Abdul-Baaki Yakubu

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🔗 https://abdul-baaki.github.io

EDUCATION

MSc. Electronics and Communications Engineering   2022 – present
Egypt-Japan University of Science and Technology, Egypt
Thesis: *Task Offloading and Resource Optimization in Multi-access Edge Computing using Reinforcement Learning.*

BSc. Telecommunication Engineering   2017 – 2021
Kwame Nkrumah University of Science and Technology, Ghana
First-class division
Graduation project: *Artificial Intelligent Dietician Consultant.*

RESEARCH INTEREST

- 5G/6G and beyond wireless communication networks
- Internet of Things and Internet of Vehicles
- Sensor Networks and wireless security
- Satellite networks
- Spectrum sharing and utilization
- Signal processing, machine learning, and Edge computing

RESEARCH EXPERIENCE

Graduate Student   present
Egypt-Japan University of Science and Technology, Egypt
Task Offloading and Resource Optimization in Multi-access Edge Computing using Reinforcement Learning.

- Designed an RIS-assisted NOMA-based Vehicular Edge Computing architecture as an environment for task offloading.
- Modeled the system for this environment and constructed a V2I transmission model using intra-edge and inter-edge interference of vehicles.
- Used distributed RL algorithms to optimize the offloading decisions to minimize the overall cost of computational offloading.
- Optimized the RIS phase shift parameters using Whale Optimization Algorithm.

Research Assistant   2021 – 2022
Department of Telecommunication Eng. KNUST, Ghana

- Path Loss Prediction based on Machine Learning
  - Trained various Regressors and compared the result to empirical path loss models.
- Worked on a project called "Providing Real-time Speech-to-Sign Language Translation using AI."
- Co-supervised undergraduate student's research projects (two groups of three students).

Projects

- **Keyword Spotting on the Edge**
  Trained NN classifier to identify particular keywords, performed pruning, and deployed it onto a smartphone and Arduino nano 33 BLE sense. Project Demo: Keyword Spotting on the Edge ⧉
- **Designed a Microwave Oscillator (5 GHz VCO)**
- **Designed a Microstrip Patch Antenna at an operating frequency of 2.5 GHz**
- **Designed a police siren using NE555 Timer**

Simulate the circuit on Proteus and solder it on a perf board to produce the exact sound.
- **Engineering in Society project**
Collected and analyzed data on malaria cases' effect on society and simulated a circuit that produced ultrasound frequencies to repel mosquitoes (electronic mosquito repellant) to keep the ecosystem safe.

PUBLICATION

Yakubu, A.-B, Abd El-Malek AH, Abo-Zahhad M, Muta O, Elsabrouty M. "Task Offloading and Resource Allocation in an RIS-assisted NOMA-based Vehicular Edge Computing," Sept, 2024.
[https://doi.org/10.1109/ACCESS.2024.3454810 ☒]

HONORS AND AWARDS

TICAD7 Scholarship, EJUST   2022
  Full funding scholarship for Master's program

Excellent Student Award, College of Engineering, KNUST   2021
  (3 times)

MasterCard Foundation Scholars' Program, KNUST   2017
  Full funding scholarship for an undergraduate program.

TEACHING EXPERIENCE

Teaching Assistant   2021 – 2021
Department of Telecommunication Eng. KNUST, Ghana
- Tutorial sessions for 60 undergraduate telecom students on;
  - Computer Applications and Project Design (TE 461),
  - Digital Communications (TE 386), and
  - Digital Signal Processing (EE 472)
- Graded assignments and quizzes under the guidelines given by the supervisor.
- Assisted in proctoring examinations.

Classroom Teacher   2016 – 2017
Apasiba Memorial School Complex, Tamale, Ghana
- Developed lesson plans and teaching strategies to enhance students' learning.
- Taught Mathematics to the primary section (13 students).
- Taught Mathematics to Junior High School students (20 students).
- Graded term papers.

INTERNSHIP EXPERIENCE

Technology Intern   2018
Vodafone, Ghana
- Taking through a series of programs and presentations, learned HTML and CSS, and used excel to analyze data.
- Worked and engaged with customers at the experience center.
- Worked effectively in groups of five to do projects for assessment; pitched topic, "Vodafone White Week," which seeks to promote VodaCash, which was the runners-up best position.

COMMUNITY SERVICE

Give back to Society, MCFSP, KNUST   2018 – 2021
- Visited primary schools to teach and mentor students to achieve academic excellence.
- Awarded best students in each subject with textbooks to improve their learning.

- Donated a pack of roofing sheets to Sawaba Zaharia E/A JHS, Savelugu, to complete a classroom for the students.

Dream Empowerment

A non-profit organization committed to teaching, mentoring, and providing assistance to high school students to choose a career path and to gain admission to tertiary institutions.

CERTIFICATIONS

- Huawei 5G networks
- Machine Learning, Stanford University, Coursera
- Machine learning foundations: A case study approach, University of Washington, Coursera
- Neural Networks and Deep Learning, DeepLearning.AI, Coursera
- Introduction to Artificial Intelligence, GhanaTechLab
- AWS Cloud Certified Practitioner
- Python for everyone, University of Michigan, Coursera
- Huawei Certified Network Associate
- Microwave and fiber communication, Workspace Inst. Ghana
- Google IT Support Professional Certificate, Coursera
  - An eight-month IT support program that covers troubleshooting, customer service, networking, operating systems, system administration, and security and includes hands-on labs.

LEADERSHIP EXPERIENCE

Vice President, International Students' Association, EJUST	2023 – present
Financial Secretary, Association of Muslim Students in Engineering, KNUST	2020 – 2021
Deputy Financial Secretary, Dagbon Students' Association, KNUST	2019 – 2020

COMPUTER SKILLS

- **Programming:** Python, MATLAB, C, Latex, HTML, and CSS.
- **Applications:** Microsoft Office Suite, Power BI, Tableau, Advanced Design System (ADS), Ansys HFSS.
- Web Designing
- Data Analysis