Abdulquadri Abiru

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EDUCATION

University of Florida *Gainesville, FL*

- Master of Science (M.S.), Electrical Engineering (GPA: 3.7/4.0) *December 2024*
- Bachelor of Science (B.S.), Electrical Engineering (GPA: 3.6/4.0) *May 2022*

Relevant Coursework: Circuits 1 & 2, Intro Signals/Systems, Digital Logic, Microprocessor Applications, Solid State Electronics, E-Circuits 1, Biosignals & Systems Analysis, Resonant MEMS, Principles of Eleectromechanical Transducers, VLSI 1

SKILLS

Programming: Python, C/C++, Java, Shell, JSON, YAML, MATLAB
Platforms: Windows, macOS, Linux (Ubuntu, Raspberry Pi OS)
Hardware: Raspberry Pi, STM32, MSP430, ESP32/8266, Zigbee RF Radios, Oscilloscopes, Function Generators, Logic/Spectrum Analyzers
Software/Protocols: : Altium Designer, KiCad, LTSpice, Code Composer Studio, Atmel, IAR I2C, SPI, UART, CAN

WORK EXPERIENCE

UF Wireless and Mobile Systems Lab *Gainesville, FL*
Graduate Research Assistant, IoT Acres Project January 2023 – *Present*

- Led the development and implementation of an IoT system for sensor data transmission on a construction site
- Achieved a 75% reduction in device overhead and costs via development of a multi-protocol, multi-threaded Python gateway on Raspberry Pi
- Automated gateway initialization using shell scripting for streamlined and efficient system startup
- Conducting rigorous testing and optimizing network infrastructure for enhanced data reliability and minimized latency
- Facilitated remote sensor deployment by designing and routing custom printed circuit boards for ESP32-based MCUs.
- Enhanced data accessibility and decision-making through AWS IoT Core, AWS TimeStream, and AWS Grafana for streamlined real-time data streaming, storage, and real-time visualization on the backend; automated backend configuration using AWS CloudFormation

Ethicon Endo-Surgery *Cincinnati, OH*
Research and Development Co-op September 2022 – *December 2022*

- Collaborated on a cross-functional team to devise and execute a test fixture for medical device component tracking
- Engineered STMF32 firmware using CubeMX and IAR to enable SPI protocol communication with a magnetometer sensor
- Developed C code to stream microcontroller data to a PC using UART protocol, managing data reception and storage with a Python script
- Conducted experiments, delivering comprehensive findings on sensor accuracy and consistency
- Supported external teams by developing a multi-threaded Python program for real-time data visualization from medical devices
- Proficiently operated standard electrical equipment and conducted hardware debugging

F5 Networks *Seattle, WA*
Software Engineering Intern June 2022 – *September 2022*

- Orchestrated Docker-based data pipeline for a Digital Twin initiative, enabling seamless data transmission via OpenTelemetry protocol
- Automated the configuration of the OpenTelemetry gateway, Prometheus database, Kafka service, and Grafana within the Docker environment using meticulously crafted YAML files
- Collaborated on packaging and deploying the pipeline as a Cloud Native Application Bundle (CNAB) using porter on Google Cloud Platform
- Integrated NGINX for network monitoring and security in the Docker ecosystem
- Demonstrated advanced Git proficiency in version control and collaborative development workflows

PROJECTS

SRAM Design

- Employed Cadence Virtuoso to meticulously design the layout of an SRAM (Static Random-Access Memory) circuit during VLSI coursework
- Focused on optimizing key components including the cell array, wordlines, bitlines, sense amplifiers, and access transistors
- Orchestrated critical elements within the layout to ensure efficient data storage, retrieval, and manipulation

Reverse Polarity Protection Circuit

- Boosted vehicle efficiency and performance by precisely calculating automotive power consumption through meticulous datasheet analysis.
- Improved system reliability and integrity by designing and prototyping a reverse polarity protection circuit utilizing an LM74610QDGKRQ1 smart diode and NMOS transistor.
- Achieved an 8% efficiency gain through innovative component integration, resulting in reduced passive power consumption

Smart Campus Project

- Spearheaded the development of the third-place-winning smart city prototype for the UF 2021 IoT Design Competition in a team of three
- Engineered and deployed IR sensors and MOSFET switch circuits to enable real-time monitoring of parking spaces and streetlights.
- Programmed an Arduino IoT board with C firmware, facilitating seamless data transmission to Azure IoT Central via the MQTT protocol.

UF Hydro Patrol Project

- Enabled miniaturization by using given specifications to layout and route custom PCBs for a research project
- Reduced interference and improved signal integrity by incorporating MOSFET switches to isolate sensor probe signals
- Performed continuity testing and assembled the PCB using surface mount soldering techniques