**Emmanuel Asuming Frimpong (PhD) MGhIE MIEEE**

**Associate Professor** at the Department of Electrical and Electronic Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

**Mobile:** +233 (0) 24 666 5284 **E-mail:** eafrimpong.soe@knust.edu.gh

**Personal Profile**

A purposeful, trustworthy, diligent and knowledgeable professional whose goal in life is to make positive impact on humanity.

**Education**

**2011 – 2015 PhD Electrical Engineering**

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

**2005 – 2006 MSc Electrical Power Systems (Distinction)**

University of Bath, Bath, England

**2000 – 2004 BSc Electrical and Electronic Engineering (First Class Honours)**

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

**Continuous Professional Development**

I continue to attend conferences, workshops and training programmes to update and broaden my knowledge base and also contribute to knowledge. Some relevant ones are listed below:

* IEEE PES-IAS PowerAfrica 2017 Conference, GIMPA, Accra, June 27 – June 30, 2017
* Off-shore training on power system engineering by Korea Electric Power Corporation (KEPCO), KEPCO Academy, Seoul, June 27 - August 6, 2016.
* On-shore training on power system engineering by Korea Electric Power Corporation (KEPCO), ECG Training School, Tema, May 23 – June 2, 2016.

**Membership of Professional Bodies**

I am a member of the Institute of Electrical and Electronic Engineers (IEEE) and the Ghana Institution of Engineers (GhIE).

**Work Experience**

**Sept. 2019 – Present Electrical Consultant, KNUST**

**Aug. 2019 – Present Head, Department of Electrical and Electrical Engineering**

**Aug. 2019 – Present Vice-Dean, Faculty of Electrical and Computer Engineering (FECE), KNUST**

**Aug. 2019 Lead investigator, Design and implementation of an intelligent switch for air conditioners**

**Jul. 2019 – Present Lead investigator, Design and implementation of an intelligent energy management device for energy conservation in air conditioners**

**Aug. 2017 – Present Local Consultant, Mathematica Policy Research, USA**

**Jan. 2016 – Jul. 2018** **Vice-Dean, Faculty of Electrical and Computer Engineering (FECE), KNUST**

**Sept. 2015 – Jul. 2017 Head, Department of Electrical and Electronic Engineering (DEEE)**

**2016 – 2018 Lead Investigator, Energy Efficiency Project, KReF, KNUST**

**2015 Consultant, Curriculum Development, ECG Training School**

**2012 – 2015 Activity Coordinator, African Union GRID-SOLAR Project**

**2012 – 2014 Project Member, Electrical Impact Analysis Project, Energy Commission, Ghana**

**Oct. 2011 – Present Senior Lecturer, KNUST**

**Jan. 2007 – Aug. 2011 Lecturer, KNUST**

**Research supervision**

Listed below are some of the undergraduate and postgraduate research works that I have supervised.

* Energy efficiency awareness, assessment and improvement on KNUST campus
* Energy auditing of streetlights
* Optimal design of off-grid PV-diesel generator-battery hybrid energy system for a selected rural community in Ghana
* Technical and economic comparative assessment of off-grid solar PV system and grid extension to an un-electrified community
* Technical challenges related to integration of high solar PV distributed generation in low voltage distribution networks
* Development of a scheme to detect inter-turn faults in transformers
* Development of an algorithm for locating faults in transmission lines
* Development of a power theft monitoring system
* Development of an algorithm for locating underground cable faults
* Design and simulation of dynamic voltage restorer
* Design and construction of earth fault relay for three-phase systems
* Automatic intensity control of LED streetlights
* Power system transient instability prediction
* Wind power generation using active yawing
* Design and construction of a small hydroelectric generator
* Substation blown fuse indicator and reporter
* Design and construction of a solar tracker
* Assessment of the effectiveness of local methods of improving soil resistivity

