DR. ELVIS TWUMASI

KNUST, Department of Electrical/Electronic Engineering Kumasi
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PROFILE

- Possess excellent communication and interpersonal skills gained through teaching experience and building rapport with individuals
- Proficient in data analysis, leveraging advanced analytical tools and techniques to extract valuable insights for informed decision-making.
- Strong commitment to teamwork building but able to work independently effectively
- Quick learner with outstanding research skills demonstrated through writing journals and preparing engineering course syllabi for students
- Proven exceptional organizational and leadership skills
- Computer literate with Microsoft Word, Excel and PowerPoint, Python, MATLAB/SIMULINK, Statistical software; SPSS

EDUCATION

PhD. Electrical/Electronic Engineering September 2018-October 2021
Kwame Nkrumah University of Science and Technology (KNUST)

Post Graduate Diploma Teaching and Learning in Higher Edu. August 2020 -June 2021
University of Education Winneba (UEW)

MPhil. Electrical/Electronic Engineering September 2016- November 2018
Kwame Nkrumah University of Science and Technology (KNUST)

BSc. Electrical/Electronic Engineering September 2011- May 2015
Kwame Nkrumah University of Science and Technology (KNUST)
Grade: First Class Honors

General Science October 2007- May 2011
Mfantsipim School

WORK EXPERIENCE

Research Scholar February 2025- May 2025
SUNY Polytechnic Institute, New York, USA
- Machine Learning, Data Science and AI applications in Solar Cells and Batteries

Coordinator Solar Group April 2024- Date
Brew Hammond Energy Center, KNUST
- Design of the solar research agenda of the center
- Coordinating the activities and research of the solar group

Coordinator, Abeeku Brew-Hammond Energy Award April 2024- Date
Brew Hammond Energy Center, KNUST
- Coordinate the award of the Abeeku Brew-Hammond Energy Award
- Coordinate Projects for the award

Assistant Power Systems Lead June 2023- Date
KNUST Engineering Education Project
- Assist in the management of all activities at the Power Systems Lab

Lecturer January 2022- Date

KNUST, Department of Electrical/Electronic Engineering

- Teach the following courses: Circuit Theory, Applied Electricity, Basic Electronics, Power Systems Analysis, Power Market and Economics
- Teach the following courses in Gambia: Circuit Theory, Basic Electronics and Power Systems Analysis

Examination Officer January 2022- Date

KNUST, Department of Electrical/Electronic Engineering

- Ensure up-to-date academic records of students
- Upload semester courses online
- Coordinate all examinations at the department

Assistant Lecturer March 2020- December 2021

AAMUSTED, Electrical/Electronic Engineering Technology Department

- Taught the following courses: Power System Analysis, Power Generation and Supply, Transmission and Distribution, AC Machines Electrical Network Analysis, and Power System Protction and Control

Examination Officer August 2020- August 2021

AAMUSTED, Electrical/Electronic Engineering Technology Department

- Ensure up-to-date academic records of students
- Upload semester courses online
- Coordinate all examinations at the department

Part-Time Lecturer July 2019- February 2020

UEW, Electrical/Electronic Engineering Technology Department

- Taught the following courses: Power Generation and Supply, Transmission and Distribution, Electrical Network Analysis

Graduate and Research Assistant August 2016-July 2018

KNUST, Electrical/Electronic Engineering Department

- Research in Maximizing the Efficient Use of Electricity in Higher Education
- Assist research work at the Electrical Engineering Department
- Assist both regular and distance learning students in their project works
- Assist in teaching courses such as; Power system analysis, Applied Electricity, Transformers, Substation and transmission line design, power system protection, High voltage Engineering, power system controls, Circuit theory

Teaching Assistant August 2015-May 2016

KNUST, Electrical/Electronic Engineering Department

- Assist faculty members with strong attention to detail on classroom instructions, examination procedures, and record-keeping of grades
- Facilitate discussion sessions to ensure students gain a complete understanding of class material

