### PERSONAL INFORMATION

Ing Dr. Benjamin Asubam Weyori, PE-GhIE Acting Director, Centre for Distance Education and E-Learning Senior Lecturer, Department of Computer Science and Informatics School of Sciences, University of Energy and Natural Resources, Box 214, Sunyani, Ghana Phone: +233 (0)24 440 7521/ +233 (0)20 093 4851, Email: <u>benjamin.weyori@uenr.edu.gh</u>

### **SUMMARY OF QUALIFICATION**

- Over ten (10) years in interdisciplinary research experience with demonstrated abilities in conducting innovative research in Computer Science with specialization in Machine Learning, Optical Fibre Technology and Quantum Computing Technology
- Over ten years in teaching Computer Science and Computer Engineering courses with demonstrated abilities in curriculum development for graduate and undergraduate programmes in Computer Science and Engineering and related programmes. Including the development of practical course syllabus, engaging lesson plans, assessment plan and providing constructive feedback in ensuring students success
- Over thirty (30) published papers in peer-reviewed journals and conference proceedings.
- Over ten (10) years tertiary education teaching experience and competencies development in modern teaching methodologies from the Quality Assurance and Academic Planning Directorate of UENR and other bodies like the EEISHEA Project, PEBL Project and the C-CoDE project.
- Complex computation problem solving using high-level logical programming knowledge with 10 + years of experience in programming languages (eg C++ Programming, Python Programming, Java Programming and MATLAB Programming)

### **EDUCATION**

| Kwame Nkrumah University of Science and Technology, Kumasi, Ghana               | 2013 - 2016 |
|---|-------------|
| Programme of Study: PhD Computer Engineering                                    |             |
| Thesis Title: Decision Based Median Filters for Impulse Noise Suppression in Co | olor Images |
| Thesis Supervisor: Professor Kwame Osei Boateng, PhD                            |             |
| Kwame Nkrumah University of Science and Technology, Kumasi, Ghana               | 2008 - 2011 |
| Programme of Study: MPhil Computer Engineering                                  |             |
| Thesis Title: Improved Median Filtering Algorithm for the Reduction of Impulse  | Noise in 2D |
| Greyscale Images  |             |
| Thesis Supervisor: Professor Kwame Osei Boateng, PhD                            |             |
| University for Development Studies, Tamale, Ghana                               | 2002 - 2006 |
| <b>Programme of Study:</b> BSc Mathematical Sciences (Computer Science Option)  |             |
| Thesis Title: Newly Developed Algorithm for Constructing Efficient Codes        |             |

**Thesis Supervisor**: Professor Kazeem Alagbe Gbolagade, PhD

#### **PROFESSIONAL CERTIFICATION**

Optical Society of America Foundation, Washington DC, USA Certificate in Optical Communication  $10^{th} - 16^{th}$  January 2020

Land Satellite Sensing Application Center (LASAC), Beijing, China 15<sup>th</sup> Aug. – 11<sup>th</sup> Sept. 2019 Certificate in High Precision Mapping Technology Remote Sensing Images and Its Application

Oracle Academy, Accra, Ghana Certificate in Java Programming  $10^{th}-26^{th}\ February\ 2016$ 

### **EMPLOYMENT HISTORY/PROFESSIONAL EXPERIENCE**

 Senior Lecturer, Department of Computer Sci. and Informatics Jan. 2019 – Present University of Energy and Natural Resources, Sunyani, Ghana

- ✓ I used the Problem Based Learning (PBL) teaching method to deliver high quality teaching and learning to students (both undergraduate and postgraduate) which increased students' performance by 50%.
- ✓ I contributed to the design, development and evaluation of courses and programmes through liaison with colleagues in other institutions which produced a very standard curriculum increasing students' knowledge in computing by 80%
- ✓ I contributed actively to developing initiatives which produced new and best practice in teaching and learning and promote it across the faculty and institution thereby increasing students' knowledge based by 60%
- ✓ I have conducted research works that has contributed massively to making an impact on society through knowledge transfer benefiting and improving the life of many
- ✓ As Head of Department, I liaised closely with teaching, technical and administrative staff to ensure a quality teaching and learning environment which increased the confidence of students by 30%.
- ✓ As Head of Department, I formulated and implemented new strategies with lecturers in the Department support, improving students' practical lessons that increased students' practical knowledge and real-world problem-solving skills by 40%.
- ✓ I successfully supervised 4 PhDs, 10 MPhil students and over 100 undergraduate students leading to their successful graduate and increasing confidence in our undergraduate and postgraduate programmes by 40%.
- ✓ I designed an efficient communication channel between the faculty and the students, which improved the working relationship between the faculty and the students increasing students' satisfaction.
- ✓ I assisted with staff selection for recruitment and interviews to recruit the best and most qualified faculty for the Department, which brought new energy for the smooth running of the Department.
- ✓ I led with the establishment of a strong externally funded research program that won some projects for the Department increasing the Department internally generated fund by 50%.

