# FRANK KOFI MANU

frankmanu500@gmail.com | (508) 762 - 7091 | www.linkedin.com/in/frankmanu500

## 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, Electromechanics.

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 Amazon Eject Chute deployment time from 12 to 2 weeks, saving $0.7M.
- Implemented PLC based controls to expedite 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 Analyzer.
- Diagnosed and resolved electrical issues in prototype systems, including on their communication modules (Wi-Fi, Bluetooth, GPS) through circuit debugging and PCB rework, improving functionality.

## TECHNICAL SKILLS

| | |
|---|---|
| Electrical Engineering: | Schematic Design, BOM Processing, Spice Analysis, OrCAD, Comms. Protocols, ($I^2C$, 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 Serveless 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.