**MARK AMO-BOATENG (PHD) - Resume**

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**EDUCATION**

* 2015 – PhD (Hydrology and Water Resources) – Hohai University, Nanjing, China
* 2010 – MSc (Water Resources Engineering and Management) – KNUST, Kumasi, Ghana
* 2007 – BSc (Civil Engineering) – KNUST, Kumasi, Ghana

**WORK EXPERIENCE**

* 2020 – Present: Founder – Xtellix, Inc (<https://xtellix.com>)
* 2020 – Present: Innovation Lead, Earth Observation Research and Innovation Centre, University of Energy and Natural Resources, Sunyani
* 2018 – Present: Certified Instructor, Nvidia Deep Learning Institute
* 2018 – 2020: Head, Earth Observation Research and Innovation Centre, University of Energy and Natural Resources, Sunyani
* 2019 – Present: Lecturer, Department Civil and Environmental Engineering, University of Energy and Natural Resources
* 2015 – 2019: Lecturer, Department of Energy and Environmental Engineering, University of Energy and Natural Resources
* 2010 – 2014: Research Assistant, College of Hydrology and Water Resources, Hohai University, Nanjing – China
* 2011 – 2012: Consultant, IRL Division, FAO, Italy, Rome

**AWARDS / ACHIEVEMENTS**

1. UNDP AccLab COVID-19 Innovation Challenge, Winner (2020) – [Award rejected due IP Conflicts]
2. Nvidia Inception AI Startups, Member (2020)
3. Launch of NASA Cosmic-2 Satellite Constellation – Ghana/UENR Team Lead (2019)
4. Nvidia Deep Learning Institute (DLI) Certified Instructor (2018)
5. $7m Shell Ocean Discovery XPRIZE, Semi-Finalist (2018)
6. Most Outsanding Lecturer – USAG/UENR (2017)
7. Nvidia Deep Learning Institute (DLI) Ambassador (2016)
8. Hardware Africa, Village Capital – Finalist (2016)
9. Seed Stars Accra, Finalist – 2nd Place (2015)
10. Emerging Companies Summit – Nvidia, Finalist (2015)
11. Young Innovator of the Year, Falling Walls Lab (2015)
12. Best PhD Student, Hohai University (2014)
13. Most Innovative Engineering Student, KNUST (2007)
14. UNESCO/Diamler Global Mondialogo Engineering Award, Finalist (2007)

**ARTIFICIAL INTELLIGENCE / MACHINE LEARNING TRAINING AND EXPERIENCE**

1. Nvidia Deep Learning Institute (DLI) Ambassador (2016)
2. Nvidia Deep Learning Institute (DLI) Certified Instructor (2018)
3. Member, Nvidia Inception for AI Startups (2020)
4. **Community Service:** 
   * National Committee on High-Performance Computing, Ministry of Environment, Science, Technology and Innovation, Member (2018 - )
   * Group on Earth Observations Africa – (AfriGEO) COVID-19 Working Group, Member
   * International Telecommunications Union – U4SSC Thematic Working Group: Blockchain for Cities, Member
   * International Telecommunications Union – U4SSC Thematic Working Group: Impact of IOT and Sensing in Cities, Member
   * ITU Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies, Member
5. **AI / ML Projects:** 
   * Xtellix (<https://xtellix.com>): enterprise platform to find solutions faster using novel self-developed proprietary AI algorithm that is 1,200x faster than the conventional search/optimization algorithms.
   * Artificial Intelligence Country Tracker (<https://aicountrymonitor.org>): automatically tracks and classifies the COVID-19 state of reporting countries and territories.
   * Covid AI X-Ray Detector: point-of-care rapid diagnosis (max 5 seconds) of COVID-19 using Smartphones and chest X-Rays. Model accuracy is 98% (Specificity 95%, Sensitivity 96%, F1-Score 95.5%)
   * Malaria Microscopy on Smartphones: rapid malaria diagnosis of parasites on thin and thick stained and un-stained blood samples. Accuracies for stained blood samples is 99.75% and un-stained blood samples is 86%.
   * Rapid diagnosis of Chest X-Rays and CT-Scans: diagnosis of 16 different chest pathologies including Tuberculosis and Pneumonia (viral or bacterial) infections.
   * Real-time weather forecasts: local scale weather forecasts from global radar predictions using Generative Adversarial Networks.
   * Improving Satellite Image Resolutions using Generative Adversarial Networks.
   * SmartCuda: Framework for productive development of High-Performance Computing and AI/ML codes on CPUs and GPUs. (<https://github.com/markamo/Smart-Cuda>)
   * Machine Learning for Computational Finance: real-time estimation of options for portfolio risk minimizations using artificial intelligence.
   * In-silico Drug Discovery/Repurposing using Artificial Intelligence.

