Peter Lau

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PROFESSIONAL SUMMARY

Highly motivated and versatile Software Engineer with over 6 years of experience in firmware engineering, full-stack development, and embedded systems. Proven ability to lead projects, develop robust software solutions, and enhance system performance, including significantly streamlining development workflows by initiating a Python library that reduced firmware upload time by 50%. Expertise includes C/C++, Python, Node.js, React, and various embedded technologies. A collaborative team player with a strong background in developing scalable platforms, optimizing workflows, and delivering innovative solutions from concept to deployment.

SKILL COMPETENCIES

Programming Languages:	C/C++, Python, Rust, Javascript (ES6+), Typescript, Java, Bash
Web (Backend):	Node.js, AWS Cloud Services (RDS, EC2), SSL/TLS, OAuth, JWT, WebSocket, Express.js, RESTful APIs
Web (Frontend):	jQuery, CSS, Bootstrap, HTML, React
Database:	MySQL, Oracle Database, Microsoft SQL Server, Amazon Redshift, PostgreSQL, MongoDB
Software Tools:	Git, OpenCV, Robot Operating System (ROS), Docker
Others:	Control System Design, Embedded System Design, Project Planning and Execution
Languages:	English (Proficient), Chinese Cantonese (Native), Chinese Mandarin (Proficient)

WORK EXPERIENCE

Analog Devices Inc. Burnaby, BC, Canada

Firmware Engineer (1 year 6 months) Nov 2022 – Apr 2024

- Initiated and developed a Python library providing internal and customer tools with effective control over leading USB extender products via Ethernet, UART, RS232 and I2C interfaces, significantly streamlining development workflows and reducing firmware upload time by 50%
- Maintained and evolved Scala-based product serialization software, enhancing its encryption module to implement robust data protection and safeguard product integrity during factory programming
- Collaborated with the Philippine team to identify and resolve critical communication issues in a DisplayPort switcher communication module on Embedded Linux, ensuring compatibility with our product serialization software
- Researched and prototyped a proof-of-concept module for network-layer device discovery, successfully validating the feasibility for integration into USB extender products to simplify setup and enhance manageability
- Contributed to the implementation of a communication protocol in firmware to enable comprehensive configuration, control, and logging for USB extenders

Technologies used: C, Python, Scala, PostgreSQL, UART, I2C, Atmel, ARP, JTAG, IGMP, DHCP, TCP/IP, UDP, Embedded Linux, Jira, Atlassian Confluence, Git

SoarStack Tech Solutions Ltd. (Technology solution provider) Hong Kong, Hong Kong SAR

Software Engineer (3 years 3 months) Apr 2019 – Jun 2022

- Developed scalable B2B platforms for European and Asian markets (Node.js, Typescript, React) on AWS (RDS, EC2), featuring order management, 3d simulation and a real-time secure chat with robust role hierarchy access control, processing hundreds of orders monthly and secure global customer communication
- Maintained purchase systems while developing a new module automating purchase order generation and delivery for a government-funded educational institution (Java 1.6, MyFaces, Oracle Database), achieving and sustaining 99.98% system uptime
- Leveraged Docker and Bash scripting to automate integrations and deployments, eliminating manual errors and enhancing system consistency, saving approximately 12 hours of manual work per week
- Led the development of a POS system running on Linux devices for a small restaurant using Node.js, MongoDB, and React, including EPSON thermal printer integration for order and receipts printing, significantly improved operational workflow and customer checkout speed

Technologies used: Java, Node.js, Typescript, Three.js, React, MongoDB, Oracle Database, MySQL, Apache MyFaces, JWT, OAuth, RESTful APIs, SSL/TLS, WebSocket, AWS RDS, AWS EC2, Docker, Bash, Linux, Git

BHL Technology Ltd. (Humanoid robot company) Hong Kong, Hong Kong SAR

Embedded Software Engineer (8 months) Aug 2018 – Mar 2019

- Engineered a ROS-based control system on Ubuntu, integrating position output from Blender for animation playback to enable facial expression and hand gesture control on a humanoid robot
- Built a wireless remote access module for robots using a blend of Python, C, and Node.js, enabling remote control, real-time monitoring, and diagnostic capabilities
- Developed a computer vision module leveraging the YOLO model running on Nvidia Jetson for face detection and tracking, integrating facial recognition capabilities (associating identities with face embeddings), enabling personalized user experiences, achieving over 90% detection accuracy at 30 FPS within 2 meters
- Engineered an embedded software on Cortex-M3, controlling motors/servos via CAN bus with fine-tuned PID controller, enabling accurate positioning and smooth actuation to work with the ROS-based system

Technologies used: C, Python, Node.js, RESTful APIs, WebSocket, CAN, PID Control, Robot Operating System (ROS), Embedded System Design, JTAG, SWIM, Blender, Bash, Linux, Git

ARTRO Digital Ltd. Hong Kong, Hong Kong SAR

Freelance Full Stack Developer (11 months) Jun 2017 – Apr 2018

- Owned the end-to-end development lifecycle for various companies, delivering tailored business websites with custom content management system (CMS), enhancing their ability to manage content and improve digital reach

Technologies used: Node.js, React, MongoDB, MySQL, RESTful APIs, SSL/TLS, Git

EDUCATION

Hong Kong University of Science and Technology (HKUST) Hong Kong, Hong Kong SAR

Bachelor of Engineering (4 years) Sep 2014 – Sep 2018

Major in Computer Engineering

ACTIVITIES

HKUST Robotics Team Hong Kong, Hong Kong SAR

Sub-team leader Dec 2014 – Jul 2016

- Represented Hong Kong University of Science and Technology (HKUST) in the National Freescale SmartCar Competition (China) in 2014 and 2015
- Led a 15-member team structured into 6 groups aligned with different competition categories in fully autonomous car racing competitions, managing project timelines and inter-group coordination
- Maintained a core C++ library on a 32-bit ARM Cortex-M4 microcontroller for interfacing with diverse components (motor driver, servo, camera, flash memory, etc.) via I2C, UART, and SPI, ensuring reliable peripheral control and supporting the development for future racing car competitions
- Designed the PCB and schematic for the main board of the racing car using Altium Designer, enabling integration of new sensors and enhancing the weight distribution for self-balancing car

Technologies used: C++, Embedded System Design, Control System Design, PID Control, Fuzzy Logic Control, PCB Design, I2C, SPI, ADC, UART, Git

USThing (Student-driven all-in-one app provider for HKUST students) Hong Kong

Android lead Developer Jan 2017 – Present

- As main Android developer during the app's early stage, established and led the initial Android development efforts, mentoring a team of talented and passionate students dedicated to the continual betterment of the app and positively impacting the HKUST student community
- Developed and integrated a Convolutional Neural Network (CNN) based CAPTCHA solver (achieving ~98.1% accuracy) and integrated it into the app's facility booking feature to enable faster, more reliable automated bookings

Technologies used: Java, Android, Python, RESTful APIs, Python, Tensorflow, Git

HONORS & AWARDS

The 11th NXP® Freescale Cup Intelligent Car Competition 2016 Changsha, China
Second class award Jul 2016

- Engineered the C++ embedded system for a two-wheeled self-balancing car, enabling autonomous navigation of complex tracks (with turns and crossovers) via magnetic field detection using dual inductor sensors

The 10th NXP® Freescale Cup Intelligent Car Competition 2015 Xiamen, China
Merit award Jul 2015

- Engineered the C++ embedded system for a multi-agent autonomous car system involving pursuit dynamics, enabling complex track navigation (with turns and crossovers) via magnetic field detection using dual inductor sensors