

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 Electromechanical Transducers, VLSI I

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

- Spearheaded 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 IoT gateway using Python on Raspberry Pi
- Automated gateway initialization with shell scripting achieving a 46% reduction in startup time, enhancing efficiency and operations.
- Optimized network infrastructure for enhanced data reliability and minimized latency through rigorous testing and troubleshooting
- Facilitated remote sensor deployment by designing and routing 5 custom printed circuit boards for ESP32-based MCUs.
- Improved data accessibility and decision-making by enabling real-time data streaming, visualization, and storage in a NoSQL database using AWS IoT Core, AWS TimeStream, and AWS Grafana; 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 of 6 to devise and execute a test fixture for medical device component tracking
- Developed a sensor driver in C using CubeMX and IAR to enable SPI protocol communication with a magnetometer sensor
- Created STM32 firmware for microcontroller data streaming to PC via UART, with data reception and storage handled by a Python script
- Presented insights from extensive experimentation, enhancing team decision-making with comprehensive sensor precision insights.
- Enhanced productivity by creating a multi-threaded Python program for real-time medical device data visualization, aiding 2 external teams.
- Advanced product development through proficient operation of standard electrical equipment and rigorous hardware debugging.

F5 Networks

Seattle, WA

Software Engineering Intern

June 2022 – September 2022

- Advanced a Digital Twin initiative by orchestrating a Docker-based data pipeline, facilitating seamless data transmission via OpenTelemetry.
- Communicated insights on OpenTelemetry's suitability for a digital twin to senior engineers, shaping strategic choices.
- Automated the configuration of a Prometheus, Kafka, and Grafana backend using YAML files, resulting in improved operational efficiency.
- Collaborated with a senior engineer to deploy the pipeline as a Cloud Native Application Bundle (CNAB) on Google Cloud Platform
- Implemented NGINX to enhance visibility, network monitoring, and security within the Docker ecosystem.
- Demonstrated adept proficiency in version control and collaborative development using GitLab, highlighting DevOps competencies

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