Intern June 2014-July 2014

Ghana Grid Company (GRIDCO)

- Ensure safety measures amongst engineers when working on machines
- Assist in carrying out maintenance on lines, transformers, circuit breakers

Intern June 2014- August 2014

Volta River Authority, Tema Thermal Plant Complex

- Performed routine maintenance on motors and transformers

PROFESSIONAL AFFILIATION

Ghana Institution of Engineers (GHIE) March 2021
Professional Engineer (PE-GHIE)

OTHER PROFESSIONAL RESPONSIBILITIES

External Examiner, NAPTEX January 2024

Editorial Board Member, Journal of Electrical Systems and Information Technology
January 2025

Reviewer, Journal of Electrical Systems and Information Technology January 2024

Reviewer, Ghana Institution of Engineers January 2024

ASSOCIATIONS

President April 2014- May 2015
Christian Engineering Students Fellowship (KNUST)

General Secretary April 2013- May 2014
Christian Engineering Students Fellowship (KNUST)

Organizing Secretary April 2012- May 2013
Christian Engineering Students Fellowship (KNUST)

PROJECTS

KNUST-TUM SEED Center Project September 2020- March 2023

- Coordination office assistant at the KNUST and the Technical University of Munich Sustainable Energy and Entrepreneurial Development (SEED) office
- Spearhead the installation of PV panels for the electrification of Yeboakrom at the Juaben Municipal area
- Develop sustainable enterprises for the community and develop a community interest company to man the solar project at Yeboakrom

KNUST SEESA Project April 2019- MAY 2020

- Coordinated the formation of a five-member group to win a scholarship for the SEESA project
- Developed an Intelligent Energy Management Device for Energy Savings in air-conditioners

KREF Project September 2015- May 2016

- Served as a research assistant to work on the topic: Maximizing the Efficient Use of Electricity in Higher Education

WORKSHOPS

TUM Annual Symposium India 21st – 25th November 2022

- Presented on the performance analysis of Solar PV minigrid, a case study of Yeboakrom

Design of Solar Mini-grid for Yeboakrom Workshop 9th-17th February 2021

- Data collection at Yeboakrom
- Sizing of renewable energy for Yeboakrom, a village in Juaben Municipality
- Development of businesses for Yeboakrom
- Community planning and Development of Yeboakrom

Strategic Planning Workshop March 2021

- Development of new strategic plans for AAMUSTED

Sustainable Energy Management Professional Pilot Training 25th-29th March 2020

- Trained as a sustainable energy professional by the KNUST sustainable energy service center

Brew Hammond Energy Center Summer School 2016 (Renewable Energies) August 2016

- Studied PV systems, Biogas, Biomass and Energy Efficiency
- Participated in biogas workshop and presented workshop results

First International Virtual Symposium Sustainable Energies, Entrepreneurship and Development 8TH-10TH December

- Studied renewable energies and sustainable entrepreneurship for rural electrification

CONFERENCES

IEEE Conference on advance computing and innovative Technologies in Engineering (ICACITE 2021) March 2021

- Presented one publication

IEEE PES-IAS Power Africa Conference 2020 (Nairobi, Kenya) August 2020

- Presented two publications
- Served as a reviewer for two conference papers

IEEE PES-IAS Power Africa Conference 2017 (Accra, Ghana) August 2017

- Presented one publication

PUBLICATIONS

Ankrah, J. C., Efah, F. B., & **Twumasi, E.** (2025). An enhanced semisteady-state Jaya algorithm with a control coefficient and a self-adaptive multipopulation strategy. *Journal of Electrical and Computer Engineering.* https://doi.org/10.1155/jece/3036909

Amekah, E. D., Ramde, E. W., Quansah, D. A., **Twumasi, E.,** Meilinger, S., & Schneiders, T. **(2024).** Optimal Placement and Upgrade of Solar PV Integration in a Grid-Connected Solar Photovoltaic System. *Solar Compass*, 100099.

