Dr. Stephen Opoku Oppong

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RESEARCH

Interests: Artificial Intelligence · Machine Learning · Computational Mathematics · Educational Technology

Areas: Artificial Intelligence · Information Systems · Plant Science · Analytical Chemistry · Computer Science Applications · Signal Processing

RESEARCH SUMMARY

38	353	9	9	2.56	24%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 38 publications listed below, 2016–2026. Field-weighted impact is the mean over the 34 works scored for it; 1.00 is the world average for works of the same field, type and year. 8 of the 34 papers scored for it are among the world's most cited tenth for their field, type and year.

POSITIONS

Lecturer 2020–present
ICT Education, University of Education, Winneba, Winneba, Ghana

Lecturer 2017–2020
Faculty of Computing and Information Systems, Ghana Communication Technology University, Accra, Ghana

Lecturer 2015–2017
Information Technology, Academic City College, Accra, Ghana

EDUCATION AND QUALIFICATIONS

PhD Computer Science
Department of Computer Science, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

MPhil Information Technology 2013–2015
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

BSc Actuarial Science 2008–2012
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

PUBLICATIONS

Journal articles 30

1. Henry Techie Menson, Michael Asante, Yaw Marfo Missah, Gaddafi Abdul Salaam, **Stephen Opoku Oppong** (2026). A Systematic Review of Artificial Intelligence and Deep Learning Approaches for Cocoa Pod Disease Detection. *Journal of Computer Science*. https://doi.org/10.3844/jcssp.2026.2540.2572
2. **Stephen Opoku Oppong**, Daniel Danso Essel, Benjamin Ghansah (2026). Deep Learning-based Software Vulnerability Severity Prediction Using Natural Language Processing. *Asian Journal of Research in Computer Science*. https://www.researchgate.net/profile/Benjamin-Ghansah-2/publication/410782487_Deep_Learning-based_Software_Vulnerability_Severity_Prediction_Using_Natural_Language_Processing/links/6a6b66aca4d94b202f22c990/Deep-Learning-based-Software-Vulnerability-Severity-Prediction-Using-

Natural-Language-Processing.pdf

3. Henry Techie-Menson, Michael Asante, Yaw Marfo Missah, Gaddafi Abdul-Salaam, **Stephen Opoku Oppong** (2026). Enhanced convolutional block attention module with Learnable Gated Fusion (LGF-CBAM) for cocoa pod disease identification. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0348147
4. Selorm Adablanu, Benjamin Ghansah, Ben-Bright Benuwa, **Stephen Opoku Oppong** (2025). A Thorough Review of AI Developments in Education: Historical Progress, Current Applications, and Future Directions. *Journal of Artificial Intelligence in Education*. https://doi.org/10.29303/jaie.v1i2.706
5. Othniel Amoani Lartey, John Kwao Dawson, Richard Opoku, **Stephen Oppong**, Frimpong Twum (2025). A proposed blockchain technology approach for securing IoT-enabled renewable and grid metering systems. *International Journal of Sustainable Energy*. https://doi.org/10.1080/14786451.2025.2597047
6. Stephen Kwashie Amemasor, **Stephen Opoku Oppong**, Benjamin Ghansah, Ben-Bright Benuwa, Daniel Danso Essel (2025). A systematic review on the impact of teacher professional development on digital instructional integration and teaching practices. *Frontiers in Education*. https://doi.org/10.3389/feduc.2025.1541031
7. Frimpong Twum, Charlyne Carol Eyram Ahiable, **Stephen Opoku Oppong**, Linda Banning, Kwabena Owusu-Agyemang (2025). Employing transfer learning for breast cancer detection using deep learning models. *PLOS Digital Health*. https://doi.org/10.1371/journal.pdig.0000907
8. Emmanuel Kwasi Gyamfi, Benjamin Ghansah, Issifu Yidana, **Stephen Opoku Oppong**, Patricia Ananga, Einstein Kow Essibu, Winston Kwamina Essibu (2025). Preservice teacher trainees' preparedness and implementation of computing curriculum in Ghana. *Discover Education*. https://doi.org/10.1007/s44217-025-00451-4
9. Patricia Ananga, Benjamin Ghansah, John Kwame Boateng, **Stephen Opoku Oppong** (2025). Student Experiences of and Opportunities for Using Social Media for Learning in Two Urban Higher Education Institutions in Ghana. *Africa Education Review*. https://doi.org/10.1080/18146627.2025.2600430
10. Stephen Kwashie Amemasor, **Stephen Opoku Oppong**, Benjamin Ghansah, Ben-Bright Benuwa, Mathias Agbeko (2025). The influence of digital professional development and professional learning communities in the relationship between school digital preparedness and digital instructional integration. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0328883
11. Kuuku Nyameye Wilson, Benjamin Ghansah, Patricia Ananga, **Stephen Opoku Oppong**, Winston Kwamina Essibu, Einstein Kow Essibu (2024). Exploring the efficacy of computer games as a pedagogical tool for teaching and learning programming: A systematic review. *Education and Information Technologies*. https://doi.org/10.1007/s10639-024-13005-2
12. Davidson Kwamivi Aidam, Ben-Bright Benuwa, **Stephen Opoku Oppong**, Edward Nwiah (2024). Sentiment and emotion analysis using pretrained deep learning models. *Journal of Data Information and Management*. https://doi.org/10.1007/s42488-024-00129-w
13. Daniel Danso Essel, Henry Techie-Menson, **Stephen Opoku Oppong**, Augustine Alakuu (2023). Digitalising the Clearance Processes of Higher Education Institutions through the Design and Implementation of an Online Clearance System. *International Journal of Scientific Research and Management (IJSRM)*. https://doi.org/10.18535/ijsrm/v11i07.as01
14. Henry Techie-Menson, Daniel Danso Essel, Delali Kwasi Dake, Alexander Asante, **Stephen Opoku Oppong** (2023). Educational Data Processing Centers; Determinants of Security Innovations at Higher Education Institutions. *Journal of Education and Practice*. https://doi.org/10.7176/jep/14-7-02
15. **Stephen Opoku Oppong** (2023). Predicting Students' Performance Using Machine Learning Algorithms: A Review. *Asian Journal of Research in Computer Science*. https://doi.org/10.9734/ajrcos/2023/v16i3351
16. **Stephen Opoku Oppong**, Frimpong Twum, James Ben Hayfron-Acquah, Yaw Marfo Missah (2022). A Novel Computer Vision Model for Medicinal Plant Identification Using Log-Gabor Filters and Deep Learning Algorithms. *Computational Intelligence and Neuroscience*. https://doi.org/10.1155/2022/1189509
17. Prince Modey, Dominic Asamoah, **Stephen Opoku Oppong**, Emmanuel Kwesi Baah (2022). Error Detection and Correction in Wireless Sensor Networks Using Enhanced Reverse Conversion Algorithm in Healthcare Delivery System. *International Journal of Wireless and Microwave Technologies*. https://doi.org/

