Kofi Addo Annan, BSc.

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EXECUTIVE SUMMARY

- Electrical/Electronic Engineering graduate with strong problem solving, research abilities and knowledge in power electronics, optimization, machine learning and deep learning.
- Power Electronics Researcher: Published one (1) first author manuscripts in high-impact scientific journals.
- Results-oriented Leader: Mentored four (4) undergraduate student researchers at the department of Electrical/Electronic Engineering, Kwame Nkrumah University of Science and Technology.

EDUCATION

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Mphil. Power Systems Engineering - Jan. 2024 - expected Nov. 2025
Achievements: Top 5% of class

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
B.Sc. Electrical/Electronic Engineering (First Class Honours) - Conferred May 2019
Achievements: Top 20 % of class

Mfantsipim Senior High School, Cape Coast, Ghana
General Science (West African Senior School Certificate Examination) - Conferred May 2015
Achievements: Top 5% of class

TECHNICAL SKILLS

Programming Software: Python and C Programming.
Graphical Presentation, Word Processing, Spreadsheet and Typesetting Software: LaTeX, Microsoft Office Suite.
Simulation Software: Totally Integrated Automation Portal (TIA Portal), MATLAB, LT Spice, COMSOL Multiphysics Software Suite, AutoCAD Electrical.
Hardware Implementation: Soldering, transmitter and receiver circuits.

INTERPERSONAL SKILLS

- Comfortable and experienced working individually or in a team.
- Excellent time management and organizational skills permitting timely project completions.
- Highly creative as exhibited through several works of graphics and animation.

TEACHING EXPERIENCE

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Graduate Teaching Assistant, Department of Electrical/Electronic Engineering Jan. 2025 – date

- Assisted faculty members in the delivery of postgraduate courses.
- Organized tutorial sessions for both regular and institute of distance learning (IDL) students.

Teaching Assistant, Department of Electrical/Electronic Engineering Sept. 2019 – Aug. 2020

- Assisted faculty members in the delivery and assessment of several undergraduate courses.
- Courses taught include: Electrical Special Machines (EE 463), Electrical Power Generation and Transmission (EE 367), Electrical Engineering Drawing (EE 156), Electrical Service Design (EE 365) and Industrial Automatic Controls (COE 484).

RESEARCH EXPERIENCE

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Research Assistant, Department of Electrical/Electronic Engineering Sept. 2019 – Aug. 2020

- Assisted a professor to supervise a research on mobile traffic light systems to improve efficient use of fuels on the roads and was conducted by three undergraduate students.
- Worked with an undergraduate student to conduct a research on fault diagnosis and isolation in power distribution systems.

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Undergraduate Researcher, Department of Electrical/Electronic Engineering Sept. 2018 – Jun. 2019

- Designed, built and tested an automated a 5-phase traffic light pre-emption control system in a research team of three(3) students.
- The sequence of operation of the Siemens S7-1214C controller for the traffic light was programmed using ladder logic in Siemens Totally Integrated Portal Software.
- Installed a 434MHz transmitter-receiver sensors to detect emergency vehicles approaching the traffic light about 240 meters away to begin the pre-emption process when an RF signal is sent by the vehicle.
- The goal of this research was to reduce CO_2 emission in cars by creating a control system to ease congestion in a typical congestion-prone Ghanaian road thus enabling effective use of our fuels and aid improve the response time of emergency vehicles while increasing safety of road users at the intersection during emergencies.

JOURNAL PUBLICATIONS

1. Kofi Addo Annan, Emmanuel Obuobi Kwame Addo, Jephthah Afedzi Baidoo, Kwame Opare-Anim: *Design and Implementation of an Emergency Traffic Light Pre-emption System Using PLC Automation*, **International Journal of Innovative Research & Development, IJIRD**, Vol.10, Issue 1, 2021.

PROFESSIONAL EXPERIENCE

Menergy International Ghana Limited, Accra, Ghana
Electrical Project Engineer, Engineering Department Nov. 2020 – Oct. 2021

- Worked in conjunction with the business development department to win a contract to supply various electrical consumables to Volta River Authority Operations Store, Akosombo, through the National Competitive Tendering procedures.

PROFESSIONAL INTERNSHIP EXPERIENCE

Electricity Company of Ghana Limited, Kumasi, Ghana
Student Intern, Engineering Department — Sep. 2024 – Oct. 2024

- Took part in revenue mobilization at Apaaso in Kumasi.
- Gained firsthand experience with fault diagnosis on the Fawoade circuit 1 from the Achiase OV 33/11 kV station
- Gained hands on experience in Cable jointing and termination.

Ghana Grid Company Limited, Tema, Ghana
Student Intern, Engineering Department — Jun. 2018 – Aug. 2018

- Conducted hourly visual inspections of the switch-yard equipment and transformer temperatures to verify the health of the equipment.
- Performed earth resistance test on Sunon-Asogli 330Kv transmission lines to determine the effectiveness of the ground connections of the pylons.

Kpone Thermal Power Plant Station, Tema, Ghana
Student Intern, Engineering Department — Jun. 2017 – Aug. 2017

- Performed combustion inspection and hot gas path inspection on the two (2) 110MW Alstom GT11N2 (EV) dual fuel combustion turbine generators.
- Performed type A visual inspection plus additional checks on the auxiliaries, the controls, and the protection and monitoring system including their settings.

