

OLUWATOBI AIYELOKUN

Motivation: A Geospatial-Artificial Intelligence (GeoAI) enthusiast interested in the application of GIS, remote sensing, numerical and computational modeling techniques for the optimization of decision-making and operations of water resources management. I enjoy collaborating with researchers from different fields to solve new challenges. Research interests are stochastic modeling, computational fluid dynamics, engineering hydrology, hydraulics, climate change, data intelligent modeling, hydro-climatic risk and extreme events, groundwater modeling and public health engineering.

A. PERSONAL DATA

First Name: Oluwatobi
Last Name: Aiyelokun
Nationality: Nigerian
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B. EDUCATION/POST GRADUATION TRAINING

1. University of Ibadan, Ibadan, Oyo State

Doctor of Philosophy (Ph.D.) (In View)
Major: Civil Engineering
Minor: Water Resources and Environmental Engineering
2018 – Present

2. University of Ibadan, Ibadan, Oyo State

Master of Science (M.Sc.) (Ph.D. Grade)
Major: Civil Engineering
Minor: Public Health and Environmental Engineering
2015 – 2017

3. Federal University of Agriculture Abeokuta, Abeokuta, Ogun State

Bachelor of Science (B.Sc.) (Second Class Upper)
Major: Water Resources Management and Agro-meteorology

Minor: Hydrology

2006 – 2011

C. KEY COMPETENCIES AND SKILLS

- a) GIS Software: ArcGIS Desktop, ArcGIS Online, ArcGIS Pro, QGIS, Global Mapper.
- b) Database Management System: PostgreSQL and MySQL
- c) Programming Language: R, Matlab and Python
- d) Hydraulic Software: EPANET
- e) Hydrologic Software: HEC HMS, HEC GEOHMS, ARC HYDRO, R and SWAT
- f) Data Science Packages: Matlab, WEKA, R and Python
- g) System Dynamics Simulator: VENSIM PLE
- h) Application Development: HTML, CSS, Bootstrap, JavaScript, Leaflet, Turf and PHP
- i) Groundwater Modelling Code: MODFLOW and Visual MODFLOW
- j) Others: SPSS, Microsoft Office (Microsoft Excel, Microsoft Word and Microsoft PowerPoint)

D. MEMBERSHIP OF LEARNED SOCIETIES

- a) Nigerian Institute of Water Engineers (NIWE);
- b) African Association of Remote Sensing of the Environment (AARSE);
- c) International Association of Engineers (IAENG);
- d) International Society for Environmental Information Sciences (ISEIS);
- e) Environmental Health Scientists Association, Nigeria (EHSAN).

E. PROFESSIONAL CERTIFICATIONS

- a) Web Programming for GIS Applications, Udemy, 2020
- b) Power BI-Sales Analysis Certification, Udemy, 2019
- c) Business Analysis Certification, Udemy, 2019
- d) Business Analysis Certification, theBABK, 2019
- e) Data Science Certification, IBM, 2018
- f) GeoServer Certification, GEO University, 2018
- g) Advanced GIS Certification, Maps Nigeria Initiative, 2017

F. CAREER HISTORY

1. OEA CONSULTS, LAGOS NIGERIA

Lead Geospatial Intelligence Analyst (July, 2019 – Present)

- a) Bathymetric survey and mapping of a portion of the Lagos Lagoon;
- b) Developed of a web application for the visualization of bathymetric information;
- c) Developed computational intelligence models for predicting depths of the Lagos Lagoon;
- d) Lead a team on the synthesis of design runoff hydrographs of Jos basin;
- e) Supported in the development of a Covid-19 response decision-support system;
- f) Hydraulic investigation of the Five Cowries Creek for a construction project;
- g) Simulation of the water resources of Kainji Basin using SWAT.

2. OLIVEARC SOLUTIONS, LAGOS NIGERIA

Geospatial Intelligence and AI Consultant (December, 2018 – June, 2019)

- a) Designed various waste management plans based on GIS simulations;
- b) Developed various groundwater flow models based finite difference and finite volume methods;
- c) Developed computational intelligence models for predicting construction aggregates, road modulus rupture and surface runoff;
- d) Conducted researches on impacts of climate change and land use changes on water resources of large basins;
- e) Developed SWAT models for water resources studies for different basins;
- f) Simulation of urban rainfall-runoff hydrographs for water resources management projects.

3. VISIONSCAPE SANITATION SOLUTIONS, LAGOS, NIGERIA

GIS Analyst (July, 2017 - November, 2018)

- a) Built GIS databases of Lagos, Abuja, Greater Accra, Seychelles and Kenya;
- b) Built asset database for waste management system in Seychelles;
- c) Developed various waste collection and disposal plans;

- d) Participated in waste stream analysis of Lagos, Nigeria and Accra, Ghana;
- e) Participated in international and nation waste management baseline studies and surveys.