- ✓ I mentored and gave research direction to junior colleagues in the faculty increasing their research productivity and output by 70% and leading to excellent postgraduate supervision.
- Lecturer, Department of Computer Science and Informatics
  Jan. 2013 Dec 2018
  University of Energy and Natural Resources, Sunyani, Ghana
  - ✓ I engaged in scholarship as required to support teaching activities which resulted in a 30% continually update and increase in students theoretical and practical knowledge thereby promoting the University.
  - ✓ I engaged in collaborative partnerships with some universities which contributed in the development of university policies in aiding the University's work in influencing leading edge practice in quality assurance.
  - ✓ I mentored colleagues with less experience and advise on personal development that stirred up their desire for teaching and increasing their research output by 20%
  - ✓ I selected appropriate assessment instruments and criteria, assess the work and progress of students by reference to the criteria and provide constructive feedback to students
  - ✓ I ensured that course design and delivery comply with quality standards and regulations of the University increasing in the quality of students we produce.
- Lecturer, Faculty of Information Comm. Sci. and Technology Sept. 2011 Dec 2012 Catholic University College of Ghana, Fiapre, Sunyani, Ghana
  - ✓ I developed course material that can provide efficient course delivery to students thereby increasing the knowledge base of student as well as increasing in their level of satisfaction.
  - ✓ I collaborated with other senior academics to improve teaching methods and expand knowledge base thereby increasing my research and teaching productivity and increasing students' satisfaction by 20%.
  - ✓ I attended and participated in meetings, conferences, and other events in and outside of the institution to increase my knowledge in the state-of-the-art in computing and technology for career advancement.
  - ✓ I participated in training opportunities and initiatives at the institution to increase my problem-solving skills and to increase my knowledge in real world practical situation and the way to resolve them.
  - ✓ I provided support for students and other colleagues resulting in an increase in 10% productivity and 5% increase in student and staff satisfaction of the system.
- Senior Research Assistant, Department of Computer Science Sept. 2007 Aug. 2011 University for Development Studies, Navrongo Campus, Navrongo, Ghana

- $\checkmark$  I provided guidance as required to support any students needing assistance with how to conduct research which increase students research knowledge by 80% and help in the completion of their thesis.
- $\checkmark$  I employed efficient management skills to manage my own research and administration activities increasing in my research productivity and output.
- $\checkmark$  I contribute to the planning of research projects in collaboration with faculty using that as a medium of knowledge transfer and increasing staff and student research output.
- $\checkmark$  I engaged in continuous professional development resulting in continually update in knowledge and understanding in the field of study or specialism and thereby increasing in 10% developing skills

## SOFT SKILLS AND COMPETENCIES

- Proven track record of research outputs, normally of high international standing •
- Proven track record of innovation in teaching and learning using PBL and SCL, reflected in design, delivery and promotion of good professional practice
- Proven ability to deliver high quality teaching
- Ability to engage students and staff, and to motivate them to perform at their best
- Excellent problem-solving skills
- Knowledge in quality assurance and related issues in the University
- Excellent oral and written communication skills.

### **TECHNICAL SKILLS AND COMPETENCIES**

- Expert programming skills in Python, Java, C and C++
- Excellent database development skills
- Solid understanding of Machine Learning Algorithms and Artificial Intelligence
- Strong background in any area of Computer Vision, Machine Learning, Quantum Computing and Optical Fibre Technology Research.

