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: Cloud Computing Systems Management , Cloud Computer Systems and Applications, Computer Communications, Advanced Systems Programming, IoT Security and Privacy, Wireless and Mobile Networks, Computer Programming Using Java, Programming for ECE 1 & 2, Microprocessor Applications

SKILLS

Programming: Python, C/C++, Shell, JSON, YAML, JavaScript
Platforms: Windows, macOS, Linux (Ubuntu, Raspberry Pi OS)
Software: Docker, Kubernetes, Terraform, Flask, REST
Certifications: AWS Certified Cloud Practitioner (CCP)

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

Dynamic Cluster Management in Kubernetes Ecosystem | Docker, Kubernetes, Python

- Orchestrated a resilient 3-node Kubernetes cluster using kubeadm, kubectl, and kubelet in a CloudLab Linux virtual environment
- Monitored system CUP utilization through the deployment of a Metrics Server and scripted tracking with Kubernetes Python SDK
- Engineered first-order linear models with local and global PI controllers for optimizing pod allocation, targeting 80% CPU utilization
- Designed Flask REST APIs for dynamic node management, handling job assignment, cordon/restore node tasks, and system state retrieval

Cloud Hosted Web Application | https://bmi.quadriabiru.com

- Deployed a serverless web app to calculate user Body Mass Index (BMI) on AWS with S3, Route 53, and ACM for TLS/SSL security
- Utilized AWS Lambda for serverless JavaScript execution, enabling real-time BMI calculations integrated with API Gateway
- Strengthened application security by meticulously implementing IAM policies for precise access control within the AWS ecosystem
- Ensured efficient and continuous updates by implementing a CI/CD pipeline with GitHub Actions for automating front-end deployment.
- Enhanced website performance and scalability by utilizing the CloudFront Content Delivery Network to efficiently serve content to users.

Cloud Hosted Resume with Automated Infrastructure Deployment | https://resume.quadriabiru.com

- Deployed a resume website on AWS with Route 53, S3, and ACM for TLS/SSL security.
- Leveraged AWS DynamoDB to store website view counts and utilized AWS Lambda functions to dynamically update the view counter
- Implemented CI/CD pipeline with GitHub Actions for automatic deployment of system updates, ensuring efficient and continuous delivery
- Streamlined infrastructure setup through automation using Terraform, significantly enhancing operational efficiency.