**Publications**

**Journal papers**

1. **Frimpong, E. A.,** Okyere, P. Y. and Asumadu, J. (2020). Wavelet analysis and neural network technique for predicting transient stability status. *Carpathian Journal of Electrical Engineering*, 14(1): 42-56.
2. 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.
3. **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.
4. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2019). Average Voltage and Neural Network Based Scheme to Predict Transient Stability Status. *National* *Journal of Electrical Engineering*, 6(2): 146-152.
5. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2018). Wavelet analysis and radial basis function neural network-based stability status prediction scheme. *National* *Journal of Electrical Engineering*, 7(3): 146-152.
6. Wemogar, E. B., **Frimpong E.A.** and Mensah L. D. (2018). Design of an optimal off-grid hybrid energy system for a rural community. *National* *Journal of Electrical Engineering*, 7(3): 169-174.
7. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2018). On-line determination of transient stability status using multilayer perceptron neural network. *Journal of Electrical Engineering*, 69(1): 1-7.
8. **Frimpong, E. A.,** Okyere, P. Y. and Asumadu, J. (2018). Walsh-Hadamard transform and support vector machine based rotor angle stability status prediction, *International Research Journal for Engineering and Technology*, 5(7): 1123-1132.
9. **Frimpong, E. A.,** Okyere, P. Y. and Asumadu, J. (2018). Real-time transient stability status prediction scheme and comparative analysis of the performance of SVM, MLPNN and RBFNN. *Carpathian Journal of Electrical Engineering*, 12(1): 22-38.
10. **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.
11. 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.
12. Twumasi, E., **Frimpong**, **E. 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.
13. **Frimpong**, **E.A.**, Asumadu J. and Okyere, P.Y. (2016). Real time prediction of coherent generator groups. *Journal of Electrical Engineering*, 16(3): 47-56.
14. **Frimpong, E.A.,** Anto, E.K.and Okyere,P. Y. (2016). Assessment of energy wastage in street lighting. *Journal of Multidisciplinary Engineering Science Studies*, 2(7): 639-641.
15. **Frimpong**, **E.A.**, Asumadu J. and Okyere, P.Y. (2015). Neural network and speed deviation-based generator out-of-step prediction scheme. *Journal of Electrical Engineering*, 15(2): 1-8.
16. **Frimpong**, **E.A.**, Asumadu J. and Okyere, P.Y. (2015). Speed deviation and multilayer perceptron neural network based transient stability status prediction scheme. *Journal of Electrical Engineering,* 15(2): 9-16.
17. Anto, E.K., **Frimpong, E.A.** and Okyere, P.Y.(2015). Impact assessment of increasing solar PV penetration on voltage and total harmonic distortion of a distribution network. *Journal of Multidisciplinary Engineering Science Studies,* 1(2): 116-127.
18. **Frimpong, E. A.** and Okyere P. Y. (2010). A review of Adaptive Autoreclosure Techniques, *Indian Journal of Computer Science and Engineering*, 1(3): 222-228.
19. **Frimpong, E. A.** and Okyere P. Y. (2010). Monthly Energy Consumption Forecasting Using Wavelet Analysis and Radial Basis Function Neural Network, *Journal of Science and Technology*, 30(2):157-164.
20. **Frimpong, E. A.**, Okyere P. Y. and Anto E. K. (2010). Adaptive Single-Pole Autoreclosure Scheme Based on Wavelet Transform and Multilayer Perceptron, *Journal of Science and Technology*, 30(1): 102-110.
21. **Frimpong, E. A.** and Okyere P. Y. (2010). Forecasting Daily Peak Load of Ghana using Radial Basis Function Neural Network and Wavelet Transform, Journal of Electrical Engineering, 10(1): 15-18.
22. **Frimpong, E. A.**, Okyere P. Y. and Anto E. K. (2009). Adaptive Single-Pole Autoreclosure Scheme Based on Standard Deviation and Wave Energy, Journal of Electrical Engineering, 9(4): 61-68.
23. Okyere P. Y., Eduful G. and **Frimpong E. A.** (2009)*.* Evaluation of Four Local Materials as Backfills to Achieve a Low Earth Electrode Resistance, *Journal of Science and Technology*, 29(2): 126-130.

