Xueyi Li

📚 **Tech Lead · Linux · BareMetal · RTOS · Multithreading · C/C++/Bash**

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Summary

- Tech lead and Effective individual contributor with 10+ years of solid experience in system design, architecture, coding, performance optimization.
- Expertise in Baremetal, Linux, C/C++, Multi-Threading, Bash, Python, Git, UML, PlantUML.
- Experiences in robust software development, working closely with HW/SW/System teams, troubleshooting and solving problems, managing technical debt and implementing simpler alternative solutions.
- Growth mindset with an emphasis on learning and self/team-improvement, result-driven, prefer "keep-it-simple" and "get-it-done".
- Respectful, Empathetic, and Humble.

Top Skills

- System Architecture & Implementation, Linux/ARM, Multithreading, BareMetal/STM32, RTOS
- C/C++/Boost, Bash, Python, Markdown, UML, SQL
- VIM, CMake, Make, Boost Build(b2), Git, Azure, Pandoc
- GPIO, I2C, SPI, UART, PWM, ADC/DAC, CAN, Oscilloscope/Multimeter, GDB
- Open Sources Libs: Boost, Http(s), WebSocket, OpenCV, BACnet, Json, OpenCV, Zbar, Redis, Hiredis, ZeroMQ, Logging

Work Experience

04/2022 - present
Staff Engineer II, Firmware Engineering @BD Bioscience, Nashville, TN *(remote)*

- Designed and implemented flow rate monitoring and clog/bubble detecting algorithm on stm32, provided HTTP(synchronous) and WebSocket(asynchronous) APIs to SW
- Implemented vacuum static and dynamic pressure monitoring and status reporting algorithm on stm32
- Originated bash script to control loader movement directly, including homing, moving, sorting, etc
- Developed bash scripts and C/C++ driver to control bio shaker, including temperature, shaking, gripping, etc
- Provided knowledge transfer to team members and help the entire team up to speed

04/2020 - 04/2022
Staff Engineer I, Firmware Engineering @BD Bioscience, San Jose, CA *(on-site)*

- Developed flow cytometry loader module from scratch, optimized performance and robustness of RS485 serial communication by implementing adaptive window algorithm;
- Simplified system architecture using asynchronous communication pattern, greatly increased loader cell sorting performance from previous **67s to ~35s**
- Redesigned and decoupled controller and simulator code, more readable and portable, preventing duplicating effort & time of entire firmware team, facilitated QA team with their daily tests
- Design and implemented Software Simulator sending http requests and receiving WebSocket messages; wrote stress test cases using bash and curl, simplified test procedures and improved test quality.
- Optimized firmware build process from **~45 minutes** to **<10 minutes** with Makefiles/boost build(b2)
- Automated release and deployment process for QA team by writing a bunch of bash scripts

08/2018 - 01/2020
Senior Software Engineer @Turntide Technologies, California, USA

- Designed & implemented BACnet server layer on top of BACnet Stack(0.9.1)
- Implemented BACnet/IP(BIP) and Master Slave/Token Passing(MSTP on RS-485) application service.
- Refactored data management layer, restructured more than ten thousands of lines of redundant code.
- Implemented sqlite3 database read/write abstract layer by creating portable utility wrapper functions.
- Designed & implemented data sharing service that allows information exchange across BACnet devices.
- Implemented dynamic memory consumption and memory leaking checking tools(with Valgrind) in bash which resolved major memory leaking issues.

04/2017 - 08/2018
Senior Software Engineer @Mercedes-Benz R&D North America, California, USA

- Designed and implemented multi-threaded video streaming service for 2D camera and 3D cameras.
- Accomplished multi-streaming solutions in distributed system with socket and open source libraries.
- Designed and implemented positioning light control system with socket servers and client using Arduino.
- Implemented messages/events communication mechanism in multi-threaded system using Redis.
- Integrated computer vision algorithms for object identification and tracking.
- Work jointly with all the cross-functional team members to achieve the best performance of the product.

02/2016 - 01/2017
Senior Embedded Software Engineer @Elixir Photonics Incorporated, California, USA

- Customized Jam STAPL Player to program FPGA in a JTAG chain with text-based Jam file.
- Implemented FTDI chip driver and Inter-Integrated Circuit (I2C) shared library on Raspberry Pi.
- Developed python wrapper to call the I2C shared library, including read/write/convert APIs.
- Implemented services to monitor memory consumption and to manage log rotations.
- Design and Implemented Low Voltage signal detection and protection application on PIC MCU.

06/2014 - 07/2015
Embedded Software Engineer @Mentor Graphics, Shanghai, China

- Developed Volcano Target Package(VTP) sample project for various customers.
- Conducted on-site presentation, training, system integration and troubleshooting.
- Demonstrated technical assistance on Automotive CAN subsystem implementation and integration.
- Strengthened sustained relationships with global customers. Improved 20% VTP market share in China.

05/2010 - 06/2014
Embedded Software Engineer @Yanfeng Visteon Electronics Technology, Shanghai, China

- Implemented critical subsystems such as Flash Boot-loader, Inter-Processor Communication Layer(IPCL, DMA), Back-light Dimming Control(PWM) and Multi-Media, which were portable, readable and consistent.
- Accelerated sibling projects' development by **3-5 months** via porting those subsystems I developed.
- Accomplished Memory Check components' implementation, familiar with link file and map file.
- Managed and accomplished more than 8 mechanism replacement projects independently in 2011.
- Maintained good relationships with customers. Won the "Best Coordinator Award" in 2011.

Education

- ***Master, Biomedical Engineering, Shanghai University, Shanghai, China, 05/2010***
- ***Bachelor, EE, Huanghe Science & Technology College, Zhengzhou, China, 06/2007***
- ***Machine Learning Engineer Nanodegree , Udacity, California, USA, 06/2019***