10.5815/ijwmt.2022.05.05

18. **Stephen Opoku Oppong**, Benjamin Ghansah, Evans Baidoo, Wilson Osafo Apeanti, Daniel Danso Essel (2022). Experimental Study of Swarm Migration Algorithms on Stochastic and Global Optimisation Problem. *International Journal of Distributed Artificial Intelligence*. https://doi.org/10.4018/ijdai.296389
19. Frimpong Twum, Yaw Marfo Missah, **Stephen Opoku Oppong**, Najim Ussiph (2022). Textural Analysis for Medicinal Plants Identification Using Log Gabor Filters. *IEEE Access*. https://doi.org/10.1109/access.2022.3196788
20. **Stephen Opoku Oppong**, Frimpong Twum, James Ben Hayfron-Acquah, Yaw Marfo Missah (2021). Medicinal Plant Identification using Gabor Filters and Deep Learning Techniques: A Paper Review. *Journal of Computer Science*. https://doi.org/10.3844/jcssp.2021.1210.1221
21. **Stephen Opoku Oppong**, Dominic Asamoah, Emmanuel Ofori Oppong, Derrick Lamptey (2019). Business Decision Support System based on Sentiment Analysis. *International Journal of Information Engineering and Electronic Business*. https://doi.org/10.5815/ijieeb.2019.01.05
22. Dominic Asamoah, Emmanuel Ofori Oppong, Peter Amoako-Yirenkyi, **Stephen Opoku Oppong** (2019). Human Fatigue Characterization and Detection Using the Eyelid State and Kalman Filter. *Asian Journal of Research in Computer Science*. https://doi.org/10.9734/ajrcos/2019/v3i130082
23. Emmanuel Ofori Oppong, **Stephen Opoku Oppong**, Dominic Asamoah, Nuku Atta Kordzo Abiew (2019). Meta-Heuristics Approach to Knapsack Problem in Memory Management. *Asian Journal of Research in Computer Science*. https://doi.org/10.9734/ajrcos/2019/v3i230087
24. Robert French-Baidoo, Dominic Asamoah, **Stephen Opoku Oppong** (2018). Achieving Confidentiality in Electronic Health Records using Cloud Systems. *International Journal of Computer Network and Information Security*. https://doi.org/10.5815/ijcnis.2018.01.03
25. **Stephen Opoku Oppong** (2018). Kalman Filter As A Threshold In Estimating The Level Of Fatigue Based On Eyelid Movement. *International Journal of Computer Science and Information Security*.
26. Dominic Asamoah, Richard Marfo, **Stephen Opoku Oppong** (2017). Measuring the Severity of Fungi Caused Disease on Leaves using Triangular Thresholding Method. *International Journal of Applied Information Systems*. https://doi.org/10.5120/ijais2017451668
27. Dominic Asamoah, Evans Baidoo, **Stephen Opoku Oppong** (2017). Optimizing Memory using Knapsack Algorithm. *International Journal of Modern Education and Computer Science*. https://doi.org/10.5815/ijmecs.2017.05.05
28. Evans BAIDOO, **Stephen OPOKU OPPONG** (2016). A COMPARATIVE STUDY ON MULTI-SWARM OPTIMISATION AND BAT ALGORITHM FOR UNCONSTRAINED NON LINEAR OPTIMISATION PROBLEMS. *DOAJ (DOAJ: Directory of Open Access Journals)*.
29. **Stephen O Oppong** (2016). Solving the TSP using Traditional Computing Approach. *International Journal of Computer Applications*. https://www.academia.edu/download/122423326/26339-26339-2016911906.pdf
30. **Stephen Opoku Oppong**, D Asamoah (2016). Value at risk: historical simulation or monte carlo simulation. *International Conference On Management, Communication and Technology (ICMCT)*. https://www.ijictm.org/pdf/folder-1/2016-09-14-07-53-53.pdf