**Referred conference papers**

1. 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.
2. Twumasi E., **Frimpong E. A.**, Kwegire 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.
3. **Frimpong, E. A.**, Okyere, P. Y. and Asumadu, J. A. (2020). Wavelet Analysis and Neural Network Scheme for Predicting Transient Stability Status. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5, doi: 10.1109/PowerAfrica49420.2020.9219977.
4. Dadzie, G., **Frimpong, E. A.**, Allotey, C. M. and Boateng, E. L. (2020). Transformer Incipient Fault Detection Technique Based on Neural Network. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-4, doi: 10.1109/PowerAfrica49420.2020.9219948.
5. **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, doi: 10.1109/PowerAfrica49420.2020.9219844.
6. Effah, A. A., Ackatiah, C. C., Oppong, F. N. and **Frimpong, E. A.** (2020). Biometric Class Attendance Register. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5, doi: 10.1109/PowerAfrica49420.2020.9219846.
7. Hammond, D. N. A., **Frimpong, E. A.** and Ohene, J. Y. (2020). Detection of Inter-Turn Faults in Transformers Using Continuous Wavelet Transform and Convolutional Neural Network. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-4, doi: 10.1109/PowerAfrica49420.2020.9219917.
8. Otchere, I. K., Kyeremeh, K. A. and **Frimpong, E. A.** (2020). Adaptive PI-GA Based Technique for Automatic Generation Control with Renewable Energy Integration. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-4, doi: 10.1109/PowerAfrica49420.2020.9219960.
9. **Frimpong, E. A.**, Bright, T., Kojo, B. and Michael, T. A. (2020). Inter-Turn Fault Detection Using Wavelet Analysis and Adaptive Neuro- Fuzzy Inference System. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5, doi: 10.1109/PowerAfrica49420.2020.9219856.
10. Otchere, I. K., Arhin, B., Kyeremeh, K. A. and **Frimpong, E. A.** (2020). Investigation of Voltage Stability for Transmission Network with High Penetration of Wind Energy Sources. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5, doi: 10.1109/PowerAfrica49420.2020.9219937.
11. Otchere, I. K., Kyeremeh, K. A., Duah, N. T. and **Frimpong, E. A.** (2020). Policy Review of Impact of Distributed Generation on Power Quality. In proceedings of IEEE PES/IAS PowerAfrica, Nairobi, Kenya, 25-28 August 2020, pp. 1-5, doi: 10.1109/PowerAfrica49420.2020.9219986.
12. Arthur, J. K., **Frimpong**, **E. A.** and Oteng-Adjei J. (2019).Optimization algorithms for solving combined economic emission dispatch: a review. In proceedings of World Congress on Engineering and Computer Science, San Francisco, 22-24 October 2019. pp. 210-215.
13. Arthur, J. K., **Frimpong, E. A.** and Oteng-Adjei, J. (2019). Literature Survey of Recent Advances in the Solution of Combined Economic Emission Dispatch Problem. In Proceedings of IEEE AFRICON, Accra, Ghana, 25-27 September 2019, pp. 1-8, doi: 10.1109/AFRICON46755.2019.9133761.
14. Arthur, J. K., Adjei O. J. **Frimpong**, **E. A.** (2018).A comprehensive overview of ancillary services in the Ghanaian Power Market. In proceedings of World Congress on Engineering and Computer Science, San Francisco, 23-25 October, 2018. pp. 294-298.
15. Arthur, J. K., **Frimpong**, **E. A.** and Okyere P. Y. (2018).Energy auditing: an overview and key issues. In proceedings of World Congress on Engineering and Computer Science, San Francisco, 23-25 October, 2018. pp. 298-302.
16. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2017). On-line determination of transient stability status using MLPNN. In proceedings of IEEE PES-IAS PowerAfrica Conference, Accra from 27-30 June 2017. pp. 23-27.
17. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2017). Prediction of transient stability status using Walsh-Hadamard transform and support vector machine. In proceedings of IEEE PES-IAS PowerAfrica Conference, Accra from 27-30 June 2017. pp. 301-306.
18. 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.
19. Ampofo, D. O., Otchere, I. K. and **Frimpong, E. A.** (2017). An investigative study on penetration limits of distributed generation on distribution networks. In proceedings of IEEE PES-IAS PowerAfrica Conference, Accra from 27-30 June 2017. pp. 573-576.
20. Otchere, I. K., Ampofo, D. O. and **Frimpong, E. A.** (2017). A 2nd order LPF wavelet-based control scheme for shunt active power filter. In proceedings of IEEE PES-IAS PowerAfrica Conference, Accra from 27-30 June 2017. pp. 444-448.
21. Otchere, I. K., Ampofo, D. O. and **Frimpong, E. A.** (2017). Adaptive discrete wavelet transform-based technique for load frequency control. In proceedings of IEEE PES-IAS PowerAfrica Conference, Accra from 27-30 June 2017. pp. 589-594.
