Emmanuel Ahene

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PROFILE

Emmanuel Ahene is a Senior Lecturer at the Department of Computer Science, a Licensed Cybersecurity Professional and the Co-Founder of Cyberpass Consult, specializing in cyber security and machine learning. He obtained his doctoral and master's degrees in Computer Science and Technology in 2019 and 2016, respectively.

His research extends to developing innovative technologies that harness the power of cyber security and machine learning to address critical challenges such as Cyber-attack Detection, equal access to Healthcare and Education. Dr Ahene leads as the PI for the Secure AI project, with the ultimate goal of developing privacy-preserving frameworks for AI agents with impact in defense, healthcare, agriculture, and beyond. His ongoing efforts have led to more than 20 research articles published in high-impact journals. He is also the PI for the SignTalk project. The outcome of the SignTalk project will be a secure deep learning model that will enhance doctor-to-patient conversation in Ghana for speech and hearing-impaired folks. In addition, he serves as the PI for the Deep Learning for food sustainability project, the CO-PI for the MESTI mHealth Project for inclusive and secure health systems and also serves as the Project lead Consultant for GIZ on the "Training under Careers in Modern IT Fields project". In 2023, he received the Vice Chancellors award for creativity and innovation in KNUST, Ghana.

As an advocate for building human capacity, Dr Ahene has provided hands-on training programs for IT professionals in public and private institutions. His efforts have impacted more than 500 IT professionals nationwide.

Within the academic community, he serves as the Guest Editor for two special issues: Special Issue on Security and Reliability in Future Intelligent Mobile Communication, Computer Communications, Elsevier and Special Issue on Frontiers in Cyber Security, Journal of Systems Architecture, Elsevier. He served as the program committee chair for the international conference on "Frontiers in Cyber Security" in December, 2022

He is a reviewer for several high-impact journals, including IEEE Internet of Things, IEEE Systems Journal, IEEE Transactions on Computers, IEEE Access, Computers and Electrical Engineering (Elsevier), KSII Transactions on Internet & Information Systems and has received awards as an outstanding reviewer from reputable journals, such as KSII Transactions on Internet & Information Systems (2020) and Computers and Electrical Engineering, Elsevier (2017).

He is a member of IEEE, GSA, and the KNUST Young Researcher's Forum, demonstrating his commitment to continuous learning and collaboration within the academic community. He has given talks at international and local conferences on cyber security and AI in several Asian and African countries.

RESEARCH

Interests	Cyber Security | Cryptography
Areas	Artificial Intelligence · Information Systems · Computer Networks and Communications · Computer Vision and Pattern Recognition · Signal Processing · Atmospheric Science

RESEARCH SUMMARY

40	505	10	10	2.91	27%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 40 publications listed below, 2015–2026. Field-weighted impact is the mean over the 26 works scored for it; 1.00 is the world average for works of the same field, type and year. 7 of the 26 papers scored for it are among the world's most cited tenth for their field, type and year.

EDUCATION AND QUALIFICATIONS

Master of Engineering in Computer Science and Technology 2014–present
School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China

PhD Computer Science and Technology
School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China