Conference papers 8

1. **Stephen Opoku Oppong**, Benjamin Ghansah, Christopher Yarkwah, Einstein Kow Essibu, Winston Kwamina Essibu (2025). Predicting Students Academic Performance Based on Self-cognitive Factors Using Machine Learning Algorithms. *Lecture notes in networks and systems*. https://doi.org/10.1007/978-981-96-6929-5_11
2. Eric Korku Agbemafle, Ben-Bright Benuwa, Benjamin Ghansah, **Stephen Opoku Oppong**, Kojo Agyekum Asiama (2024). Enhanced Technology Acceptance Model for Evaluating Adoption of Cloud Computing in Colleges of Education in Ghana. https://doi.org/10.1109/smartblock4africa61928.2024.10779531
3. Godwin Elo, Benjamin Ghansah, **Stephen Opoku Oppong**, Ben-Bright Benuwa, Winston Kwamina Essibu, Einstein Kow Essibu (2024). Predicting Voting Patterns Using Generative Adversarial Networks and Stack

Star Classifier. https://doi.org/10.1109/smartblock4africa61928.2024.10779561

4. Emmanuel Kwesi Baah, Steven Yirenkyi, Dominic Asamoah, **Stephen Opoku Oppong**, Edward Opoku-Mensah, Benjamin Tei Partey, Anthony Kingsley Sackey, Oliver Kornyo, Evans Obu (2022). Enhancing Port Scans Attack Detection Using Principal Component Analysis and Machine Learning Algorithms. *Communications in computer and information science*. https://doi.org/10.1007/978-981-19-8445-7_8
5. **Stephen Opoku Oppong**, Frimpong Twum, James Ben Hayfron-Acquah, Yaw Marfo Missah (2021). Hybrid Approach to Medicinal Plant Leaf Image Enhancement Using Contrast Limited Adaptive Histogram Equalization and Homomorphic Filter. *2021 International Conference on Electrical, Computer and Energy Technologies (ICECET)*. https://doi.org/10.1109/icecet52533.2021.9698460
6. **Stephen Opoku Oppong**, Emmanuel Kwesi Baah, Mathias Agbeko, Justice Nueteh Terkper (2021). Improved Botnet Attack Detection Using Principal Component Analysis and Ensemble Voting Algorithm. https://doi.org/10.1109/iccma53594.2021.00014
7. Evans Badioo, **Stephen Opoku Oppong**, Jurong Hu, Benjamin Danso Kwakye (2020). Covariance Based Tensor Reconstruction Approach for the Bistatic MIMO Radar in Unknown Nonuniform Noise. https://doi.org/10.1109/icsip49896.2020.9339419
8. Evans Baidoo, Jurong Hu, **Stephen Opoku Oppong**, Ying Tian (2019). Angle estimation in blind signal for MIMO radar. https://doi.org/10.1109/africon46755.2019.9133786