SOLIU ADEMOLA MUDASHIRU

Email: *mudashirusa@futa.edu.ng*

Academic webpage: *https://soliu-mudashiru.github.io/*

LinkedIn: www.linkedin.com/in/mudashiru-soliu-a2068b139

SUMMARY

Theorizing, understanding and solving earth system dynamics through data-driven geospatial modelling approaches for informed decision making on water resources management.

Research Interests: Groundwater and hydrogeologic modelling; GIS, remote sensing, and geospatial modelling; Machine learning and AI approaches in geoscience; Environmental geophysics and subsurface characterization; Natural resources assessment and environmental sustainability; Policy and decision making.

EDUCATION

Master of Technology (M.Tech) in Exploration Geophysics (4.43/5.00 or 88.6%)

Federal University of Technology, Akure (FUTA) 2025

Specialization: Groundwater, Environmental, Engineering, Mining

Bachelor of Technology (B.Tech) in Applied Geophysics (3.82/5.00 or 76.4%)

Federal University of Technology, Akure (FUTA) 2018

WORK EXPERIENCE

Teaching Assistant – Department of Applied Geophysics

Federal University of Technology, Akure 2026 - Present

- Assisting in undergraduate instructions and laboratory sessions.
- Supporting field based geophysical training exercises.
- Guiding students in data interpretation and technical report writing.
- Contributing to exam supervision, grading and academic mentoring.

Environmental Scientist – Mukolak GeoConsult

Nigeria Limited, Akure 2023– Present

- Assisting in the coordination of researchers in geophysical field surveys for groundwater and environmental studies.
- Supporting on-site measurements of relevant water parameters like EC, pH, water table depth, and discharge measurement.
- Collaborating in technical report writing.

GIS & Remote Sensing Specialist – Independent Consultant

Nigeria 2022 – Present

- Processing multispectral imagery from Sentinel and Landsat tools for land cover mapping and groundwater related studies.
- Carrying out spatial interpolation and geostatistical analysis using ArcGIS and Python programming language.
- Producing thematic maps and digital elevation analyses to support environmental assessments

Graduate Student Researcher - Department of Applied Geophysics

Federal University of Technology, Akure 2021 – 2025

- Conducted groundwater flow modelling and aquifer characterization using GIS-based analytical tools.
- Interpreted hydrogeological parameters to evaluate groundwater potential.
- Prepared groundwater monitoring datasets, processed time-series data, and contributed to field data acquisition.
- Developed maps for groundwater vulnerability, recharge zones, and hydraulic properties using ArcGIS & Google Earth Engine.
- Mentored three final year undergraduate students in their thesis data collection and writing.

PUBLICATIONS

- Mogaji, K.A., Eval, J.F., Afolabi, D.O., **Mudashiru, S.A.,** Effiong, A.J & Adegoke, Q.O (2025). Catastrophe theory and AHP modelling of landslide susceptibility using multi-source geodata in southwestern Nigeria. *Discover Geosciences (Springer Nature). Link*
- Mogaji, K.A., **Mudashiru, S.A.,** Ozegin, K.O & Oguntade, S.S (2026). Groundwater potential assessment leveraging the hybrid objective model (IDOCRIW-CoCoSo) in the basement terrain of Nigeria: insights from remote sensing and geophysical datasets. *Cleaner Water (Elsevier). Link*
- **Mudashiru, S.A.,** Mogaji, K.A., Ozegin, K.O. (2026). Groundwater vulnerability evaluation using a Python-coded IDOCRIW-MAUT model in heterogeneous geologic environment, Nigeria. *Geosystems and Geoenvironment (Elsevier). Link*
- Ozegin, K.O., **Mudashiru, S.A** & Ejepu, J.S (2026). Geospatial technology-based MCDA and machine learning algorithms: an ensemble and inter-evaluating frameworks for conceptualizing groundwater potential. *Ecological Frontiers (Elsevier). Link*
- Mogaji, K.A., **Mudashiru, S.A**., Oguntade, S.S & Toyib, M. Y (2026). Geospatial Modelling of Landfill Suitability Using Geophysical and Remote Sensing Data in a Basement Complex Area. *Discover Applied Sciences (Springer Nature). Link*
- Obimba, H.O., Anifowose**,** A.Y.B, Adiat, K.A.N and **Soliu, A.M** (2026). Integrating RS-GIS and Hydrogeophysical Methods for Aquifer Characterization in Gombe, Northeast Nigeria. Journal of Earth and Atmospheric Research. *Link*
- **Mudashiru, S.A**., Olatunji, A.O., Oke, P.A, Adeyanju, O.L., Orewale, T.P (2024). Subsurface competence evaluation using electrical resistivity method at a proposed building site along FUTA staff quarters, Oba Nla, Akure Southwestern Nigeria. *Pakistan Journal of Geology, 8 (1): 80.87. Link*
- Mogaji, K.A & **Mudashiru, S.A** (2024). Groundwater potentiality assessment applying python-based IDOCRIW-COCOSO objective modelling algorithm in a multi-faceted geologic environment of Nigeria. *HydroResearch (KeAi & Elsevier). Preprint Online*