### **LEADERSHIP/ADMINISTRATIVE POSITIONS**

- ★ Ag. Director, Centre for Distance Education and E-Learning Sept 2021 – Present
- \* Head of Department, Department of Comp. Sci. and Info.
- ★ Ag. Head of Department, Department of Comp. Sci. and Info. Sept. 2017–July 2019
- \* School Postgraduate Coordinator, School of Sciences

# Sept. 2019 – July 2021

Sept. 2015–July 2017

### **SERVICE TO COMMUNITY**

• External Assessor of Dr. Ben Beklisi Kwame Ayawli's Document for Promotion to the Rank of a Senior Lecturer in the Department of Computer Science, Sunyani Technical University

- **External Examiner** for Graduate Thesis Examination, Computer Engineering Dept, KNUST, Kumasi, Ghana
- External Examiner for BTech Computer Science, Sunyani Technical University, Sunyani
- **Reviewer** IEEE Access
- **Reviewer** Scientific African
- **Reviewer** International Journal of Numerical Modelling: Electronic Networks, Devices, and Fields
- **Reviewer** Journal of Sensors
- **Reviewer** Open Computer Science
- **Reviewer** Journal of Energy and Natural Resource Management (JENRM)

### **PROFESSIONAL MEMBERSHIP**

- **Professional Engineer**, Ghana Institution of Engineering
- **Member** The Institute of Electrical and Electronics Engineers, Inc. (IEEE) (Computer Society)
- Member Association for Computing Machinery (ACM)
- Member Ghana Science Association (GSA)
- Member International Association of Engineers (IAENG)
- Member Optical Society of America (OSA)
- Member University Teachers Association of Ghana (UTAG)

### PROJECTS/GRANTS

- I developed a proposal with some colleagues to win a five-year project on Enhancing Entrepreneurship, Innovation, and Sustainability in Higher Education in Africa (EEISHEA). This project is designed to reform Higher Education (HE) to ensure curricula that are highly relevant to the contemporary economic and social needs of Africa, equipping graduates with skills and competencies for employability and self-employment. I am the E-Learning Local Project Lead for UENR.
- I developed a proposal with some colleagues to win a two-year project to create C-CoDE (Center of Competence in Digital Education). The key element of the project is that each institution will create a C-CoDE to able them to design, produce, and integrate quality online courses into their curricula. It is one hundred thousand US dollar (\$100,000). I am the Local Project Coordinator for C-CoDE UENR.
- I developed a proposal with some colleagues to win a two-year project of Partnership for Enhanced and Blended Learning (PEBL). This project seeks to enhance teaching quality, student outcomes, employability, and research output by addressing the critical academic staff shortages faced in many east African universities. I am Local Project Coordinator for PEBL, UENR.

