

FRANK KOFI MANU

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EDUCATION

University of Massachusetts, Lowell

May, 2020

M.Sc. Computer Engineering

Relevant Courses: Coding & Information Theory, FPGA Logic Design, Radar Systems, Data Structures, Microwave Engineering, Data Communication Networks, Communication Theory.

Honors: Summa Cum Laude.

University of Massachusetts, Lowell

May, 2018

B.Sc. Electrical Engineering

Relevant Courses: Wireless Communications, Electromagnetics, Electromechanics, Microprocessors Feedback Systems, Digital Signal Processing.

Honors: Commonwealth Honors, Dean's List, Omicron Delta Kappa, Tau Beta Pi (MA Theta), Magna Cum Laude.

PROFESSIONAL DEVELOPMENT

MIT xPRO

Aug 2018 - Mar 2019

Architecture and Systems Engineering

WORK EXPERIENCE

Amazon

Amazon Robotics

Sr. Systems Development Engineer

Nov 2023 - Present

- Developed "FRODO", an ElectronJS and Python desktop application, reducing Chute deployment executions (MCMs) from 48 to 1 and saving ~\$0.8M on deployments at FCs (MQY1 and SHV1).
- Implemented PLC based controls to expediate resolution of pacakage exceptions, enabling Amazon to fulfill more deliveries within promised customer times.
- Mentored junior engineers, participated in recruiting and interviewing processes, and contributed to strategic policies to drive engineering improvements and team growth.

Systems Development Engineer

Jul 2021 - Nov 2023

- Developed "Interceptor," a Python-based middleware connecting Amazon Pharmacy's SmartPac and Symphony WMS, reducing associate packing time from an average of 30 seconds to 12 seconds.
- Collaborated on the design of "AWIS", a prototype Computer Vision and Machine Learning system, to reduce virtual-physical mismatches (VPMS), a \$2M annual cost driver at BDL2 (FC).
- Created scripts to improve scanner accuracy, eliminating approximately 1,200 monthly scan lockout instances across Amazon's Pharmacy network.
- Developed "Skippy," a Python script for operations at DEN4 (FC), to gather metrics on dwell times for made-on-demand (MOD), enhancing critical pull times (CPTs) for MOD books.

Carrier Corporation

Kidde Fire Systems

Systems Engineer

Jun 2018 - Jul 2021

- Led the development of KFS IntelliSite™ from concept to production release achieving a 33% faster time to market, in 2 years, compared to KFS' typical 3 to 4 year product development timeline.
- Engineered and integrated hardware and software systems, including an IoT Gateway running Yocto Linux, Antenna and other critical hardware to ensure system reliability.
- Led software engineering efforts, including architectural design, code reviews, QA testing, debugging, and implementing continuous integration practices.

WORK EXPERIENCE

Analog Devices (Industrial Capstone Project)

UMass Lowell, EECE Dept.

Electrical Engineer

Aug 2017 - May 2018

- Constructed Monopulse Phased Array Radar System primarily to provide a test platform and marketing demo system for the Analog Device's ADAR1000 beamforming chips.
- Managed project concept design, schedule, component selection and consecutive changes successfully from initial client meeting to functional prototype system.
- Conducted RF loopback tests, improving detection occurrence of target corner reflector by approximately 95% out of 300+ sample runs and successful demos in capstone showcase.

ThermoFisher Scientific

Thermo Scientific

Electrical Engineering Co-op

Jan 2017 - Sep 2017

- Carried out and authored Bring-Up and Design Verification Tests for PCBs and prototype subsystems, ensuring system reliability.
- Updated circuit schematics and PCB layouts to integrate Bluetooth and WiFi connectivity for ThermoFisher's Niton Handheld XRF Analyzer.
- Debugged and resolved electrical issues in prototype systems, including on communication modules FPGAs and processors, improving functionality for end products like Niton Apollo (LIBS Technology).

TECHNICAL SKILLS

Electrical Engineering: Schematic Design, BOM Processing, Spice Analysis, OrCAD, Comms. Protocols, (I²C, SPI & UART), WIFI, Bluetooth and GPS modules, Circuit Debug, PCB Design.

Computer Engineering: Python, C, C++, C#, MATLAB, VHDL, Verilog, Typescript, Javascript, MySQL.

Systems Engineering: Systems Architecture, IBM DOORS (Requirements Management), Jama, AWS Serverless Design & Architecture, JIRA, Research Program Management.

RESEARCH EXPERIENCE

Advanced Communication Networks Lab

UMass Lowell, EECE Dept.

Electrical Engineering Research Asst.

Jan 2016 - May 2018

- Assisted in analyzing Optical Network design and resource allocation with a focus on problems resulting from packet blocking.
- Assisted in developing network simulators for investigating blocking probability, advance reservation and allocation, and various networking heuristics (first fit, random fit etc.).
- Reviewed research papers from PhD candidates, offered constructive criticisms and recommended clarification on various theoretical assertions.

Lead-free Nano-solders and Applications

UMass Lowell, ChemE Dept.

Electrical Engineering Research Asst.

Aug 2015 - Jan 2016

- Synthesized lead-free nano particles for developing solder from Sn/Cu (Tin/Copper) powder.
- Focused on synthesis precision to achieve results comparable to lead based solders.
- Analyzed soldered components for comparison with solder joints made by Pb(Lead) based solders.
- Proposed the 4-wire approach for measuring resistances of conductive test samples after persistent imprecise results. Subsequent results were precise and fairly accurate within error margins.