TECHNICAL REPORTS

- **(Co-Author and Scientist) –** Integrated geological and geophysical investigations to assess subsurface conditions associated with structural distress at FUTA central mosque, Akure, Ondo State (October, 2026). *Link*
- **(Co-Author and Scientist) –** Hydrogeophysical investigation for borehole development at ECWA churh, back of Elizade, Ojuelegba, Akure, Ondo State (October, 2026). *Link*
- **(Co-Author and Scientist) -** Hydrogeophysical investigation for borehole development at the residential building site of Mr. Opaluwa Danjuma, Akure, Ondo State (May, 2026). *Link*
- **(Co-Author and Scientist) –** Hydrogeophysical investigation for borehole development at the residential building site of Mrs Olaoye, Ilere, Akure, Ondo State (March, 2026). *Link*
- **(Co-Author and Scientist) –** Hydrogeophysical investigation for borehole development within part of WOSEM church compound, Akure, Ondo State (February, 2026). *Link*
- **(Co-Author and Scientist) -** Hydrogeophysical investigation for borehole development carried out at FUTA water factory, FUTA, Akure, Ondo State (February, 2026). *Link*

- **(Co-Author and Scientist) –** Hydrogeophysical investigation for borehole development carried out at the proposed new site of Prof. Ogunduyile, Alaba layout, Southgate FUTA, Akure, Ondo State (December, 2025). *Link*
- **(Co-Author and Scientist)** - Hydrogeophysical investigation for borehole development at the residential site of Alhaji Yemi Lawal, Awo Ekiti, Ekiti State (May, 2025). *Link*
- **(Co-Author and Scientist)** – Geophysical investigation for the estimation of depth to top of limestone deposit at a proposed mining block, Ijoun, off Ilaro, Ogun State (April, 2025). *Link*
- **(Co-Author and Scientist)** - Hydrogeophysical investigation for borehole development at post graduate research lab, FUTA, Akure, Ondo State (March, 2025). *Link*
- **(Co-Author and Scientist)** – Hydrogeophysical investigation for borehole development carried out at FUTA bock industry site, FUTA, Akure, Ondo State (March, 2025). *Link*
- **(Co-Author and Scientist)** - Hydrogeophysical investigation for borehole development at the residential site of Mr Sulaiman, Akure, Ondo State (January, 2025). *Link*
- **(Co-Author and Scientist)** - Hydrogeophysical investigation for borehole development at the residential building site of Prince Obabunmoye, Oda, Akure, Ondo State (December, 2024). *Link*
- **(Co-Author and Scientist)** - Hydrogeophysical investigation for borehole development at the residential building site of Mr Sule Ahmed, Igoba, Akure, Ondo State (October, 2024). *Link*
- **(Co-Author and Scientist)** - Hydrogeophysical investigation for borehole development at the residential building site of Mr Olaseinde, Ondo town, Ondo State (October, 2024). *Link*

RESEARCH EXPERIENCE

"Employing MCDM model for state wide groundwater sustainability development" 2026

- Processed state wide remote sensing datasets for the generation of conditioning parameters
- Developed the conceptual workflow for the employment of Python coded AHP model used for the modelling
- Validated the developed groundwater potential map using the provided ground truth hydrogeologicc record

"Development of 3D geological modelling for suspected subsurface contamination" 2026

- Analyzed the electrical resistivity results for software data type compliance
- Developed python codes to successfully remodel the data to appropriate standard
- Used both ArcGIS pro and RockWorks software to generate 3D geological model of the contamination

"Spatial groundwater rechargeability prediction using machine learning algorithms" 2026

- Established the spatial dependencies of the parameters employed for the prediction
- Used ArcGIS 10.8.2 software to generate the spatial maps and deployment of computational workflows for the ML algorithms
- Participated in spatial data structuring of inputs into the modelling

"Leveraging Geophysics, GIS and MCDM modelling for sustainable city development" 2026

