SAMUEL BOATENG, PhD.

AI660, Kwame Awuah Street, BS-0042-1576│0207758469│
https:/www.linkedin.com/in/samuelboateng│boatengsamuel@gmail.com│samuel.boateng@uenr.edu.gh

RESEARCH SCIENTIST, DATA SCIENTIST, LECTURER

PROFESSIONAL WORK EXPERIENCE

University of Energy and Natural Resources   March 2021 ~
Lecturer
- Teaches both undergraduate and graduate courses in IT and Computer Science programs
- Supervises undergraduate final year projects and as well MSc and MPhil Computer Science thesis supervision and assessment
- Development of Curriculum and other accreditation related documents for Diploma IT, MSc and MPhil Computer Science and MSc, MPhil and PhD IT
- Research and publication of original research articles

STL Ghana, Accra, Ghana   June 2010 – July 2011
Software Engineer and Systems Support
- Provided onsite and online support for National Health Insurance Authority (NHIA) staff; troubleshoot software and developed a problem reporting module between management and technical staff of the Company.
- Generated, analysed and presented usage statistics of a reporting module of the NHIA MIS.

Eastlight Computer Systems, Accra, Ghana   September 2009 – May 2010
Software Engineer
- Led software developer and supported systems. Developed a school management system for Senior High Schools.
- Developed saving and loan applications for small groups and organisations.

BSystems, Accra, Ghana   July 2008 – August 2009
National Service Personnel
- Implemented and deployed nationwide the National Health Insurance Authority (NHIA) integrated Health Insurance Management Information System.
- Trained NHIA staff on various modules of the integrated system. Overall, I was involved directly in the training of about 2000 staff of the NHIA
- Prepared training materials (tutorials and manuals) and presentations

Dateline Computer Systems, Accra, Ghana   March 2004 – June 2008
Microsoft Office Suite Tutor
- Taught the trainees/students how to use the various programs in the Ms Office suite.
- Prepared teaching and learning materials such as program manuals/tutorials, designed and developed course content.

EDUCATION

Korea University of Science and Technology, Daejeon, South Korea   October 2011 – August 2020
Korea Institute of Science and Technology, Seoul, South Korea
PhD in Nano and Information Technology
Integrated Masters and PhD Program in Nano and Information Technology

Methodist University College, Accra, Ghana   August 2004 – June 2008
Bachelor of Science in Information Technology

Opoku Ware School, Kumasi, Ghana   January 1997 – December 1999
Senior Secondary School Certificate Examinations (General Science)

PUBLICATIONS

- I. K. Nti *et al*., "Enhancing Flood Prediction using Ensemble and Deep Learning Techniques," *2021 22nd International Arab Conference on Information Technology (ACIT)*, 2021, pp. 1-9, doi: 10.1109/ACIT53391.2021.9677084.
- **Samuel Boateng**, Kwang Ryeol Lee, Deepika, Haneol Cho, Chansoo Kim, Kyu Hwan Lee. KIST-NOMAD - a repository to manage large amounts of computational materials science data. *Korean J. Met. Mater.* 2020;58(10):728-739. DOI: https://doi.org/10.3365/KJMM.2020.58.10.728
- Haneol Cho, Hyunsu Son, Donghun Kim, Minho Lee, **Samuel Boateng**, HyukSu Han, Kang Min Kim, Seungchul Kim, Heechae Choi, Taeseup Song and Kyu Hwan Lee (2017). Impact of Mg- Doping Site Control in the Performance of Li4Ti5O12 Li-Ion Battery Anode: First-Principles Predictions and Experimental Verifications. *J. Phys. Chem. C 2017, 121, 14994−15001.* DOI: 10.1021/acs.jpcc.7b01475
- **Samuel Boateng**, Haneol Cho and Kyu Hwan Lee. State-of-the-Art Technology for Improving the Performance and Stability of High-Performance Computers, *KISToday Vol. 7 No. 1, May 2014 pp 29-41*. https://eng.kist.re.kr/Data/PB114/2014061909551946.pdf

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RESEARCH PROJECTS

Emergency Response Solution for Disaster Recovery   January 2014 – December 2014
- Pre Installed USB-disk with operating system and Geographic Information System (GIS) applications. Ensured USB disk can be plugged into a computer for use or to be installed. Wrote documentation and user manuals.