**E-WASTE PROJECTS:**

1. An assessment of heavy metal concentrations in an E-Waste site (Agbogbloshie – Ghana)
2. Land use / land cover changes at Agbogloshie E-waste site – Ghana
3. Assessing the resource potential of E-Waste batteries in Ghana
4. Using Artificial Intelligence to Identify and Classify objects at Ghana’s E-Waste dump site
5. Developing low-cost air quality sensor for resource limited environments
6. Monitoring air quality at Ghana’s E-waste site (Agbogbloshie)
7. Water quality tracking using remote sensing and artificial intelligence at Agbogbloshie – Ghana
8. Powering homes in Ghana using E-Waste batteries
9. Simulating air quality dispersal at Agbogbloshie E-Waste site
10. E-Waste as an alternative resource mine and its potential – a case study of Agbogbloshie

**RECENT WORKSHOPS/TRAININGS:**

1. Fundamentals of Accelerated Computing with CUDA C/C++, Sunyani – Ghana (2019)
2. Deep Learning for Predictive Maintenance, San Jose – USA (2019)
3. Transfer, On-Line Augmentation, Modeling, and Fine-Tuning for Industrial Inspection, San Jose – USA (2019)
4. Introduction to Industrial Inspection, Problem Formulation, Data Curation/Exploration/Formatting, San Jose – USA (2019)
5. Deep Learning for Anomaly Detection, San Jose – USA (2019)
6. Medical Image Analysis with R and MXNet, San Jose – USA (2019)
7. Data Augmentation and Segmentation with Generative Networks for Medical Imaging, San Jose – USA (2019)
8. Deploying Neural Networks for Embedded Applications, San Jose – USA (2019)
9. Image Super Resolution with Autoencoders, San Jose – USA (2019)
10. Signal Processing with DIGITS, San Jose – USA (2019)
11. GPU Accelerated Forecasting of Mortgage Default Risk with RAPIDS and XGBoost, San Jose – USA (2019)
12. GPU Accelerated Investment Selection with Deep Learning, San Jose – USA (2019)
13. Modelling Time Series Data with Recurrent Neural Networks in Keras, San Jose – USA (2019)
14. Fundamentals of Accelerated Computing with CUDA C/C++, San Jose – USA (2019)
15. Fundamentals of Deep Learning for Computer Vision, San Jose – USA (2019)

**WILDFIRE PROJECTS**

* Advanced Virtual Fire Information System – System Design and Developer
* Radio Alert System for Advanced Virtual Fire Information System – Inventor
* Mobile App (Android and iOS) and Web Dashboard for Advanced Virtual Fire Information System

**PROJECT MANAGEMENT EDUCATION**

* Project Management Professional (PMP) – Certification Ongoing
* Project Management Fundamentals (Fundamentals and Beyond)
* Lean Masterclass (Certified Lean Proficient and Certified Lean Expert)
* Deeply Practical Project Management
* Complete Jira Agile Project Management
* One-Pagerr Project Management System
* Jira Crash Course
* Leadership and Management Training
* Agile Retrospective: Continuous Improvement + Kaizen with Scrum
* Project Management: Deliver on Time + Scrum Project Delivery
* Compliance and Risk Management
* Certified Lean Six Sigma (Green Belt, White Belt, Black Belt)
* Productivity and Project Management for Increased Profits
* Project Management in One Hour