PUBLICATIONS

Journal articles 31

1. Rectta Adetor, **Emmanuel Ahene**, Christian Idan Frowne, Nana Amissah Amoah, Richard Adade, Kwabena Owusu-Agyemang, Rose-Mary Owusuaa Mensah Gyening, Justice Owusu Agyemang, Betty Agyei Kponyo, Enoch Acheampong, Jerry John Kponyo (2026). A Domain-Specific Ghanaian Sign Language Dataset for Healthcare Communication With Baseline Benchmarks. *IEEE Access*. https://doi.org/10.1109/access.2026.3732480
2. **Emmanuel Ahene**, Richmond Owusu Agyei, Rose-Mary Owusuaa Mensah Gyening, Kwasi Adu Obirikorang, Kate Takyi, Kwabena Owusu-Agyemang, Linda Amoako-Banning, Joojo Walker (2026). A deep learning-based automated Solar-Powered Fish Monitoring System. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0351628
3. **Emmanuel Ahene**, Christian Idan Frowne, Rectta Adetor, Nana Amissah Amoah, Richard Adade, Kwabena Owusu-Agyemang, Rose-Mary Owusuaa Mensah Gyening, Justice Owusu Agyemang, Betty Agyei Kponyo, Enoch Acheampong, Jerry John Kponyo (2026). A large scale multimodal dataset for healthcare domain Ghanaian sign language translation and retrieval based synthesis. *Scientific Reports*. https://doi.org/10.1038/s41598-026-43478-9
4. Juliet Arthur, Rose-Mary Owusuaa Mensah Gyening, **Emmanuel Ahene**, Prince Dawson Tetteh, Betty Agyei Kponyo, Justice Agyemang Owusu, Kate Takyi, Jerry John Kponyo (2026). A systematic review of machine learning techniques for real-time speech and noise classification in hearing aids. *Disability and Rehabilitation Assistive Technology*. https://doi.org/10.1080/17483107.2026.2671834
5. Rose-Mary Owusuaa Mensah Gyening, Juliet Arthur, Prince Dawson Tetteh, Felix Adu Mensah Amofah, Kelvin Ackah, Enoch Acheampong, Betty Agyei Kponyo, Justice Owusu Agyemang, **Emmanuel Ahene**, Vida Kasore, Jerry John Kponyo (2026). GESMA: A dataset of Ghanaian environmental soundscapes for machine learning applications. *Data in Brief*. https://doi.org/10.1016/j.dib.2026.112732
6. Enoch Acheampong, Vida Kasore, Betty Kponyo Agyei, Ros Yaw Owusu-Ansah, Jeffrey Kwame Owusu Ansah, Elizabeth Owusu-Ansah, Justice Owusu Agyemang, Rose-Mary Owusuaa Mensah Gyening, **Emmanuel Ahene**, Juliet Arthur, Jerry John Kponyo (2026). Integrating artificial intelligence into design and development of assistive technologies: user needs and preferences in Ghana. *Journal of Enabling Technologies*. https://doi.org/10.1108/jet-10-2025-0081
7. Prince Asare Aning, Dr. Dominic Asamoah, Narain Kobby Gaisie, **Dr. Emmanuel Ahene** (2026). Quantum Resilient RSA Variants for cloud security. *Zenodo (CERN European Organization for Nuclear Research)*. https://doi.org/10.5281/zenodo.19973774

8. Muftawu Hussein, **Emmanuel Ahene**, Abdul Luckman Hassan, Issifu Damba Kanzoni (2026). Robust predictive analysis of international mobility among research talents. *Discover Data*. https://doi.org/10.1007/s44248-026-00110-5

9. Prince Dawson Tetteh, Rose-Mary Owusuaa Mensah Gyening, Juliet Arthur, Justice Agyemang Owusu, Betty Agyei Kponyo, **Emmanuel Ahene**, Jerry John Kponyo (2026). Speech enhancement techniques for hearing aids: a systematic review. *Universal Access in the Information Society*. https://doi.org/10.1007/s10209-026-01342-7

10. Steven Yirenkyi, Cyril D. Boateng, **Emmanuel Ahene**, Jeffrey N. A. Aryee, Michael Asante, Alex Baffour Akoto (2026). The feasibility gap: a systematic review of AI flood forecasting strategies in data-scarce regions. *International Journal of River Basin Management*. https://doi.org/10.1080/15715124.2026.2712534

11. Samuel K. Afful, Cyril D. Boateng, **Emmanuel Ahene**, Jeffrey N. A. Aryee, David D. Wemegah, Solomon S. R. Gidigasu, Akyana Britwum, Marian A. Osei, Jesse Gilbert, Haoulata Touré, Vera Mensah (2025). A systematic review of neural network applications for groundwater level prediction. *Discover Applied Sciences*. https://doi.org/10.1007/s42452-025-06817-5

12. Enoch Acheampong, Vida Kasore, Betty Agyei Kponyo, Ros Yaw Owusu-Ansah, Jeffrey Kwame Owusu-Ansah, Owusu Ansah, Elizabeth Owusu Ansah, Justice Owusu Agyemang, Rose-Mary Owusuaa Mensah Gyening, Mensah Gyening, **Emmanuel Ahene**, Jerry John Kponyo (2025). Barriers to assistive technology uptake among persons with disabilities in selected urban districts in Ghana. *Scientific Reports*. https://doi.org/10.1038/s41598-025-31466-4

