Jiwook Kim

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Website: https://www.jkimengineer.com

Skilled in C/C++, Embedded Linux, FPGA design, analog and digital electronics, computer systems, and ROS.

Passionate about edge computing and innovative embedded system solutions.

Education

Northeastern University

BS in Computer Engineering Technology
GPA:3.7/4.0
Jan 2018 - Aug 2021

Skills

Computer Languages

- C • Modern C++ • Python
- BASH • Linux System Programming
- Assembly • SystemVerilog • CUDA
- MATLAB • LaTeX • JavaScript

Computer Science and Algorithms

- Concurrency • Data Structures • Git
- Computer Architecture • ROS
- Linux Device Driver • OOP
- Design Patterns • Yolo
- Computer Network/Socket
- Computer Vision • Docker
- Machine Learning • Deep Learning
- Digital Signal Processing • Sensor Fusion
- Compiler • Unit Test(GTest)
- Pytorch • Reinforcement Learning
- Trace32 • Control Theory • SLAM

Electronics

- Digital/Analog Circuit Design • FPGA
- Power Electronics • Electromagnetics
- Arm • Sensors/Actuators • Soldering
- Oscilloscope • Multimeter
- Function Generator
- Bare-metal MCU (Atmel, Arm Cortex-M)
- PCB Design • RaspberryPi • WiFi
- I2C • SPI • UART • Ethernet
- RS-232 • RS-422 • RS-485

Mathematics

- Linear Algebra • Vector Calculus • ODE
- Discrete Mathematics • Probability and Statistics • Complex Analysis

My Certifications

More than 100 Engineering Certifications:

https://www.jkimengineer.com/Menu/CERTIFICATES.html

Portfolio

www.jkimengineer.com/Menu/Personal%20Projects.html

Awards

- Physics Highest Honors
- Regional Finalist in First Tech Challenge
- High School Mathematical Competition in Modeling: Finalist

Experience

Senior Software Engineer Oct 2022 - Sep 2024

Qualcomm | Full time Contract Role | San Diego, California, USA

- Developed and optimized open-source(C/C++) network driver for Qualcomm's IP Accelerator (IPA) on Snapdragon Modem chips, enhancing packet processing efficiency for CPUs.
- Developed Linux network interfaces to integrate with the IPA, optimizing packet routing and processing for improved system performance.
- Developed IPA drivers within hypervisor-based virtual machines and validated their functionality, ensuring compatibility and performance across diverse environments while supporting development and testing workflows.
- Designed Python scripts to automate monitoring for the IPA Configuration Manager's task, improving system reliability and operational efficiency.

Embedded System Engineer Jan 2022 - Oct 2022

Hanyang University Technology Commercialization | Seoul, Korea

- Worked for location tracking device for police officers, focusing on collecting LTE uplink physical layer RSRP (Reference Signal Received Power) to localize cellular phones. Primarily developed high-speed signal processing in SystemVerilog using Xilinx FPGA with Vivado, implementing the SoC modem while contributing to electronic circuit design and digital signal processing. Additionally, I worked on embedded Linux development(C++) to extract and process GPS and IMU data, supporting the device's real-time localization features.

Robotics Software Engineer July 2021 - Dec 2021

Viewmagine | Seoul, Korea

- Designed and developed an IoT drone station, including custom electronic circuits and embedded software(C++/Python) to manage station operations, and implemented HTTP socket communication protocol to enable seamless drone-station interaction.
- Developed a drone navigation system using ROS(C++/Python). This system employs an Extended Kalman Filter (EKF) to fuse data from GPS and IMU for accurate state estimation. Additionally, implemented PID controllers to ensure precise trajectory control and stable, reliable flight performance.
- Developed object detection algorithm for drones with OpenCV and YOLO, enhancing real-time perception capabilities for autonomous flight applications.
- Engineered gimbal firmware in C++, enabling precise camera stabilization and control for improved aerial imaging and data capture.

Co-op Hardware: Electrical Engineer Jan 2019 - July 2019

Bose | Boston, MA

- Developed bare-metal embedded firmware in C++ for an audio-based embedded device, integrating LED control with laser sensors, rotary encoders, capacitive sensors, buttons, and potentiometers. Applied advanced signal processing techniques to manage sensor inputs, enabling dynamic lighting and audio playback features that deliver an engaging user experience.
- Conducted thermo-testing and battery characteristic analysis on lithium-ion and silver-zinc batteries to ensure long-term reliability.

Embedded System Engineer Jan 2020 – April 2020

Northeastern University: Silicon synapse lab | Boston, MA

- Developed electrical circuits and firmware(C++) for the Robot Bat using the STM32 Arm Cortex-M microcontroller, implementing IMU data retrieval, servo motor-based flight control, and Bluetooth communication with mobile applications.

AP Physics Teaching Assistant November 2016 - May 2017

Stony Brook High School | Stony Brook, NY