Portable and Expandable Hybrid HPC Ultra – Fast Build and Recovery
- A software solution which uses a customised version of System Imager to install Linux Operating System and Applications on Hybrid (CPU and GPU) servers.
- Installed, tested compatibility and efficiency of applications on an Operating system. Prepared the USB disks for use. Prepared documentation and user manuals.

Multiscale Materials Modelling on High Performance Computers   October 2011 – December 2013
- Implemented the UNICORE middleware on KIST Graphics Processing Unit High Performance Computers. Deployed and implemented materials modelling applications on GPU servers.
- Trained and supported KIST computational materials science researchers to use the MMM@HPC platform. Wrote quarterly reports on deliverables and system implementation and usage.

Peru Amazon Conservation Project   January 2015 – December 2015
Collaboration with Profession César Beltrán Castañón of Pontifical Catholic University of Peru
- The project aimed at using GPU and advanced graphics solutions to analyse animal and plant data of the Amazon rainforest. Collaborated with a Professor to set up a GPU server. Installed the required software and provided support for project partners. Analysed data; wrote and presented reports.

Analysis of Middle East Respiratory Syndrome (MERS) Data   June 2015 – December 2015
Data Analysis and Presentation
- Analysed data on MERS outbreak in South Korea. The dataset contained all 186 infections in 43 hospitals between May 20 and July 4, 2015.

- The data included diagnosis and reporting date, gender, age of patient at diagnosis, source of infection, transmission route and stage of MERS.
- The analysis specifically focused on transmission route, state of the infection and whether the patient survived.
- Data source is Korea Disease Control and Prevention Agency
- Analysis showed that majority of infections occurred at hospitals when friends and family, doctors and nurses get infection by coming into contact with infected persons

Low Serum Cholesterol and Haemorrhagic Stroke in Men   January 2016 – June 2017

Machine Learning Prediction and Analysis
- Developed machine learning algorithm to predict the effects of low serum cholesterol and haemorrhagic stroke of 108,461 Korean men aged between 35 and 59.

Smoking and Atherosclerotic Cardiovascular Disease in Men with Love Levels of Serum Cholesterol
- Project objective was to use machine learning (artificial neural network) to predict the occurrence of IHD (Ischemic Heart Disease), CVD (Cerebrovascular Disease) and ASCVD (Atherosclerotic Cardiovascular Disease) in Korean men. The target groups were 108,461 Korean men aged 35 to 59 who received health insurance from the Korea Medical Insurance Corporation and who had biennial medical evaluation in 1990 and 1992.

KIST Novel Materials Discovery Materials Data Repository   July 2017 – July 2020
- Developed a materials data repository for computational and quantum mechanical materials data. Managed materials data repository.
- Trained and provided support for KIST Computational Science research group to use KIST- NOMAD repository. Developed a documentation and user manual of the repository.
- Developed Novel High Dimensional Neural Network Potential (nHDNNP) algorithm to predict energy, forces and charges of materials.

REFERENCES

Dr. Samuel Attuquayefio
Senior Lecturer
University of Professional Studies, Accra
New Road, Madina
Email: samuel.attuquayefio@upsamail.edu.gh

Mr. Isaac Dapaah CISO, CDPSE
Head; Projects, Research and
Management Information System (MIS)
Food and Drugs Authority (FDA)
P. O. Box CT 2783, Cantonments, Accra
Email: isaac.dapaah@fda.gov.gh

Ing. Dr. Benjamin Asubam Weyori
Acting Director
Centre for E-learning and Distance Education
University of Energy and Natural Resources
Sunyani
Email: benjamin.weyori@uenr.edu.gh