WORKSHOPS ATTENDED

- *Machine Learning Masterclass* moderated by **Dr. Elvis Twumasi** on Saturday, May 31, 2025 8:00 AM - 2:00 PM GMT.
- *Wireless Power Transfer - The Invisible Truth* moderated by **Dr. Sheldon Williamson** on Wednesday, September 22, 2021 8:00 PM - 9:30 PM UTC.
- *Adaptive EMC Design for Wide Bandgap Power Converters in Aviation Applications* presented by **Dr. Cong Li** on Tuesday, July 22, 2021 1:00 PM - 2:30 PM UTC.
- *Testing Inverters using Electric Motor Emulators: Benefits, Challenges* presented by **Dr. Uday Deshpande** on Tuesday, June 29, 2021 3:00 PM - 4:30 PM UTC.
- *Advanced Health-Conscious Fast Charging Schemes and Battery Management Systems for Autonomous E-mobility* presented by **Dr. Sheldon Williamson** on Tuesday, June 15, 2021 3:30 PM - 5:00 PM UTC.
- *Power Electronics for Precision Farming with Sustainable and Cleaner Environment* presented by **Dr. Brij N. Singh** on Tuesday, May 18, 2021 3:00 PM - 4:30 PM UTC.
- *Using Time Synchronization to Improve Your Protection and Control System* presented by **Walid Ali, P.Eng** on Monday, May 10, 2021 07:54 PM.
- *IEEE Future Tech Forum: Climate Change Roundtable* presented by **Dr. Charles Despins** and **Professor Jaafar Elmirghani** as part of IEEE Future Directions Tech Forum on Friday, April 30, 2021 2:00 PM ET.

- *Clean Energy, the Circular Economy, and the Age of Artificial Intelligence for SmartGrid Systems* presented by **Professor Marcelo Godoy Simoes** and sponsored by The University of Sheffield and IEEE United Kingdom and Ireland Section on Wednesday, April 28, 2021 16:00 London.
- *High-Density Motor Drive Design for Electric Aircraft Propulsion: what we might know and what we don't* presented by **Dr. Fang Luo** and sponsored by the IEEE Transportation Electrification Community and the IEEE Power Electronics Society Technical Committee on Aerospace Power on Tuesday, April 13, 2021 3:00 PM - 4:30 PM UTC.
- *Unlimited Range Electrified Drones for Emergency Medical Response Activities* presented by **Dr. Sheldon Williamson** and **Dr. Carolyn McGregor AM** and sponsored by the IEEE Transportation Electrification Community and IEEE Engineering in Medicine and Biology Society on Thursday, April 1, 2021 3:00 PM - 4:30 PM UTC.

PROJECTS

1. **DC/DC Converter Circuit:** Designed, built and tested a 3.7V to 30V DC-DC boost converter with two (2) 12V cooling fans connected in series at the output. Completed on **June 2022.**
2. **Battery Management Systems:** Designed, built and tested a cost effective, less efficient, non-smart wired battery management system which is capable of charging a 3S battery pack, protect it from over-voltage, balance the batteries, and limit the charging current. Completed on **February 2022.**
3. **A Wireless Power Transmission Circuit:** Designed, built and tested a simple wireless power transmission circuit which lights up LEDs and powers a USB charging port. Completed on **January 2022.**
4. **A Traffic Light Pre-emption Control System:** Designed, built and tested an automated 5-phase traffic light pre-emption control system using the TIA portal software and a PLC. Completed on **May 2019.**

CERTIFICATIONS AND LICENSES

1. **Electric Vehicle Battery Pack Calculations Using Microsoft Excel:** A course of study offered by **Decibels Labs**, Issued November 2021.
2. **IEEE Innovation at Work (1PDH):** Wireless Power Transfer - The Invisible Truth, Issued September 2021.
3. **LTspice Tutorial for Beginners in Electronic Simulations:** A course of study offered by **Udemy**, an online learning tool instructed by **Ye Zhao, PhD**, Issued September 2021.
4. **MATLAB/Simulink for Power System Simulations:** A course of study offered by **Udemy**, an online learning tool instructed by **Ricardo Romero, PE**, Issued September 2021.
5. **MATLAB/Simulink for Electronics Simulations:** A course of study offered by **Udemy**, an online learning tool instructed by **Ricardo Romero, PE**, Issued September 2021.
6. **Simulating Power Electronic Circuits Using Python:** A course of study offered by **Udemy**, an online learning tool instructed by **Dr. Shivkumar Iyer**, Issued July 2021.
7. **IEEE Innovation at Work (1 PDH):** Adaptive EMC Design for Wide Bandgap Power Converters in Aviation, Issued July 2021.

8. **IEEE Innovation at Work (1 PDH):** Testing Inverters using Electric Motor Emulators: Benefits, Challenges, Issued June 2021.
9. **IEEE Innovation at Work (1 PDH):** Advanced Health-Conscious Fast Charging Schemes and Battery Management Systems for Autonomous E-mobility, Issued June 2021.
10. **eCARS2x: Electric Cars: Technology:** A course of study offered by **DelftX**, an online learning initiative of Delft University of Technology, Issued June 2021.
11. **IEEE Innovation at Work (1 PDH):** Power Electronics for Precision Farming with Sustainable and Cleaner Environment, Issued May 2021.
12. **General Electric Grid Solutions (1 Training Hour):** Using Time Synchronization to Improve Your Protection and Control System, Issued May 2021.
13. **IEEE Innovation at Work (1 PDH):** High-Density Motor Drive Design for Electric Aircraft Propulsion: what we might know and what we don't , Issued May 2021.
14. **IEEE Innovation at Work (1 PDH):** Unlimited Range Electrified Drones for Emergency Medical Response Activities, Issued April 2021.

HOBBIES

- Love learning new languages and techniques through videos on Youtube channels.
- Enjoy listening to radio podcasts to update myself in the world of electronics for technical tips and applications during commutes.
- Admire next generation technologies on transportation electrification by frequently reading publications on the newest breakthroughs released online via IEEE Xplore.

REFERENCES

Available upon request.