

# Victor E. Irekponor, Ph.D (In View).



<https://vireks.com>



[Google Scholar](#)



[ResearchGate](#)



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[GitHub](#)

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**Research Interests:** Spatial Data Science, Multiscale Spatial Modelling, Machine Learning, Spatial Analytics, Urban Informatics, Web3

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## EDUCATION

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📌 **University of Maryland, College Park, USA**

Aug 2022 – Present

Doctorate (Ph.D.) – Geospatial Information Science and Cartography

Advisor: Professor (*Associate*) Taylor Oshan

NSF Funded Research Assistantship Recipient

📌 **University of Lagos, Nigeria** – BSc. Urban and Regional Planning,

1st Class Honours: CGPA 4.69 / 5.0

Oct 2015 - Nov 2021

University's office of advancement Scholarship Recipient

Earned the HOD's Award for Academic Excellence

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## PROFESSIONAL EXPERIENCE

📌 **Retina-AI Health: Remote, US** — Senior Data Scientist / Machine Learning Software Engineer

Feb 2019 – Aug 2022

- I wrote the Standard Operating Procedures for the Company's Data Science, Machine Learning and AI experiments
- I wrote the change protocol for our Software as a Medical Device (SaMD), in accordance with the US FDA's proposed regulatory framework for modifications to Artificial Intelligence/Machine Learning (AI/ML)-based Software as a Medical Device (SaMD). The document contained both a detailed Software Pre-specification (SPS) and a detailed Algorithm Change Plan (ACP)
- I supervised a team of 3 in the Data Science department and reviewed codes to ensure that they were compliant with the company's Standard Operating Procedures (SOPs)
- Utilized artificial intelligence and machine learning techniques on **PyTorch and Keras** to enhance diagnosis and treatment procedures for retinal diseases
- Replicated state-of-the-art research papers in the field and compared the results.
- Relabeled image datasets for better accuracy.
- Explored generative models, particularly VQ - VAEs, StyleGANs, and StyleALAEs for Image generation.
- Worked with a team of three to build an internal tool for grading retinal images using React and Django

📌 **WeStat Nigeria Limited, Nigeria** – Data Engineering Consultant

Jan 2020 – Mar 2020

- Worked on the backend development of an ePayment solution, integrating data endpoints from NIBSS
- Utilized Kibana dashboard and BSPump to visualize data from POS machines and create a real-time streaming platform

- 📌 **The Hong Kong Polytechnic University: HKSAR** — Research Assistant Jul 2019 – Sep 2020
- Worked as a Research Assistant in the Community Resilience lab (Department of Building and Real Estate)
  - I collaborated with a PhD candidate in the lab to write a paper that was published in a top Q1 journal – *Cities*, entitled “A framework to gathering and preprocessing location based social media big data for sustainable urban planning and management”
  - Graph Theory, Social Network Analysis (SNA), Actor Network Theory (ANT), Structural Equation Modelling, are also part of what I worked on during my time in the lab as a Research Assistant.
  - I applied my knowledge of social media big data mining to get 10 years’ worth of backdated Twitter data to be used for analysis (4,000 Tweets) using a web scraping script I modified and wrote. Modified version can be found on my [GitHub](#).
  - I explored the unstructured textual data, discovering patterns with the aid of yearly, monthly and quarterly time series plots I generated with python, pandas and seaborn libraries.
  - I also wrangled the electronic unstructured twitter data, mined emotions from it using Sentiment Analysis libraries such as Textblob and VADER.
- 📌 **Omdena AI: Remote, US** — Machine Learning Engineer Aug 2019 – Oct 2019
- I collaborated with a team of 30 AI Engineers, Deep machine learning Enthusiasts from 15 countries to build Artificial Intelligence that can flag dangerous and threatening keywords/conversations on Social media e.g Twitter, Facebook, Instagram, etc.
- 📌 **Lagos State Government: Lagos, Nigeria** — Urban Planner (Intern) Jul 2019 – Dec 2019
- I produced Architectural drawings for different clients
  - I worked on processing Physical Planning and Development Permits for clients in the district
  - I used GIS tools to obtain site analysis information for clients
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## RESEARCH PUBLICATIONS

