

Muhammad Afif Ramadhan

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Stockholm, Sweden

EDUCATION

- **KTH Royal Institute of Technology** Stockholm, Sweden
Masters in Embedded System, Software Track August 2024 – present
- **Bandung Institute of Technology** Bandung, Indonesia
Bachelor of Engineering in Electronics, with honors: Cum Laude August 2016 – July 2020

WORK EXPERIENCE

- **CAD-IT Consultants (ASIA) Pte Ltd** Bandung, Indonesia
Embedded Systems Engineer November 2022 - July 2024
 - **Over-the-Air Firmware Update:** Redesigned and improved existing Firmware-Over-The-Air (FOTA) systems, increasing system reliability from 80% to nearly 100%. Integrated FOTA with a device management system using LwM2M protocol.
 - **Device Management and Monitoring:** Integrated Lightweight Machine-to-Machine (LwM2M) protocol using UDP/IP, enabling remote configuration, provisioning, and monitoring. Utilized [Wakaama](#) and [Eclipse Leshan](#) for implementation.
 - **Embedded Security Authentication Module:** Designed and developed a authentication module, using time-based password to secure remote access. Implemented using MbedTLS and a custom algorithm.
 - **Real-time Locationing Systems:** Developed an indoor real-time location system (RTLS), consisting of firmware, a full-stack web interface, and a database. Utilized SvelteKit and SQLite to track tagged objects with high accuracy and display results in a 3D web UI.
- **PT Xirka Dama Persada** Bandung, Indonesia
Contract-based Embedded Systems Engineer June 2022 - October 2022
 - **Embedded System Design:** Designed an embedded system architecture for IoT real-time power monitoring of photovoltaic cells, using Espressif ESP32.
 - **Sensor Test and Development:** Developed a C++ library to interface with power meter sensors and calibration software for accurate measurements, reducing power measurement error from 10% to less than 2%.
 - **Internet Connectivity:** Established a network interface layer enabling interchangeable internet connectivity through GPRS, WiFi, or wired Ethernet options, bridging to TCP/IP stack.
 - **UI for Embedded System:** Created a UI using event-driven methodology for flexibility and robust system using a custom library for an OLED display.
- **Center of Microelectronics, Bandung Institute of Technology** Bandung, Indonesia
Researcher for Visible Light Communication June 2020 - June 2022
 - **Simulation and Prototyping:** Simulated Visible Light Communication (VLC) using an adapted OFDM model in MATLAB and tested it in a Zynq-7000 FPGA-based prototype as a proof-of-concept.
 - **Academic Research Writing and Presentation:** Presented research findings and published two academic papers on the topic, both of which were published to the IEEE.
- **PT Xirka Dama Persada** Bandung, Indonesia
Internship followed by Contract-based Part-time Embedded Engineer May 2019 - January 2020
 - **Hardware Abstraction Library Development:** Created a Hardware Abstraction Layer (HAL) for an ARM Cortex-M3 microcontroller, covering GPIO, I2C, SPI, and Hardware Timer modules.

SKILLS

- **Programming Languages:** Proficient in Embedded C/C++, Golang, SvelteKit, and Python.
- **Development Tools:** Experienced with Git, Linux, and FreeRTOS, and other various open-source projects.
- **Embedded Systems:** Expertise in embedded system design, microcontroller interfacing, low-level programming, and real-time operating systems.
- **Communication:** Experience working with multinational teams in Singapore and Indonesia, effectively communicate ideas and deliver reports and documentation in English.