Twumasi, E., Frimpong, E. A., Prah, N. K., & Gyasi, D. B. **(2024).** A novel improvement of particle swarm optimization using an improved velocity update function based on local best murmuration particle. Journal of Electrical Systems and Information Technology, 11(1). https://doi.org/10.1186/s43067-024-00168-8

Twumasi, E., Archer, E., Addo, E. O., & Frimpong, E. A. **(2024).** Modification of coot optimization algorithm (COA) with adaptive sigmoid increasing inertia weight for global optimization. Applied Computing and Intelligence, 4(1), 93–106. https://doi.org/10.3934/aci.2024006

Amekah, E. D., Ramde, E. W., Quanssah, A. D., **Twumasi, E.,** Meilinger, S., & Thorsten, S. **(2024).** Analyzing the Consequences of Power Factor Degradation in Grid-connected Solar Photovoltaic Systems. *e-Prime-Advances in Electrical Engineering, Electronics and Energy*, 100715.

Twumasi, E., Abdul-Fatawu, Y. S., & Frimpong, E. A. **(2023).** Optimal Sizing and Placement of Series Capacitors in Distribution Networks Using Modified Elephant Herding Optimization Algorithm. *Journal of Applied Research in Electrical Engineering*.

Abdul-Fatawu, S. Y., **Twumasi, E.**, & Frimpong, E. A. **(2023).** Optimal Integration of Multiple Shunt Reactive Compensators in Radial Distribution Systems for Loss Reduction using Modified Mountain Gazelle Optimizer (MMGO). *International Journal of Electrical Engineering and Applied Sciences (IJEEAS)*, *6*(2).

Ayasu, B., Antoh, E. K., **Twumasi, E.**, & Frimpong, E. A. **(2023).** Enhanced Adaptive Simulated Based Artificial Gorilla Troop Optimizer for Global Optimisation. *International Journal of Electrical Engineering and Applied Sciences (IJEEAS)*, *6*(2).

Okolo A. E. ,**Twumasi E.**, Frimpong E. A. **(2023).** Optimal PID Controller Based on an Improved Sparrow Search Algorithm for Multi-Area Frequency Control, Carpathian Journal of Electrical Engineering, vol. 17, no. 1, pp. 7-20, 2023.

Tenkorang, E. K. A., Frimpong, E. A., & **Twumasi, E. (2023).** Transformer Inter-Turn Fault Diagnosis Using Continuous Wavelet Transforms and Convolutional Neural Networks. *ADRRI Journal of Engineering and Technology*, *7*(2 (6) July-September), 1-17.

Twumasi, E., Frimpong, E. A., & Prah II, N. K. **(2023).** Combined Economic Emission Dispatch in A Grid-Connected Microgrid Using An Improved Mayfly Algorithm. Journal of Applied Research in Electrical Engineering.

Yussif, A. F. S., **Twumasi, E.,** & Frimpong, E. A. **(2023).** Performance Enhancement of Elephant Herding Optimization Algorithm Using Modified Update Operators. JURNAL NASIONAL TEKNIK ELEKTRO.

Yussif, A. F. S., **Twumasi, E.,** & Frimpong, E. A. **(2023).** Modified Mountain Gazelle Optimizer Based on Logistic Chaotic Mapping and Truncation Selection. International Research Journal of Engineering and Technology

Ohene-Akoto, J., **Twumasi, E.** & Frimpong, E. A. **(2022).** Enhancement of the Prediction Accuracy of Grey System Model Using a Particle Swarm Optimized Initial Condition. Carpathian Journal of Electrical Engineering, 16(1).

Prah II, N. K., Frimpong, E. A., & **Twumasi, E. (2022).** Modified Individual Experience Mayfly Algorithm. Carpathian Journal of Electrical Engineering, 16(1).

Twumasi, E. and Frimpong, E. A. **(2021).** Prediction of unregulated energy usage in office buildings. International Journal of Building Pathology and Adaptation, 1-14.