### **PUBLICATION AND PRESENTATION**

### JOURNAL PUBLICATIONS

- Isaac Kofi Nti, Owusu Nyarko-Boateng, Adebayo Felix Adekoya, Benjamin Asubam Weyori (2021). An empirical assessment of different kernel functions on the performance of support vector machines, Bulletin of Electrical Engineering and Informatics, Vol. 10, No. 6, pp. 3403 – 3411. ISSN: 2302-9285, DOI: 10.11591/eei. v10i6.3046
- 2. Peter Nimbe, **Benjamin Asubam Weyori**, Adebayo Felix Adekoya (2021). Rotation of bits: a classical and quantum perspective, Journal of Electrical Systems and Information Technology 8(4).
- Peter Nimbe, Benjamin Asubam Weyori, Prosper Kandabongee Yeng (2021). A Framework for Quantum-Classical Cryptographic Translation, International Journal of Theoretical Physics, <u>https://doi.org/10.1007/s10773-020-04698-5</u>.
- Anokye Acheampong Amponsah, Adebayo Felix Adekoya, Benjamin Asubam Weyori (2021). Blockchain in Insurance: Exploratory Analysis of Prospects and Threats, International Journal of Advanced Computer Science and Applications, Vol. 12, No. 1.
- 5. Isaac Kofi Nti, Adebayo Felix Adekoya, **Benjamin Asubam Weyori** (2021). A novel multi-source information-fusion predictive framework based on deep neural networks for accuracy enhancement in stock market prediction, Journal of Big Data, 8(1), DOI: 10.1186/s40537-020-00400-y.
- Mensah Kwabena Patrick, Benjamin Asubam Weyori, Mighty Abra Ayidzoe (2020). Capsule network with K-Means routingfor plant disease recognition, Journal of Intelligent and Fuzzy Systems 40(4):1-12
- Mensah Kwabena Patrick, Benjamin Asubam Weyori, Mighty Abra Ayidzoe (2020). Gabor Capsule Network for Plant Disease Detection, International Journal of Advanced Computer Science and Applications, Vol. 11, No. 10.
- Mensah Kwabena Patrick, Benjamin Asubam Weyori, Mighty Abra Ayidzoe (2020). Exploring the Performance of LBP-Capsule Networks with K-Means Routing on Complex Images, Journal of King Saud University - Computer and Information Sciences, pp. 1319-1578, DOI: 10.1016/j.jksuci.2020.10.006.
- 9. O. Nyarko-Boateng, A. F. Adekoya, **B. A. Weyori** (2020). Using machine learning techniques to predict the cost of repairing hard failures in underground fiber optics networks, Journal of Big Data, Vol. 7, No. 64.
- Owusu Nyarko-Boateng, Adebayo Felix Adekoya, Benjamin Asubam Weyori (2020). Predicting the actual location of faults in underground optical networks using linear regression, Engineering Reports, DOI: 10.1002/eng2.12304.
- Isaac Kofi Nti, Adebayo Felix Adekoya, Benjamin Asubam Weyori (2020). Predicting Stock Market Price Movement Using Sentiment Analysis: Evidence from Ghana, Applied Computer Systems, Vol. 25, No. 1, pp. 33 – 42.
- 12. Owusu Nyarko-Boateng, Adebayo Felix Adekoya, **Benjamin Asubam Weyori** (2020). Adopting Intelligent Modelling to Trace Fault in Underground Optical Network: A

Comprehensive Survey, Machine Learning and Big Financial Data, Journal of Big Data, 7(1).

- Isaac Kofi Nti, Adebayo Felix Adekoya, Benjamin Asubam Weyori (2020). Efficient Stock-Market Prediction Using Ensemble Support Vector Machine, Open Computer Science, Vol. 10, pp 153-163.
- 14. Isaac Kofi Nti, Adebayo Felix Adekoya, **Benjamin Asubam Weyori** (2020). A comprehensive evaluation of ensemble learning for stock-market prediction, Journal of Big Data, 7(20), pp: 1-40.
- 15. O. Nyarko-Boateng, Faith Edem Bright Xedagbui, A. F. Adekoya, B. A. Weyori (2020). Fiber Optic Deployment Challenges and their Management in a Developing Country: A Tutorial and Case Study in Ghana, Engineering Report, DOI: 10.1002/eng2.12121.
- 16. Isaac Kofi Nti, Adebayo Felix Adekoya, **Benjamin Asubam Weyori** (2020). A comprehensive evaluation of ensemble learning for stock-market prediction, Journal of Big Data, 7(20).
- 17. O. Nyarko-Boateng, **B. A. Weyori**, Lord Anertei Tetteh (2020). Optimized Authentication Model for Online Transaction Payments, Journal of Computer Science 16(2), pp. 225-234
- I. K. Nti, A. F. Adekoya, B. A. Weyori (2019): A Systematic Review of Fundamental and Technical Analysis of Stock Market Predictions, Artificial Intelligence Review, pp. 1-51.
- 19. O. Nyarko-Boateng, A. F. Adekoya, **B. A. Weyori** (2019): Investigating QoS and Performance of Received Signal Strength Indicator in Fiber Optics Broadband Data Communication, American Journal of Engineering and Applied, pp. 1-11.
- 20. I. K. Nti, A. F. Adekoya, **B. A. Weyori** (2019): Random Forest-Based Feature Selection of Macroeconomic Variables for Stock Market Prediction, American Journal of Engineering and Applied, 16(7), pp. 200-212.
- 21. **Benjamin Asubam Weyori**, Kwame Osei Boateng, Sampson Twumasi-Ankrah (2017): Efficient Novel Vector Median Filter Design for Impulse Noise Suppression in Color Images, International Journal of Innovative Computing, Information, and Control (IJICIC), Volume 13, Number 4.
- 22. **Benjamin Asubam Weyori**, Kwame Osei Boateng, Peter N. Amponsah, Paul K. Yeboah (2016): Design and Implementation of the Block Matching Hybrid Median Filter for Noise Removal in Color Images, International Journal of Innovative Computing, Information and Control (IJICIC), Volume 12, Number 6, pp. 1865-1879
- 23. Benjamin Asubam Weyori, Kwame Osei Boateng, Peter N. Amponsah, Paul K. Yeboah, Stephen Akobre (2016): Simulating the Effect of Noise and Distortions on The RGB Component of Real-World Color Images, International Journal of Innovative Computing, Information, and Control (IJICIC), Volume 12, Number 6, pp. 1929 -1941.
- 24. Sheng Wang, Jianfeng Lu, Xingjian Gu, Benjamin A. Weyori, Jing-Yu Yang (2016): Unsupervised discriminant canonical correlation analysis based on spectral clustering. Neurocomputing, 171, pp 425-433.