3. HERMTECH RESEARCH AND CONSULTANCY, OGUN, NIGERIA

Hydrologist and GIS Analyst (December, 2012 - June, 2017)

- a) Employed spatial-statistical analysis of design storms for regional flood management;
- b) Employed spatio-temporal modeling of runoff data in system dynamics modeling;
- c) Designed an optimized solid waste collection and management system using Geographic Information System (GIS);
- d) Mapped flood hazard and Groundwater Prospect zones using GIS and Multi Criteria Analysis (MCA);
- e) Designed Water Supply Systems for a rural community;
- f) Conducted compliance evaluation of effluent discharge of a dairy industry and design of more efficient effluent treatment plant;
- g) Conducted research on soil contamination, indoor and outdoor air pollution;
- h) Engaged in presentations/training on Artificial Intelligence and GIS applications;
- i) Conducted various research on flood risk reduction and disaster management;
- j) Developed stochastic models for operation of hydraulic structures for flood control;
- k) Developed groundwater recharge models;
- l) Estimated groundwater recharges using multiple methods;
- m) Delineated and estimated morphometric properties of river basins;
- n) Evaluated hydro-meteorological data for water resources management projects.

4. OYO STATE WATER CORPORATION, OYO, NIGERIA

Hydrologist/NYSC Corps Member (November, 2011 — November, 2012)

- a) Monitored general water treatment plant operation at Asejire Waterworks;
- b) Guided plant tours at Asejire waterworks;
- c) Participated in survey and levelling for pipe networking

H. PUBLICATIONS

1. Journal Publication

- i. Aiyelokun, O.O., Ojelabi, A. and Agbede, O.A. (2020). Performance Evaluation of Machine Learning Models in Predicting Dry and Wet Climate Phases. *Journal of Soft Computing in Civil Engineering*. 4(1): 29-48.
- ii. Agbede, O.A., Aiyelokun O.O, Ojelabi, A. and Oyelakin, J. (2019) Impact of Low Impact Development on Peak Floods Using System Dynamics. *University of Ibadan (UI) Journal of Civil Engineering* 1(1): 50-62 (In Press).
- iii. Aiyelokun, O., Oyelakin, J., Ojelabi, A. and Agbede, O. (2018). An Integration of Stochastic Models and GIS as Decision Support Tool for Regional Flood Management in Southwest Nigeria. *Nigerian Institution of Water Engineers (NIWE) Water Journal*. 1(1): 18-29
- iv. Aiyelokun, O., Ogunsanwo, G., Adelere J., Agbede, O. (2018). Modeling and simulation of river discharge using artificial neural networks. *Ife Journal of Science*. 20(2):207-214., DOI:10.4314/ij.s.v20i2.17
- v. Aiyelokun, O. Ogunsanwo, G., and Fabiyi, O. (2018). Artificial Intelligence Based Drought Predictions in Part of the Tropics. *Journal of Urban and Environmental Engineering*. 11(2): 165-173. doi: 10.4090/juee.2017.v11n2.165173
- vi. Aiyelokun, O., Olodo, A. (2017). Forecasting One-Decade Ahead Minimum Temperature and Relative Humidity. *Journal of Water Security*. 3:1-7. DOI: <http://dx.doi.org/10.15544/jws.2017.006>
- vii. Aiyelokun, O., Olutimehin, A., Opatoki., A., and Agbede, O. (2017). Assessment of heavy Metal Contamination in Soils from Open Dumpsite in Sagamu, Southwest Nigeria. *African Journal of Environmental Health Sciences*. 4:103-109
- viii. Agbede, O.A and Aiyelokun, O.O. (2016). Establishment of a Stochastic Model for

- Sustainable Economic Flood Management in Yewa Sub-Basin, Southwest Nigeria. *Civil Engineering Journal*. 2(12): 646-655. DOI: 10.28991/cej-2016-00000065
- ix. Aiyelokun, O. (2016). Evidence of Persistent Surge in Atmospheric Warming in Ijebu-Ode Metropolis. *International journal of Innovation*. 6(2): 9-13.
 - x. Oke, M. O. and Aiyelokun, O. (2015). A Statistical Approach to Flood Disaster Management and Risks Reduction in Ibu River Basin. *Nigerian Journal of Technological Research*. 10(2): 17-22 DOI: 10.4314/njtr.v10i2.4.
 - xi. Oke, M. O., Martins, O., Idowu, O. and Aiyelokun, O. (2015). Comparative Analysis of Groundwater Recharge Estimation Value Obtained Using Empirical Methods in Ogun and Oshun River Basins. *Ife Journal of Science*. 17(1): 53-63.