- Analyzed Geophysical datasets to determining their relevance to subsoil stability assessment
- Employed MCDM modelling to spatially evaluate the competency of the subsoil in the study area
- Evaluated the efficacy of geotechnical parameters to reliably check the performance of the GIS based stability maps of the study area

"Landslide susceptibility mapping using catastrophe and MCDM modelling algorithms" 2026

- Ensured correct visualization of the study area's extent and geology
- Developed the visualization of the conditioning factors map using ArcGIS 10.8.2 software
- Created the final susceptibility maps based on the catastrophe and MCDM modelling outputs

"Artificial intelligence (AI) for flood risk assessment" 2026

- Analyzing EO data to determine flood conditioning parameters like runoff generation indicators

- ❖ Employing the effectiveness of Google Earth Engine (GEE) to spatially assess areas of flood occurrence in the study area
- ❖ Evaluating ML algorithms to predict flood vulnerability of the studied region to support effective land use planning

"Machine learning frameworks and data driven modelling for Copper prospectivity" 2025

- ❖ Conceptualized the adopted conditioning factors.
- ❖ Designed the suitable ML algorithms and Entropy model used for the prospectivity prediction.
- ❖ Co-authored the submitted Team slide for the Next Generation Explorers Awards (NGEA) submission.

"Urban groundwater modelling leveraging on Fuzzy logic approach" 2025

- ❖ Designed fuzzy-based hydrologic model integrating factors from remote sensing and field data acquisition.
- ❖ Conceptualized urban water quality indicators (pH, TDS) to predict resource vulnerability.
- ❖ Drafted the accepted PhD proposal from this research.

"Geospatial technology-based MCDA and machine learning algorithms: an ensemble and inter-evaluating frameworks for conceptualizing groundwater potential" 2025

- ❖ Processed and analyzed all the ecological modelling datasets (LULC, DEM, PERSIANN).
- ❖ Performed all the machine learning modelling using Python programming language.
- ❖ Produced the water availability maps based on the models using ArcGIS 10.7 software.

"Conceptualization of MEREC model for spatial groundwater potential modelling" 2025

- ❖ Coded the Methods Based on Removal Effects of Criteria using Python programming language for the assessment.
- ❖ Conceptualized the spatial geophysical datasets employed as modelling inputs.
- ❖ Produced the resource partitioning map using ArcGIS 10.8 software.

"Prediction of groundwater vulnerability in a basement complex area using MCDM-GIS approach" 2024

- ❖ Conceptualized the Multi Criteria Decision Making Models for the groundwater vulnerability assessment.
- ❖ Integrated remote sensing data (i.e. DEM, PERSIANN) with geophysical datasets for the groundwater vulnerability assessment.
- ❖ Drafted the accepted proposal.

FIELD WORK EXPERIENCE

"Assistant Coordinator", Hydrochemical Data Collection Field Survey, Delta State, Nigeria 2026

- ❖ Coordinated the environmental chemistry team or effective navigation to water sample locations
- ❖ Ensured effective provision of field materials the environmental chemistry team
- ❖ Assisted in the quality assurance of collected water samples to meet laboratory standards

"Assistant Team Lead", Riverbed Analysis Field Survey, Delta State, Nigeria 2026

- ❖ Coordinated navigation to locations where river soil samples have been gathered
- ❖ Ensured proper soil sample data collection during the survey
- ❖ Affirmed proper handling and preservation of soil samples to meet laboratory standards

"Assistant Supervisor", Geotechnical and Geophysical survey, Akure, Nigeria 2026

- ❖ Provided
- ❖ Ensured proper soil sample data collection during the survey
- ❖ Affirmed proper handling and preservation of soil samples to meet laboratory standards

"Assistant Coordinator", Geotechnical and geophysical survey, Delta State, Nigeria 2026

- ❖ Managed everyday logistics needed for successful daily field work completion
- ❖ Ensured data quality and control throughout the period of the survey
- ❖ Ascertained proper documentation of the acquired geophysical datasets

"Logistics Manager", Graduate and Undergraduate Students Geophysical Field Work, Ode-Aye, Nigeria 2026

- ❖ Ensured proper management of field work activities throughout the duration of the field work
- ❖ Gave lecture on data acquisition, processing and interpretation of ERT geophysical datasets
- ❖ Maintained proper documentation of students' availabilities for the complete duration of the field work

"Hydrogeophysics survey for borehole development" Akure, Nigeria 2026

- ❖ Set up the R-50 resistivity equipment to acquire the hydrogeophysics data in the study area
- ❖ Analyzed and interpreted the collected horizontal profiling and Schlumberger data with the other team members.
- ❖ Wrote the report detailing the findings.

