Fuad Ismail

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Summary

I am an ex-R&D Hardware Engineer from Keysight Technologies Malaysia with over 4 years of experience in the hardware industry (RF, electronics, embedded). Despite that, I am acquinted with software development, as my work frequently require me to develop softwares, such as embedded software, mathematical simulation, and computational libraries.

I took a career break since August 2023 due to personal reasons. I am currently self studying Computer Science to break into the industry. See github.com/fuad1502/self-study-cs to know what I've achieved throughout my 7-months career break.

I am mainly interested in Systems Software (OS, Database, Distributed and Embedded Systems) and my goal is to consistently contribute to the OSS ecosystem by contributing to public repositories and building my own OSS projects. Currently, I have contributed and will be contributing regularly to Verilator, an open-source SystemVerilog simulator and lint system.

I am a passionate learner commited to continuous learning and have a track record of showing initiative at the workplace and deeply care about my work.

Education

Bandung Institute of Technology Bandung, Indonesia
Electrical Engineering (BS), ABET Accredited, GPA 3.81/4.0 *2014 - 2018*

Technical Skills

Programming Languages: Rust, Go, C, C++, Java, JavaScript, Python, SQL, SystemVerilog, MATLAB
Developer Tools: Git, Docker/Podman, CMake, Make
Libraries / Frameworks: React, Gin

OSS Projects

Bilbob: A Social Media for Your Pets February 2024 – Present
github.com/fuad1502/bilbob

Bilbob is a Social Media platform written in Go with Gin web framework for the backend and Javascript with React for the frontend. This project originally meant as a learning exercise on end-to-end web development. Therefore, all functionality, such as registration and password storage management, authentication and session management, resource querying, are all written from scratch. Bilbob is live on bilbob.fuadismail.com.

Rubbler November 2023 – Present
github.com/fuad1502/rubbler

Rubbler is a RISC-V assembler written in Rust. This library was written with the main purpose of embedding a simple RISC-V assembler inside of a RISC-V CPU test bench code written with Verilator.

RVSV November 2023 – Present
github.com/fuad1502/rvsv

RVSV is a SystemVerilog implementation of a 5-stage pipelined RISC-V CPU. Verification code is written in C++ using Verilator and Rubbler.

KIBI October 2023 – Present
github.com/fuad1502/kibi

KIBI is a simple typing test web application. Built with React and Spring Boot. KIBI is live on kibi.fuadismail.com.

Other Projects

NAALG: Network Analyzer Algorithms C++ Library

Keysight Technologies

I initiated the development of NAALG due two things. First, I was tasked with developing a novel Time Domain Reflectometry (TDR) calculation from Vector Network Analyzer (VNA) measurements. Second, on a different project, I had just implemented a new calibration algorithm for an embedded VNA. Since both of this project involves calculation on VNA measurements, I realize that it would be nice to have a library that provides all of these VNA algorithms in one place. NAALG is similar to scikit-rf, but uses high performant implementation in C++ to enable usage in embedded real-time measurement applications.

Custom Telecommunication Device (GMSK + TDM Transceiver)

Hariff Daya Tunggal Engineering

My team was tasked with developing a fully custom telecommunication device. My role was in developing the physical (PHY) and medium access control (MAC) layer on an *All Programmable SoC (APSoC)*. The PHY layer is written in Verilog, while the MAC layer is written in C. Communication between the two layers uses Direct Memory Access (DMA).

Automatic Identification System Search and Rescue Transponder

Labs247

Automatic Identification System (AIS) Search and Rescue Transponder (SART) is a radio device used to locate distressed vessels. My role was in developing all of the electronic and embedded software aspect of the device, and production. We use FreeRTOS Real-Time Operating System to enable low power usage and multiple tasks management. Up till now the device is still in production.

Relevant Experience

Software Engineer February 2021 - October 2021

Lumina Industries *Jakarta, Indonesia*

- Wrote the Windows middleware for a Virtual Camera software using Win32 API.
- Developed image processing features using C++ with OpenCV.
- Worked remotely with a medium-sized team from various nationalities (USA, Taiwan, and Indonesia).

Additional Experience

R&D Hardware Engineer January 2022 – August 2023

Keysight Technologies *Penang, Malaysia*

- Initiated the development of NAALG, a network analyzer algorithms C++ library.
- Demonstrated iniatiative by voluntarily improving an internal software tool used by our team.
- Demonstrated initiative by introducing a better software development workflow.
- Significantly improve the measurement accuracy of an embedded VNA product by introducing and implementing a better calibration algorithm.
- Successfully extend the measurement bandwidth of an embedded VNA product.
- Fixed a technical issue in an embedded VNA product and wrote a technical paper on it.
- Collaborate in a team from various time zones (USA, Europe, and Malaysia).

R&D Radio Frequency Engineer August 2020 – February 2021

Hariff Daya Tunggal Engineering *Bandung, Indonesia*

- Wrote MATLAB simulations to evaluate system-level design tradeoffs for the development of a fully custom telecommunication device.
- Implemented the PHY and MAC layer of a fully custom telecommunication device on an APSoC using Verilog and C.
- Designed a schematic for a fully custom telecommunication device.

R&D Electronic Design Engineer August 2018 – August 2020

Labs247 *Jakarta, Indonesia*

- Lead the development of telecommunication product (AIS SART) which is still in production up till now.
- Involved in the development of medical product (CPAP BiPAP machine).
- Demonstrated initiative by suggesting cost-saving solutions that avoids vendor lock in and introduced an efficient production workflow.