tunneling software. Added multicast network auto-discovery for cooperative playback.
- Created hand-held vision scanner software: main application (embedded Qt, SQLite), operating system (Open Embedded), and cross-platform desktop apps (Qt). Wrote Python applications to validate file system integrity, monitor processes, and perform rule-based data synchronization.
- Developed a large online card game network including game servers (Linux/C++), client application (Windows, C++, WTL), automatic updater, and server-interface code (PHP).
- Setup and managed software tools (source control, bug tracking, builds) and one-step build process.
- Created Linux OS for file-level repair of Windows systems in under 30 seconds.
- Architected software for nuclear, biological, and chemical weapons detectors. Setup the software department infrastructure. Added complex gas flow control algorithm to legacy gas chromatography-mass spectrometer. Wrote graphical data analysis application in Python.
- Created a distributed test framework for Video-on-Demand servers that imitated multiple brands of consumer set-top boxes and analyzed over 1.5 terabits per second of MPEG video. Used C++, Python, Kqueues, CORBA, and XML. Feedback from QA was overwhelmingly positive.
- Designed C/C++ software for head-end HDTV MPEG video encoders for Dish Networks.
- Worked on online servers and networking core for the video game 'URU: Ages Beyond Myst'.
 - Implemented efficient game patch difference algorithm reducing patches up to 75%.
- Created software in C/C++ for controlling up to 100,000 distributed fiber optic Ethernet switches.
 - Created a simple, flexible, and fast in-memory embedded database server in C and helped develop complex algorithms for internal packet switching and blade redundancy for enterprise switches.
- Wrote C programs that assimilated data from and controlled, via a radio link, a telescope that studied cosmic microwave background radiation.
- Designed and built a PCI data acquisition system that read up to 256 16-bit channels, all simultaneously at a frequency of 1.2 kHz.

Technology Experience

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| Languages & APIs: | C, C++, Python, Shell Scripts, Java, SQL, PL/SQL, sed, awk, Android, Qt |
| Protocol Expertise: | Low-level socket programming, UDP, TCP, deep protocol knowledge (SNMP, VLAN, Ethernet (Layer 2), TCP/IP (Layer 3/4)), extensive use of Wireshark. |
| IDEs & Tools: | Emacs, Android Studio, GDB, Mercurial, Git, CMake, GCC |
| Operating Systems: | Linux, Mac OS X, VxWorks, OSE, Windows |
| Knowledge Tools: | MS Visio, ScreenSteps, ScreenFlow, Balsamiq Mockups, OmniGraffle |
| Linux Distributions: | Android, Yocto, Open Embedded, Buildroot, Ubuntu |
| Other: | Linux Kernel, U-Boot, threads, SysV IPC, SSH |

Education, Awards, Interests, & Personal Notes

- University of Pennsylvania, B.S.E. Computer Science Engineering, Electrical Engineering – 1999
 - Fred Ketterer Memorial Award for Outstanding Creativity in a Senior Design Project
- Co-Organizer of Tampa Bay Android and CoderNight Meetups, Python learning and meetups, reading technical websites, managing a personal Internet server since 1999.
- Family life, Boy Scout Troop Scoutmaster, Eagle Scout, Cycling, Cooking, Backpacking
- Proposed at the summit of Mount Kilimanjaro
- Began programming in BASIC on a Commodore 64 and an Apple II in the late 80s and early 90s