"Hydrogeologic Modelling Survey" Oba – Ile, Akure, Nigeria 2025

- ❖ Set up the PASSI resistivity equipment to acquire the 1D VES data in the study area
- ❖ Analyzed and interpreted the collected data with the other team members.
- ❖ Authored the report detailing the findings.

"Borehole Development Geophysical Survey" Awo-Ekiti, Ekiti State, Nigeria 2025

- ❖ Collaborated in the 1D VES data acquisition and the instrumental setup for the data gathering
- ❖ Analyzed and interpreted the collected data with the other team members.
- ❖ Developed the report detailing the findings.

"Application of MEREC model for Water Analysis" Akure, Nigeria 2025

- ❖ Led the graduate student in the field data collection of well depth and static water level data in the study area
- ❖ Configured the navigation instrument for smooth well location data acquisition.
- ❖ Offered the graduate students insights into the computations of the well depth data

"Iron Ore Deposit Mapping at Ebiya Ajaokuta Local Government", Kogi state, Nigeria 2023

- ❖ Conducted Vertical Electrical Sounding (VES) data acquisition with the other team members.
- ❖ Interpreted VES results using WinResist software to locate conductive zones diagnostic of iron ore occurrence.
- ❖ Assisted in the curation of magnetic data interpreted to delineate the magnetic ore body from the surrounding geologic formations

"Geophysical survey for subsurface characterization" Igarra, Edo State, Nigeria 2023

- ❖ Interpreted the 2D ERT data acquired using DIPRO™ inversion software to show lateral and vertical visualization of the geologic settings of the study site
- ❖ Processed the ground truth magnetic data to locate geologic contact zones as well as structures that could be inimical to the foundation design of the study site

JOURNAL PEER REVIEW

PEER REVIEWER FOR:

Water Science; Discover Sustainability; Discover Environment 2026

OTHER COMPETENCIES

"Critical Writing Expert at Teflon Workshop" Remote | Nigeria 2025– Present

- ❖ Developed tailored academic reports, essays, and research-based assignments for diverse clients
- ❖ Transformed complex topics into insightful documents that showcase high-level of critical reasoning

"Project Work Reviewer", Federal University of Technology, Akure, Nigeria 2023– Present

- ❖ Leveraged my research ability to review undergraduate project write up for publications
- ❖ Offered insights for graduate research work submission into reputable journals
- ❖ Reviewed graduate students thesis prior to submission to their supervisors

"Machine Learning Expert at Infinity Research Consultant" Remote | UK 2022 – 2024

- ❖ Developed machine learning models (i.e. XGBoost, Random Forest, SVM etc.) for diverse projects.
- ❖ Led data analysis projects across several team members.

THESIS

Master's Thesis

"Development of IDOCRIW-COCOSO and IDOCRIW – MAUT Decision Support System Models for Groundwater Potentiality and Vulnerability in a Basement Terrain" 2025

Bachelor's Thesis

"Subsoil evaluation for pre-foundation study using geophysical methods at FUTA staff quarters" 2018

KEY SKILLS

Programming languages – (Python, R), **GIS – (**ArcGIS Desktop, ArcGIS Online, Google Earth Engine), **Remote Sensing – (**Experience with Sentinel 1 & 2, SRTM, ALOS- PALSAR, LiDAR, and ASTER), **Modelling –** (Hydrologic, Landfill, Ecosystem, Urban green), **Data Analysis – (**Python, R, Excel, PowerBI), **Machine Leaning and AI** (Sci-Kit Learn, PyTorch), **Soft Skills –** (Strong writing, teamwork and independent research abilities).

CONFERENCES AND WEBINARS

Second Sub-Saharan African Regional Virtual Conference by SEG 2024
The Role of Geophysics in HDD Webinar by SEG FUTA 2023
Water and Development Symposium Virtual Conference by IHE DELFT 2023
3rd World Symposium on Climate Change Adaptation (WSCCA- 2017), FUTA 2019

REFERENCES

Prof. K.A.N. Adiat
Professor, Department of Applied Geophysics, FUTA
Email: kanadiat@futa.edu.ng | Phone: +2348038670332

Prof. (Assoc.) K. O. Ozegin
Associate Professor, Department of Physics, AAU
Email: ozeginkess@aauekpoma.edu.ng | Phone: +2348034953007

Prof. (Assoc.) A.A. Akinlalu
Associate Professor, Department of Applied Geophysics, FUTA
Email: aaakinlalu@futa.edu.ng | Phone: +2348034298275