13. Abena Achiaa Atwereboannah, Wei-Ping Wu, Mugahed A. Al-antari, Sophyani B. Yussif, Chukwuebuka J. Ejiyi, Edwin K. Tenagyei, Grace-Mercure B. Kissanga, Gyarteng S. A. Emmanuel, Yeong Hyeon Gu, **Emmanuel Ahene** (2025). MEN: leveraging explainable multimodal encoding network for precision prediction of CYP450 inhibitors. *Scientific Reports*. https://doi.org/10.1038/s41598-025-04982-6

14. Franco Osei-Wusu, Elvis Antwi Sarfo, **Emmanuel Ahene** (2025). P2P-CKKS: enhancing homomorphic encryption efficiency via dynamic power-of-two vector padding. *Journal of Electrical Systems and Information Technology*. https://doi.org/10.1186/s43067-025-00276-z

15. Steven Yirenkyi, Cyril D. Boateng, **Emmanuel Ahene**, Sylvester K. Danuor (2024). Automatic lithology identification in meteorite impact craters using machine learning algorithms. *Scientific Reports*. https://doi.org/10.1038/s41598-024-62959-3

16. Evans Osei Kofi, **Emmanuel Ahene** (2023). Enhanced network load balancing technique for efficient performance in software defined network. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0284176

17. Frimpong Twum, Emmanuel Mawuli Lagoh, Yaw Missah, Najim Ussiph, **Emmanuel Ahene** (2022). Cold Boot Attack on Encrypted Containers for Forensic Investigations. *KSII Transactions on Internet and Information Systems*. https://doi.org/10.3837/tiis.2022.09.013

18. **Emmanuel Ahene**, Joojo Walker, Ikram Ali, Kwame Ofosuhene Peasah, Michael Asante (2022). Efficient deniable authentication and its application in location-based services. *Computers & Electrical Engineering*. https://doi.org/10.1016/j.compeleceng.2022.107958

19. Martha T. Teye, Yaw Marfo Missah, **Emmanuel Ahene**, Twum Frimpong (2022). Evaluation of Conversational Agents: Understanding Culture, Context and Environment in Emotion Detection. *IEEE Access*. https://doi.org/10.1109/access.2022.3153787

20. **Emmanuel Ahene**, Joojo Walker, Rose-mary Owusuaa Mensah Gyening, Gaddafi Abdul-Salaam, James Ben Hayfron-Acquah (2022). Heterogeneous signcryption with proxy re-encryption and its application in EHR systems. *Telecommunication Systems*. https://doi.org/10.1007/s11235-022-00886-2

21. Joojo Walker, Fan Zhou, Edward Y. Baagyere, **Emmanuel Ahene**, Fengli Zhang (2022). Implicit optimal variational collaborative filtering. *Complex & Intelligent Systems*. https://doi.org/10.1007/s40747-022-00696-8

22. **Emmanuel Ahene**, Mark Ofori-Oduro, Frimpong Twum, Joojo Walker, Yaw Marfo Missah (2021). Efficient Authentication Protocol and Its Application in Resonant Inductive Coupling Wireless Power Transfer Systems. *Sensors*. https://doi.org/10.3390/s21248245