- 25. Peter Nimbe, J.B. Hayfron-Acquah, B. A. Weyori (2015). Performance, Security and Statistical Analysis of Nimbe Cipher 1 (NC1), International Knowledge Press, Asian Journal of Mathematics and Computer Research, ISSN No.: 2395-4205 (Print), 23954213 (Online), Vol. 6, Issue: 1, pp. 37-60.
- 26. Peter Nimbe, J.B. Hayfron-Acquah, B. A. Weyori (2015). An Improved Symmetric Cipher Encryption for Securing Data, International Knowledge Press, Asian Journal of Mathematics and Computer Research, ISSN No.: 2395-4205 (Print), 2395-4213 (Online), Vol. 4, Issue: 3, pp. 139-154.
- 27. Peter Nimbe, E. Okyere, B. A. Weyori (2015). An Alternative Technique for Finding the Nth Root of Real Numbers, International Knowledge Press, Asian Journal of Mathematics and Computer Research, ISSN No.: 2395-4205 (Print), 2395-4213 (Online), Vol.: 3, Issue: 1, pp. 32-39.
- 28. **B. A. Weyori**, K. O. Boateng (2013): Dynamic Intelligent Mean Filter for Impulse Noise Suppression in 2D Images, International Journal of Modern Engineering, pp 60-67, Vol. 13, No. 2.
- 29. **B. A. Weyori**, P. N. Amponsah, P. Yeboah (2012): Modeling a Secured Digital Image Encryption Scheme Using a Three Moduli Set, Global Journal of Computer Science and Technology Inter-disciplinary, Volume 12, Issue 10, Version 1.0, pp 7-13.
- K.O. Boateng, B. A. Weyori, D.S. Laar (2012): Improving the Effectiveness of the Median Filter, International Journal of Electrical Communication Engineering, Vol. 5, No. 1, pp. 85-97.
- 31. **B. A. Weyori**, P. N. Amponsah, P. Yeboah (2011), "Design and Development of a Secured Data Coding and Compression Method for 2D Digital Images", International Journal of Computer Applications, Vol. 33, No. 7, pp. 50-58.

### **CONFERENCE PUBLICATIONS**

- 1. Mensah Kwabena Patrick, **Benjamin Asubam Weyori** and Ayidzoe Abra Mighty (2020), Max-Pooled Fast Learning Gabor Capsule Network, International Conference on Artificial Intelligence, Big Data, Computing and Data Communication Systems (icABCD)).
- 2. **Benjamin Asubam Weyori**, Francis Attiogbe, Samuel Gyamfi, PBL Framework for African Higher Education: A Case Study in UENR (Accepted in 2020 International Research Symposium on Problem-Based Learning (IRSPBL 2020))
- 3. Prosper Yeng, Peter Nimbe, **Benjamin Asubam Weyori**, Bian Yang (2019). Web Vulnerability Measures for SMEs, Proceedings of the 12th Norwegian Information Security Conference, Norway.
- Weyori, B. A., Boateng, K. O. (2013)," Implementation of an Adaptive Median filter for Color Image Processing", 28<sup>th</sup> Biennial Conference, Ghana Science Association, Accra, July 14 - 19 2013.
- Weyori, B. A., Boateng, K. O., and Gbolagade K. A. (2009)," Residue Number System: An important tool to Secured Digital Image Coding", *International Conference on Mathematics and its Applications*, Accra, June 16 - 20 2009.

# <u>REFEREES</u>

Will be provided as per your request