### Peer Reviewed Journal Publications

- 1 Abdul-Rahman, M., Chan, E. H., Wong, M. S., **Irekponor, V. E.**, & Abdul-Rahman, M. O. (2021). “A framework to simplify pre-processing location-based social media big data for sustainable urban planning and management”. *Cities – The International Journal of Urban Policy and Planning*, 109. doi.org/10.1016/j.cities.2020.102986
- 2 Oshan. T, **Irekponor, V. E.** (2024). “Conducting Local Comparisons using Adjusted Geographically Weighted Correlation Coefficients”. (In Prep,), 2024
- 3 **Irekponor, V. E.**, Oshan. T (2024). “Replicability and Reproducibility through the lens of multiscale spatially varying coefficient (SVC) models: Visualization strategies for comparing process scale and heterogeneity”. *Catography and Geographic Information Science*. (In Prep,), 2024

### Conference Proceedings

- 1 **Irekponor, V. E.**, Oshan. T (2024). “Visualization Strategies for Big Models”. *Catography and Geographic Information Science (CaGIS) and the University Consortium for Geographic Information Science (UCGIS) Symposium, Columbus, Ohio*.

- Anthony J Bustamante, Niskarsha Ghimire, Preet R Sanghavi, Arpit Pokharel, **Victor E Irekponor**. (2021). "Advantages of Machine Learning in Networking-Monitoring Systems to Size Network Appliances and Identify Incongruency in Data Networks" *The International Conference on Advances in Emerging Trends and Technologies* doi.org/10.1007/978-3-030-96147-3\_15

## Preprints

- V.E. Irekponor**, M. Abdul-Rahman, M. Agunbiade, A.J. Bustamante. (2022). "A framework to determine micro-level population figures using spatially disaggregated population estimates". Preprint <https://doi.org/10.48550/arXiv.2212.02020>

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## Technical Publications

- Converting the Layers of a DWG file in AutoCAD to an ESRI Shapefile using Geopackages in QGIS 3.x published in **Noteworthy – the Journal blog**. May 2020
- Mathematical Prerequisites for understanding Autoencoders and Variational Autoencoders (VAEs): Beginner Friendly, Intermediate Exciting, and Expert Refreshing. Published in **Analytics Vidhya**. May 2020
- Mining Twitter Data Without API Keys. Published in **Analytics Vidhya**. Nov 2019
- Creating an Unbiased Test-set for your machine learning model using stratified sampling techniques. Published in **Noteworthy – the Journal blog**. Feb 2019
- My Top Three Learnings in Omdena's AI challenge to solve the Chicago gun violence problem, Published in **Medium**. Oct 2019
- Shomolu Local Government Area: An In-depth exploratory data analysis using Python programming language (Pandas and Seaborn libraries), Published in **Medium**. Feb 2019
- Climate Change and Flooding in Lagos – What do you know? Published in **Medium**. Feb 2019

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## SKILLS

Coding	Python, JavaScript, TypeScript, R, Shell Scripting, SQL
Packages	Pandas/numPy/sciPy, Tensorflow/Keras, PyTorch, sklearn, Matplotlib, React.js, Svelte.js
Geospatial Analysis	ArcGIS, ArcMAP, QGIS, GeoPandas, PySAL Fiona, Shapely
Urban Design	AutoCAD, SketchUp, Revit
Computing	Version control (Git), Docker, Cloud Computing (google)

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## AWARDS AND CERTIFICATIONS

### Awards

2024  **International Cartographic Association (ICA) Scholarship** - CaGIS+UCGIS Joint Symposium

2022	📌	<b>BSOS Diversity Recruitment Supplement</b> – University of Maryland	\$5000
2022	📌	<b>Early Career Researcher Award</b> – TETFUND-NRF Grant Project (Integrated Address Systems Research)	\$200
2022	📌	<b>H.O.D/University's Award for Best Academic Performance</b> - Department of Urban & Regional Planning	\$500
2020	📌	<b>UmojaHack Africa: Inter-campus SAEON Challenge, 1<sup>st</sup> place winner</b> – University of Lagos	-
2019	📌	<b>Access Bank/African Fintech Foundry Hackathon, 1<sup>st</sup> place winner</b> – Access Bank of Nigeria	\$1,500