**PUBLICATIONS / CONFERENCE PRESENTATIONS**

* Guo, Y., Li, Z., Amo-Boateng, M., Deng, P., & Huang, P. (2014). Quantitative assessment of the impact of climate variability and human activities on runoff changes for the upper reaches of Weihe River. *Stochastic Environmental Research and Risk Assessment*, *28*(2), 333-346.
* Kan, G., Lei, T., Liang, K., Li, J., Ding, L., He, X., ... & Amo-Boateng, M. (2016). A multi-core CPU and many-core GPU based fast parallel shuffled complex evolution global optimization approach. *IEEE Transactions on Parallel and Distributed Systems*, *28*(2), 332-344.
* Kan, G., Liang, K., Li, J., Ding, L., He, X., Hu, Y., & Amo-Boateng, M. (2016). Accelerating the SCE-UA global optimization method based on multi-core CPU and many-core GPU. *Advances in Meteorology*, *2016*.
* Amo-Boateng, M., Li, Z., & Guan, Y. (2014). Inter-annual variation of streamflow, precipitation and evaporation in a small humid watershed (Chengcun Basin, China). *Chinese Journal Of Oceanology And Limnology*, *32* (2), 455-468.
* Kabo-Bah, A. T., Yuebo, X., Amo-Boateng, Mark, & Mathew, J. O. (2013). A note on cross-validation technique for environmental modeling. *Journal of Applied Sciences in Environmental Sanitation*, *8*(2).
* Kabo-Bah, A. T., Yuebo, X. I. E., James, O. O., Amo-Boateng, M., & Guan, Y. (2013). Can BOD5 be Estimated Without any Dilution and Manometric Methods?. *Oriental Journal of Chemistry*, *29*(1), 75.
* Kabo-Bah, A. T., Yuebo, X., James, O. O., Amo-Boateng, M., & Guan, Y. (2013). A Rapid Test to Evaluate Eutrophication in Polluted Rivers. *Oriental Journal of Chemistry*, *29*(1), 121-122.
* Amo-Boateng, M. (2017). Super-speeds with Zero-RAM: Next Generation Large-Scale Optimization in Your Laptop! *arXiv preprint arXiv:1709.02500*.
* Ofosu, E. A., Amo-Boateng, M., Domfeh, M. K., & Andoh, R. (2018). Re-engineering Hydropower Plant for Improved Performance. In *Sustainable Hydropower in West Africa* (pp. 189-195). Academic Press.
* Sowa, D. M., Amuzu-Sefordzi, B., Baddoo, T. D., Amo-Boateng, M., & Domfeh, M. K. (2018). Climate Change and Hydrovision. In *Sustainable Hydropower in West Africa* (pp. 1-28). Academic Press.
* Kabo-bah, A. T., Amo-Boateng, M., Kabo-bah, K., Sey, N. E. N., Siabi, E., Okyereh, S., & Sarquah, K. (2019) Sendai Framework Implementation–A Regional Assessment of Wildfires in West Africa.
* Atta-Motte, H., Kuada, E., & Amo-Boteng, M. (2018, August). Optimizing Mining Track Equipment Undercarriage Shoe Life Using Convolution Neural Network. In *2018 IEEE 7th International Conference on Adaptive Science & Technology (ICAST)* (pp. 1-8). IEEE.
* Mark Amo-Boateng, (2019). Spoilage Detection in Fruits and Vegetables Using AI and Spectral Imaging. In 2019 International Conference on Engineering, Applied Sciences and System Modelling, Sunyani. (November, 2019)
* Mark Amo-Boateng, (2019). Turning Waste Batteries into Powerbanks for Homes & Offices. In 2019 International Conference on Engineering, Applied Sciences and System Modelling, Sunyani. (November, 2019)
* Mark Amo-Boateng, (2019). Fast Optimization of Very Large-Scale Problems on the Edge. In 2019 International Conference on Engineering, Applied Sciences and System Modelling, Sunyani. (November, 2019)
* Mark Amo-Boateng, (2019) Advance Fire Information Alert System for Farmers. In 2019 International Conference on Engineering, Applied Sciences and System Modelling, Sunyani. (November, 2019)