23. Nana Kofi Ahoi Appiah-Badu, Yaw Marfo Missah, Leonard K. Amekudzi, Najim Ussiph, Twum Frimpong, **Emmanuel Ahene** (2021). Rainfall Prediction Using Machine Learning Algorithms for the Various Ecological Zones of Ghana. *IEEE Access*. https://doi.org/10.1109/access.2021.3139312
24. **Emmanuel Ahene** (2019). 2019 Index IEEE Internet of Things Journal Vol. 6. *IEEE Internet of Things Journal*. https://ieeexplore.ieee.org/abstract/document/8964519/
25. **E Ahene** (2019). A blockchain-based certificateless public key signature scheme for vehicle-to-infrastructure communication in VANETs. *Journal of Systems Architecture*. https://www.sciencedirect.com/science/article/pii/S1383762119302103
26. **E Ahene** (2019). A certificateless signcryption with proxy re-encryption for practical access control in cloud-based reliable smart grid: E. Ahene et al. *Telecommunication Systems*. https://doi.org/10.1007/s11235-018-0530-5
27. **E Ahene** (2019). Certificateless deniably authenticated encryption and its application to e-voting system: E. Ahene et al. *Telecommunication Systems*. https://doi.org/10.1007/s11235-018-0496-3
28. **E Ahene** (2019). Efficient signcryption with proxy re-encryption and its application in smart grid. *IEEE Internet of Things Journal*. https://ieeexplore.ieee.org/abstract/document/8771191/
29. Heyang Xu, Bo Yang, Weiwei Qi, **Emmanuel Ahene** (2016). A Multi-objective Optimization Approach to Workflow Scheduling in Clouds Considering Fault Recovery. *KSII Transactions on Internet and Information Systems*. https://doi.org/10.3837/tiis.2016.03.002
30. **E Ahene** (2016). Fault-tolerant resource provisioning with deadline-driven optimization in hybrid clouds. *International Journal of Advanced Computer Science and Applications*. https://pdfs.semanticscholar.org/a108/d4d087ef4d9188ec9b5fc047bda81e0c3264.pdf
31. **E Ahene** (2015). A pairing-free key-insulated certificate-based signature scheme with provable security. *KSII Transactions on Internet & Information Systems*. http://www.itiis.org/digital-library/manuscript/file/20763/TIISVol9No3-23.pdf

Book chapters 2

1. RMOM Gyening, **E Ahene**, D Agyili (2025). Design and Evaluation of a Mobile Health Platform for Improved Healthcare Delivery in Underserved Communities in Ghana. *International Conference on e-Health and Bioengineering*. https://doi.org/10.1007/978-3-032-23952-5_1
2. **E Ahene** (2019). CLIBDA: A Deniable Authentication Scheme for Pervasive Computing Environment. *International Conference on Frontiers in Cyber Security*. https://doi.org/10.1007/978-981-15-0818-9_5

Conference papers 6

1. Emmanuel D. Acheampong, **Emmanuel Ahene**, Ebenezer Komla Gavua, Emmanuel Akwah Kyei, Martin Mabeifam Ujakpa, William Leslie Brown-Acquaye, Forgor Lempogo, Justice Williams Asare, Godfred Yaw Koi-Akrofi (2026). Application of Deep Learning Model for Enhancing Medical Image Classification Using Non-local Means Filtering, Contrast-Limited Adaptive Histogram Equalization and Data Augmentation. *Communications in computer and information science*. https://doi.org/10.1007/978-3-032-12930-7_7
2. Chelsea Kowouvi, **Emmanuel Ahene**, Joojo Walker, Rosemary Akyere, Dominic Kingsford Opoku Agyili, Desmond Nani, Jerry John Kponyo (2026). Incentive-Driven Zero-Knowledge Proof-Based Gradient Aggregation for Federated Learning. *Communications in computer and information science*. https://doi.org/10.1007/978-981-95-9514-3_31
3. **Emmanuel Ahene**, Fagen Li (2022). Frontiers in Cyber Security. *Communications in computer and information science*. https://doi.org/10.1007/978-981-19-8445-7
4. Samuel Kelly Brew, **Emmanuel Ahene** (2022). Threat Landscape Across Multiple Cloud Service Providers Using Honeypots as an Attack Source. *Communications in computer and information science*. https://doi.org/10.1007/978-981-19-8445-7_11
5. **E Ahene** (2017). Secure energy encryption for wireless power transfer. *2017 IEEE 7th International Advance Computing Conference (IACC)*. https://ieeexplore.ieee.org/abstract/document/7976787/

6. **E Ahene** (2015). Application of residue number system (RNS) to image processing using orthogonal transformation. *2015 IEEE International Conference on Communication Software and Networks (ICCSN)*. https://ieeexplore.ieee.org/abstract/document/7296177/

Reports 1

1. **E Ahene** (2022). Frontiers in Cyber Security: 5th International Conference, FCS 2022, Kumasi, Ghana, December 13–15, 2022, Proceedings. *Springer Nature*. https://books.google.com/books?hl=en&lr=&id=66GfEAAAQBAJ&oi=fnd&pg=PR5&dq=info:kuyB1EevT0UJ:scholar.google.com&ots=1IIWUpfCfx&sig=hZgflsu5wYm3cZ9UgorUrI1IH08