Twumasi, E., Frimpong, E.A., Kwegyir, D. and Folitse, D., **(2021).** Improvement of grey system model using particle swarm optimization. Journal of Electrical Systems and Information Technology, 8(1), pp.1-15.

Twumasi, E., Frimpong, E. A., and Opoku, D. (2021). Estimation of Unregulated Energy in Office Buildings Using Fuzzy Inference System. International Research Journal of Engineering and Technology, 8(7), 3463-3475.

Oteng-Adjei J., Ohene-Akoto J., Frimpong E. A., Malori A.-M. I., **Twumasi E.** and Ennin J. **(2021).** Customer Damage Function Evaluation using Indirect Analytical Method: The Case of Ghana. In proceedings of ICACITE, Gr. Noida, India, pp. 121-126.

Addo E.O., **Twumasi E.,** and Kwegyir D. **(2021).** "Improvement of Particle Swarm Optimization Using Personal Best Adaptive weight," international journal of innovative science and research technology, 6(9).

Gyabaah, J. A., **Twumasi, E.,** & Gyamfi, S. **(2021).** Saving electricity in an emergency, experiences from some countries and lessons for Ghana. ADRRI Journal of Engineering and Technology, 5(3 (4) October-December), 1-16.

Twumasi E., Frimpong E. A., Kwegir D. and Folits D. **(2020).** Improvement of Grey System Model Using Particle Swarm Optimization. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5, doi: 10.1109/PowerAfrica49420.2020.9219959.

Frimpong, E. A. and **Twumasi, E. (2020).** A Model for Predicting Unregulated Energy Usage. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5.

Anokye, S., **Twumasi, E.,** Frimpong, E. A., Agyirakwa, B. M. and Kudor, R. E. **(2020).** Intelligent Energy Management Device for Energy Conservation in Air conditioners. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-4, doi: 10.1109/PowerAfrica49420.2020.9219800

Twumasi, E. Frimpong, E. A. and Novihoho L. **(2019).** Potential for Energy Saving in Educational Institutions in Ghana. National Journal of Electrical Engineering, 8(3): 119-126.

Frimpong, E. A., **Twumasi, E. (2019).** Awareness of demand-side management practices among staff of an educational institution. Carpathian Journal of Electrical Engineering, 13(1): 7-16

Twumasi, E. and Frimpong E. A. **(2018)** A Scheme for optimal placement of light sensors for illumination control. International Research journal for Engineering and technology, 5(7): 1729-1734.

Twumasi, E., Frimpong, A., Kemausuor, F., Appiah, D. O. and Okyere, P. Y. **(2018).** Energy efficiency awareness and preparedness among students. Journal of Electrical Engineering, 18(1): 140-146.

Frimpong E. A., and **Twumasi E.** (2018), Electricity conservation and safety awareness among senior high school students. Carpathian Journal of Electrical Engineering, 12(1): 69-86. Accessed http://cee.ubm.ro/current-issue.html

Twumasi, E., Frimpong, E. A., Kemausuor, F., Appiah, D. O. and Okyere, P. Y. **(2017)** Energy efficiency awareness and preparedness among students. In proceedings of IEEE PES-IAS PowerAfrica Conference, Accra from 27-30 June 2017. pp. 456-461.

Twumasi, E., Frimpong, E. A., and Novihoho, L. **(2017).** Potential for energy savings in educational institutions in Ghana. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 243-249.

Twumasi, E., Frimpong, E. A., Kemausuor, F., Appiah, D. O. and Okyere, P. Y. **(2017).** Awareness of demand-side management practices among staff of educational institutions. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 61-67.

REFEREES

Prof. Frimpong Emmanuel A. (0246665284)
Electrical/Electronic Engineering Department KNUST Kumasi.

Prof. Okyere Philip Yaw (0208124340)
Electrical/Electronic Engineering Department KNUST Kumasi.

Dr. Emmanuel K. Anto (0243225858)
Electrical/Electronic Engineering Department KNUST Kumasi.