22. Ampofo, D. O., Otchere, I. K. and **Frimpong, E. A.** (2017). An investigation into the optimal sizing, placement and operation of voltage regulation devices in distribution networks having distributed generation. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 237-242, August 2017.
23. **Frimpong**, E. A., Okyere, P. Y. and Asumadu, J. (2017). Average value and multilayer perceptron neural network-based scheme to predict transient stability status. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 250-256, August 2017.
24. Otchere, I. K., Ampofo, D. O., **Frimpong, E. A.** and Marfo, E. (2017). Optimal adaptive controller for automatic generation control systems. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 257-261, August 2017.
25. Borweh, W. E., **Frimpong**, E. A., Adaramola, M. S. and Mensah, L. D. (2017).Optimal design of off-grid pv-diesel generator-battery hybrid energy system for a rural community. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 262-268, August 2017.
26. **Frimpong**, E. A., Okyere, P. Y. and Asumadu, J. (2017). Post-fault voltage and radial basis function neural network-based stability status prediction scheme. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 269- 276, August 2017.
27. **Frimpong**, E. A., Okyere, P. Y. and Opoku, D. (2017). Real-time prediction of out-of-step generator groups. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 277-282, August 2017.
28. **Frimpong**, E. A., Tetteh, B., Boahene, K., and Thomas, A. M. (2017). Wavelet analysis and adaptive neuro- fuzzy inference system based inter-turn fault detection. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 292-299, August 2017.
29. 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, August 2017.
30. **Frimpong**, E. A., Okyere, P. Y. and Asumadu, J. (2017). Real-time transient stability status prediction scheme and comparative analysis of the performance of MLPNN, RBFNN and SVM. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 283-291, August 2017.
31. **Frimpong**, E. A., Okyere, P. Y. and Asumadu, J. (2017). Wavelet Analysis and Neural Network Based Scheme for Predicting Transient Stability Status. In proceedings of 2nd Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi, pp. 300-307, August 2017.
32. 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, August 2017.
33. Anto, E. K., **Frimpong, E. A.,** Addo, E. O. K. (2015). Performance appraisal of deployed solar PV cell technologies – A case study in Kumasi, Ghana. In proceedings of Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi from August 6-7, 2015. pp. 702-718.
34. Anto, E. K., **Frimpong, E. A.**, Addo, E. O. K., Okyere, P. Y. (2015). Improving the conversion efficiency of standalone solar PV system using the P&O MPPT algorithm – case study in Ghana, In proceedings of Engineering, Science, Technology and Environment (ESTE) Conference, KNUST, Kumasi from August 6-7, 2015. pp. 720-739.
35. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2014). Prediction of transient stability status using speed deviation and multilayer perceptron neural network. In proceedings of 9th Annual CIGRÉ Canada Conference on Power Systems, Toronto,Canada, September 22-24, 2014.
36. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2014). Neural network and speed deviation-based generator out-of-step prediction scheme. In proceedings of 9th Annual CIGRÉ Canada Conference on Power Systems, Toronto,Canada, September 22-24, 2014.
37. **Frimpong**, **E. A.,** Okyere, P. Y. and Asumadu, J. A. (2013). Generator out-of-step prediction using wavelet analysis. In proceedings of the IEEE 4th International Symposium on Power Electronics and Distributed Generation Systems (PEDG13), Rogers, Arkansas from July 8 – 11, 2013.

**Book**

1. Okyere, P. Y. and **Frimpong, E. A.** (2013). **Fundamentals of Electric and Magnetic Circuits**. ISBN: 978-9988-1-8890-0, Delta Papyrus, Kumasi.

**Technical reports**

1. Twumasi, E., **Frimpong**, **E. A.,** Kemausuor, F., Appiah, D. O. and Okyere, P. Y. (2018). Maximizing the efficient use of electricity in educational institutions. Report submitted to KNUST Research Fund, Ghana.
2. Anto, E. K., **Frimpong**, **E. A.** andNuamah, J. K. G. (2014). Electrical impact analysis of grid-connected solar PV systems on the performance of distribution networks. Report submitted to Energy Commission, Ghana.

**Hobbies and Interest**

I enjoy reading, researching and attending to the needs of others.

**Referees**

Prof. Philip Yaw Okyere Prof. Mark Adom-Asamoah

Associate Professor, DEEE Provost, College of Engineering

Address: DEEE, KNUST, Kumasi. Address: CoE, KNUST, Kumasi

Mobile: 0208124340 Mobile: 0208968363

E-mail: pyokere.soe@knust.edu.gh E-mail: [markadomasamoah@gmail.com](mailto:markadomasamoah@gmail.com)