

# Timothy Adu

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## SUMMARY

I'm an embedded systems architect who lives at the intersection of hardware and firmware - I am a problem solver at heart and I'm driven by building solutions to real problems! I've led teams and commercial-scale firmware development, test and QA, handled certification, supplier and mass production workflows, and coached engineers from intern level to independent contributors. Practical, detail-oriented, fun to work with, and slightly obsessed with making devices reliable in the wild.

## SKILLS

### ⇒ PROGRAMMING/SCRIPTING LANGUAGES:

C | C++ | Matlab | Python | Bash

### ⇒ COMMUNICATION PROTOCOLS:

BLE | NFC | CANBUS | I2C | SPI | UART | WiFi | LTE-M | NB-IoT | CAT1.bis | LoRa

### ⇒ DEVELOPMENT METHODOLOGIES:

Scalable Embedded Software | Firmware | Devops | CI/CD | Test Driven Development | Quality Assurance | Hardware Bringup | Low Power Embedded Design | Systems Architecture/Design | Project Management | Documentation | Agile/Scrum | UML | Driver & Middleware Development | Test Automation

### ⇒ MICROCONTROLLER PLATFORMS:

STM32 | NRF52 | NRF91 | ESP32 | NXP | ATSAMD | ATMEGA | PIC32 | ARM | Raspberry Pi

### ⇒ EMBEDDED DEVELOPMENT PLATFORMS:

FreeRTOS | Bare Metal | NRF5 SDK | NRF Connect SDK | MPLAB Harmony | MCUXpresso SDK | GCC | STM32CubeMX

### ⇒ DEVELOPMENT SOFTWARE TOOLS:

MPLABX-IDE | VsCode | Eclipse | STM32CUBE-IDE | SEGGER Embedded Studio | SEGGER Jlink | SEGGER SystemView | PLANTUML | Git | JIRA | GitHub | Gitlab | KiCAD | Doxygen | SonarQube | Docker | CodeSonar | PyTest | Jenkins

### ⇒ CODING STANDARDS:

Barr-C | MISRA-C

## EXPERIENCE

### Hardware (Embedded Systems) Technical Lead

Tector

March 2024 - Present, Copenhagen, Denmark

- Leading design and development of new low power IoT sensors (electronics and firmware).
- Project lifecycle management and reporting (project timelines, reports, weekly updates).
- Management of product certification processes and requirements.
- Define, oversee and perform quality assurance tests to ensure product reliability and performance.
- Define and manage hardware operations processes and maintaining contacts with suppliers.

### Founder | Mentor | Hardware Startup Advisor | Embedded Systems Consultant

Helix Embedded

July 2023 - Present, Copenhagen, Denmark

- Coaching/mentoring of students studying Embedded Systems Engineering. Coaching 2-3 students every quarter.
- Sparring and mentoring hardware startups.
- Engineering consulting - product development, embedded software development and architecture development.

## Senior Embedded Software Engineer

EMRI A/S

August 2023 - February 2024, Copenhagen, Denmark

- Developed embedded software for marine autopilot navigation systems.
- Developed and maintained automated test platform.
- Integrated robust communication protocols for marine navigation devices, enabling seamless interoperability across multiple hardware platforms.

## Embedded Systems Technical Lead

Donkey Republic

November 2021 - August 2023, Copenhagen, Denmark

- Assumed the pivotal role of Product Owner in spearheading the comprehensive development of a bike control system, overseeing all aspects from inception to execution.
- Provided leadership in the formulation and execution of hardware and firmware architecture and design strategies, applied across 4 projects, ensuring robust and high-performance systems.
- Conducted meticulous research and executed a discerning process for the selection of electronic components, underpinning product excellence.
- Cultivated robust relationships with 15 distributors and meticulously managed the supply chain, ensuring timely access to critical resources.
- Spearheaded the establishment of PCBA programming and test hardware for 10k+ production units, along with the development of rigorous QA procedures for the EMS provider, ensuring product quality.
- Undertook a comprehensive codebase refactoring and cleanup initiative, optimizing code quality and maintainability for long-term sustainability.

## Lead Firmware Engineer

Nordsense

December 2018 - October 2021, Copenhagen, Denmark

- Orchestrated a dedicated team comprising 2 engineers and 3 consultants, steering the development of cutting-edge sensor hardware solutions.
- Development and maintenance of firmware for both existing and pioneering products, ensuring their optimal performance. Maintained 2 hardware platforms.
- Assumed a central role in product development, effectively managing and meticulously overseeing requirements throughout the project lifecycle.
- Pioneered the establishment of a robust CI/CD workflow, elevating code quality and development efficiency.
- Architected a scalable firmware framework adaptable across 3 development projects, fostering efficiency and reusability.
- Exemplified meticulous documentation practices by extensively documenting the codebase and associated processes, facilitating seamless knowledge transfer and maintenance.

## Embedded Software Engineer

WSAudiology

February 2018 - December 2018, Lynge, Denmark

- Demonstrated proficiency in the comprehensive lifecycle management of embedded software for hearing aids, encompassing analysis, design, implementation, and rigorous testing of 2 product platforms.
- Conceptualized and engineered a robust test architecture and framework to enable continuous integration, delivery, and automated testing, bolstering development efficiency.
- Implemented an advanced toolset for static application security testing, a critical measure to meet the stringent standards inherent in medical device development.
- Exercised leadership as a Scrum Master, managing an external team of 4 test developers, ensuring streamlined collaboration and the achievement of project objectives.

## Embedded Software Engineer

Sennheiser

August 2014 - January 2018, Ballerup, Denmark

- Spearheaded end-to-end responsibilities, encompassing analysis, design, implementation, rigorous testing, meticulous documentation, and seamless integration of embedded software tailored for CCO solutions. Developed software on 3 product lines.
- Orchestrated the adept integration of complex systems, harnessing the power of cutting-edge continuous integration tools to optimize project workflows.
- Pioneered the development and perpetual maintenance of sophisticated test automation solutions for 3 different projects, elevating the precision and efficiency of the testing process.
- Exemplified strategic prowess through in-depth requirement analysis and the meticulous design of software modules, aligning each component seamlessly with project objectives.
- Innovated and engineered state-of-the-art Electronic Hook Switch (EHS) drivers, enabling seamless communication with a diverse array of desk phones, expanding product compatibility horizons.

## EDUCATION

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### Bachelor of Engineering

Technical University of Denmark • Copenhagen, Denmark • 2014

- Awarded partial scholarship due to excellent performance in engineering courses.

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## CERTIFICATIONS

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### Cellular IoT Fundamentals

Mpirical • 2021

- Certified in development of IoT solutions, with focus on cellular wireless technologies.

### Engineering Project Management

Rice University • 2021

- Certified in the methodologies and procedures of managing engineering projects.

### 4G Broadband LTE

IEEE • 2019

- Certified in development of IoT products using 4G LTE/LTE-M/NB-IoT

### Bluetooth Low Energy (BLE) Training

Widex • 2018

- Certified in development of BLE solutions.

### Technical Writing for Scientists and Engineers

IEEE • 2017

- Certified in standardized methodologies for technical documentation with focus on embedded systems.

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## INVOLVEMENT

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### Career coach/mentor

Danish Society of Engineers (IDA) • April 2020 – Present