2. Publication in Edited and Published Conference Proceedings

- i. Agbede, O.A., Aiyelokun O.O, Ojelabi, A. (2019). Modeling Low Impact Development (SLID) In a Small Ungauged River Basin for Flood Reduction. Proceedings of the 2019 Civil Engineering Conference, University of Ibadan, Ibadan, Nigeria. Pp 150-163
- ii. Aiyelokun, O., Oyelakin, J. and Agbede, O. (2018). An Integration of Stochastic Models and GIS as Decision Support Tool for Regional Flood Management in Southwest. Nigeria. Nigerian Institution of Water Engineers. 2nd National Conference "Climate Change and Water Resources in Nigeria – Processes, Impacts and Adaptations". Abeokuta. October 15th – 17th 2018, pp 54-62.
- iii. Aiyelokun, O., Ogunsanwo, G. and Opatoki, A. (2016). Application of Innovative Technology in Groundwater Resources Prospecting in Afikpo Sub-Basin, Nigeria. Paper Presented at the TASUED UCC 2016 Interdisciplinary Conference. Themed: Integration, Innovation and Technology Education for Global Development. 22-25 August, 2016.
- iv. Ogunsanwo, G., Alaba, B. and Aiyelokun, O. (2016). Predicting Students' University Preference Using Artificial Neural Network. Paper Presented at the TASUED UCC 2016 Interdisciplinary Conference. Themed: Integration, Innovation and Technology Education for Global Development. 22-25 August,

2016.

- v. Oke, M. O. and Aiyelokun, O. (2015). A Statistical Approach to Flood Disaster Management and Risks Reduction in Ibu River Basin. In O.Y. Balogun and K.A Aderogba (eds) Disaster Risk Management: How Prepared is Nigeria. Ibadan: Ibadan University. Printery, pp 235-248.

3. Book Chapter

- i. Aiyelokun O., Ogunsanwo G., Ojelabi A., Agbede O. (2021) *Gaussian Naïve Bayes Classification Algorithm for Drought and Flood Risk Reduction*. In: Deo R., Samui P., Kisi O., Yaseen Z. (eds) Intelligent Data Analytics for Decision-Support Systems in Hazard Mitigation. Springer Transactions in Civil and Environmental Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-15-5772-9_3

I CONFERENCE PRESENTATIONS

- i. Agbede, O.A., Aiyelokun O.O, Ojelabi, A. Modeling Sustainable Low Impact Development (SLID) In a Small Ungauged River Basin for Flood Reduction. 2019 Civil Engineering Conference, University of Ibadan, Ibadan, Nigeria, 10-12 July, 2019.
- ii. Aiyelokun, O., Fabiyi, O., and Adebayo, J. (2016). Assessment of Sources of Indoor Air Pollution in Students' Dormitories: A Case Study of Polytechnic Ibadan. Paper Presented at the 4th annual Conference of Environmental Health Sciences. Themed: Pollution Control and Sustainable Technology. Held at CESDEV Suites, Ibadan, Nigeria, 20-25, November, 2016.
- iii. Aiyelokun, O., Olutimehin, A. and Opatoki, A. (2016). Assessment of Pollution Level of Heavy Metals in Soils Around an Open Dumpsite in Sagamu. Paper Presented at the 4th annual Conference of Environmental Health Sciences. Themed: Pollution Control and Sustainable Technology. Held at CESDEV Suites, Ibadan, Nigeria, 20-25, November, 2016.
- iv. Aiyelokun, O., Ogunsanwo, G. and Opatoki, A. (2016). Application of Innovative Technology in Groundwater Resources Prospecting in Afikpo Sub-

Basin, Nigeria. Paper Presented at the TASUED UCC 2016 Interdisciplinary Conference. Themed: Integration, Innovation and Technology Education For Global Development. Held at Tai Solarin University of Education, Ogun, Nigeria, 22-25 August, 2016.

- v. Oke, M. O. and Aiyelokun, O. (2014). A Statistical Approach to Flood Disaster Management and Risks Reduction in Ibu River Basin. Paper Presented at the national conference. Themed: Environment, Risks and Management. Held at Tai Solarin University of Education, Ogun, Nigeria, 3-5 March 2014.

J. WORKSHOP ATTENDED/SEMINAR PRESENTATIONS

- a. Python and Geospatial Technologies for Building Infrastructure. Training at OEA Consults, Lagos Nigeria, 7th February, 2020
- b. Application of Remote Sensing in Bathymetric Derivation. Presentation at OEA Consults, Lagos Nigeria. 5th August, 2019
- c. One-Day Training Workshop on Solar Energy System. Themed: Go Green, Go Solar, Get Power. Held at Trenchard Hall, University of Ibadan. 3rd October, 2016
- d. 2-Day Training Workshop on Integrated Municipal and Industrial Solid Waste Management. Organized by the Nigerian Society of Engineers (NSE) in Collaboration with the Departments of Environment Health Sciences and Civil Engineering. 3-4 August, 2016.
- e. Modeling and Predicting Drought in Part of Southwest Nigeria: An Artificial Neural Network Approach. Seminar Presentation in the Department of Civil Engineering. 14-15 July, 2016.
- f. Integrated Water Resources Management (IWRM). Postal Presentation in Department Civil Engineering in Partial Fulfillment for TCE 718. 15 December, 2015.

REFEREES

1. **Prof. Agbede, Oluwole.**

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Ibadan, Oyo State.

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Date: 08/11/2020