* Mark Amo-Boateng, (2019). Earth Observation Infrastructure at UENR and its economic benefits for Ghana & West Africa. In Africa Geospatial Data and Internet Conference 2019. Accra (October, 2019)
* Appiahene, Peter & Amo-Boateng, Mark & Kabo-bah, Amos Tiereyangn. (2019). Improving Satellite Images Resolutions with Generative Adversarial Network. In 4th GeoData Technology Workshop, Vienna – Austria (April, 2019)
* Mark Amo-Boateng (2018). Using AI for Realtime Malaria Detection on Mobile phones. AI for Good Summit, Geneva, Switzerland. (May, 2018)
* Amo-Boateng, Mark (2018). Geo4Health: Realtime Monitoring of Health and Diseases Using AI and GIS. In 3rd AfriGeoss Conference, Libreville – Gabon (June, 2018)
* Amo-Boateng, M. (2018). Realtime Calibration/Optimization of Large-Scale Geospatial Models. In 3rd AfriGeoss Conference, Libreville – Gabon (June, 2018)
* Amo-Boateng, M. Amos Kabo-bah. (2017). Developing the Ghana DataCube for Geospatial Analysis. In 2nd AfriGeoss Conference, Sunyani – Ghana (June, 2017)
* Amo-Boateng, M., (2017). Realtime Calibration of Very Large Engineering Models on Regular Computers. In 2nd AfriGeoss Conference, Sunyani – Ghana (June, 2017)
* Caleb Mensah, Amos T. Kabo-bah, Mark Amo-Boateng, Kamila J. Kabo-bah, (2017). Short Range Weather Forecasting with GEONETCAST System. In International Conference on Climate Change and Sustainable Development in Africa 2017, Sunyani – Ghana (July, 2017)
* Amos T. Kabo-bah, Mark Amo-Boateng, Kamila Kabo-bah, Simon Abugre, Julia Atayi, (2017). Mapping Deforestation in the Brong Ahafo Region of Ghana. In International Conference on Climate Change and Sustainable Development in Africa 2017, Sunyani – Ghana (July, 2017)
* Amos T. Kabo-bah, Mark Amo-Boateng, Kamila Kabo-bah, Simon Abugre, Julia Atayi, (2017). Mapping Deforestation in the Brong Ahafo Region of Ghana. In International Conference on Climate Change and Sustainable Development in Africa 2017, Sunyani – Ghana (July, 2017)
* Amos T. Kabo-bah, Mark Amo-Boateng, Kamila J. Kabo-bah, Caleb Mensah (2017). COSMIC-2 Programme and Future Prospects for Climate Change. In International Conference on Climate Change and Sustainable Development in Africa 2017, Sunyani – Ghana (July, 2017)
* Mark Amo-Boateng, (2017) Very Large-Scale Stochastic Optimization on Mobile Phones. In NIMS Conference on Scientific Computing and Industrial modeling, KNUST - Ghana. (November, 2017)
* Mark Amo-Boateng, Williams Asamoah (2017) Preventing Concurrent Start-Up Surge of Surge Appliances in Solar Home Systems. In 3rd Renewable Energy Fair (Conference and Exhibition), Accra - Ghana. (October, 2017)
* Amo-Boateng M (Ph.D), Appiah RB, Anyetei FA (2017) Potential Application Of Solar Power For Unmanned Aerial Vehicles (UAV). In 3rd Renewable Energy Fair (Conference and Exhibition), Accra - Ghana. (October, 2017) [POSTER]
* Amo-Boateng M (Ph.D), Adjetey E, Ohemeng AS, Enninful DA, Atinsia AM (2017) Optimization Of A Wind Turbine Blade For Low Wind Speed Applications Using Computational Fluid Dynamics. In 3rd Renewable Energy Fair (Conference and Exhibition), Accra - Ghana. (October, 2017) [POSTER]
* Amo-Boateng M (Ph.D), Lamptey SND, Afful MD, Daa M (2017) Harvesting The Kinetic Energy Of Moving Vehicles As A Renewable Source Of Energy. In 3rd Renewable Energy Fair (Conference and Exhibition), Accra - Ghana. (October, 2017) [POSTER]

**REFEREES**

1. **Prof Bob Andoh**

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