### Professional Certifications

2022	📌	<b>Social and Behavioral Responsible Conduct of Research</b> – by Citi Program
2020	📌	<b>Design Systems with React and Storybook</b> – by Frontend Masters
2020	📌	<b>Building Deep Learning Applications with Keras 2.0</b> – by LinkedIn
2020	📌	<b>Learning Functional Programming with JavaScript</b> – by LinkedIn
2020	📌	<b>Smart Cities: Solving Urban Problems Using Technology</b> – by LinkedIn
2019	📌	<b>Data Science Nigeria bootcamp Participation</b> – by DSNai
2019	📌	<b>Research Writing in the Social Sciences</b> – by INASP

### Invited Speaking Engagements

2023	📌	<b>Center for Geospatial Information Science (CGIS)</b> – I was invited to give a talk on my summer research project entitled " <i>Replicability and Reproducibility through the lens of multiscale spatially varying coefficient (SVC) models: Visualization strategies for comparing process scale and heterogeneity</i> "
2020	📌	<b>Data Scientist Network (Data Science Nigeria)</b> – Co-hosted a discussion session on " <a href="#">Zindi's Umoja Hackathon image classification</a> "
2020	📌	<b>AI+ Club Virtual Bootcamp</b> – Anchored a presentation session entitled " <a href="#">Getting started with machine learning</a> "
2019	📌	<b>Python Conference Nigeria</b> – Delivered a talk entitled " <a href="#">Gathering and Preprocessing Twitter Data for business or Organizational Insights</a> "

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## Research and Teaching Experience

### Research

Apr 2022 – present	📌	<b>Spatial Data Science, GEOSMASH Lab, University of Maryland, USA</b> Graduate Research Assistant
Mar 2020 – present	📌	<b>Geospatial Software Solutions/Data Science, UNILAG-LISA Lab, University of Lagos, Nigeria</b> Research Affiliate
2019	📌	<b>AI Africa Lab, Lagos, Nigeria</b> Research Affiliate
Jul 2019 – Sep 2020	📌	<b>Urban Analytics, Community Resilience Labs, Polytechnic University, Hong Kong</b> Undergraduate Research Assistant





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## Leadership and Service

- 2023  **Department of Geographical Sciences, University of Maryland**  
--- Member of the 2023 Graduate Orientation Committee  
--- Was a part of the team that prepared the Incoming Graduate Student Orientation Guide for the Fall 2023 Academic session
- 2022  **University of Maryland African Graduate Student Association (UMCPAGSA)**  
--- Elected as the pioneer Vice-President of the Association for the 2022-2023 Academic calendar year  
--- Prepared the constitution and bye-laws of the association
- 2020  **Developer Students Club (DSC), University of Lagos, Nigeria**  
--- Elected as the Lead Python Instructor  
--- Member of the core team for the 2019-2020 Academic year  
--- I introduced newbie students to the field of programming, particularly the Python programming language  
--- I mentored beginners and intermediates in Data Science, Machine Learning, and Artificial Intelligence.
- 2020  **UmojaHack Africa: Inter-campus SAEON Challenge, Zindi, Africa.**  
I led a team of 3 representing my university to build an image classifier able to classify images of deep-sea invertebrates for an inter-campus machine learning competition and we emerged as 1st place winners in Nigeria, and 3rd place winners in Africa [[Competition leaderboard](#), [University Acknowledgement](#)].
- 2019  **African Fintech Foundry (AFF), Access Bank Nigeria**  
I led a team of 5, conducting exploratory data analysis on an anonymized bank customer data for the purpose of discovering insights. [We also built a machine learning model](#) to predict customer Non-Performing Loans (NPL) and developed an alternative credit scoring algorithm. We finished first in this competition out of a total of 10 teams.
- 2019  **Data Scientists Network (Data Science Nigeria), Lagos, Nigeria**  
--- As an AI+ club member, I provide mentorship and support to younger colleagues in AI, Data science and machine learning  
--- Presented the winning codes to the AI+ club community alongside my team via a YouTube live session [[Link to session](#)].  
--- Participated actively in various Kaggle and Zindi machine learning competitions

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## Professional Memberships

- 2024  **Cartography and Geographic Information Society (CaGIS)**  
Student Member
- 2023  **American Statistical Association (ASA)**  
ASA ID: 254897
- 2023  **American Planning Association (APA)**  
APA ID: 414018
- 2022  **American Association of Geographers (AAG)**  
Student Member