



Chisom Ezekannagha

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Education

2024 **PhD (Doctor rerum naturalium), Computer Science**, *Faculty of Mathematics and Computer Science, Philipps-Universität Marburg*, Marburg, Germany, scilicet submitted (11.2023), viva voce (05.2024).

2016 – 2018 **Master of Science, Computer Science (Bioinformatics)**, *Faculty of Natural Sciences, University of Ibadan*, Ibadan, Nigeria.

2009 – 2013 **Bachelors of Science, Computer Science**, *Faculty of Natural Sciences, Anambra State University*, Uli, Nigeria.

Work Experience

Jan 2024 – present **Postdoctoral Researcher**, VISUALIZATION GROUP, CENTER FOR ARTIFICIAL INTELLIGENCE IN PUBLIC HEALTH RESEARCH, ZENTRUM FÜR KÜNSTLICHE INTELLIGENZ IN DER PUBLIC HEALTH- FORSCHUNG (ZKI-PH), Robert Koch Institute(RKI), Berlin, Germany.

- Lead a cutting-edge project focused on creating dynamic, interactive visualizations to demystify complex, high-dimensional datasets and inherent uncertainties, facilitating clearer understanding among public health professionals.
- Focus on using advanced visualization techniques for enhancing the transparency and user-friendliness of artificial intelligence (AI) in public health informatics, ensuring that these technologies are approachable and useful for decision-making in policy and healthcare.
- Collaborate in designing and implementing advanced AI algorithms to enhance the accessibility and comprehensibility of public health data, contributing to improved community health outcomes.
- Contribute to multiple grant proposals to secure funding for pioneering AI and public health visualization research, demonstrating proficiency in articulating project significance and innovation to funding bodies.

Oct 2020 – **Research Associate**, HEIDER LAB, PHILIPPS-UNIVERSITÄT MARBURG,
Dec 2023 Germany.

- Extended existing, creating new and alternative visualization methods for bioinformatics and ML problems.
- Supervised students carrying out their BSc and MSc research projects in the Lab.
- Organized workshops and provided assistance for lectures and seminars for multiple undergraduate and graduate students.

MOSLA (MOLEKULARE SPEICHER ZUR LANGZEIT-ARCHIVIERUNG), PHILIPPS-UNIVERSITÄT MARBURG

- Systematically reviewed DNA storage system to provide design considerations for achieving long-term archiving data storage.
- Developed a novel visualization and analytical method for information storage systems based on biological and chemical compounds.
- Mastered various techniques and methods in information visualization, data storage, bioinformatics, and machine learning.
- Collaborated with colleagues within MOSLA as well as externally.

May 2018 – **Research Supervisor**, INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE,
Oct 2019 Ibadan, Nigeria.

- Developed and implemented scripts to parse, process, and analyze genome-wide data sets for RNA sequencing and gene expression studies.
- Carried out data analyses in parallel on a large compute cluster; integrated, organized, and analyzed program output.
- Managed research data sets on file servers and ensured their appropriate backup, completeness, correctness, and integrity.
- Prepared reports of findings by compiling results, generating figures, and preparing tables from analyses of genomics studies.
- Developed research objectives, projects, and proposals.

May 2017 – **Research Fellow**, INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE,
April 2018 Ibadan, Nigeria.

- Developed a new computational method called GeAnnotate for the annotation of Cassava genes
- Used programming languages such as R/Python for pipeline development
- Made presentations at conferences/exhibit work at other appropriate events
- Assisted in preparing scientific presentations, grant applications, and manuscripts

Complementary Education

- 2022 **OxML Summer school**, *Oxford Machine Learning summer school*, University of Oxford, England.
(Virtual)
- 2021 **Bio+Med+Vis Spring school**, *The 1st Spring School on Biological and Medical Visualization*, (Virtual).
- 2019 **Workshop**, *Next Generation Sequencing Bioinformatics*, University of Witwatersrand, Johannesburg, South Africa.
- 2016 **Training**, *H3ABioNet Introduction to Bioinformatics Course (IBT)*, University of Ibadan, Nigeria.

Grants

- 2019 **Welcome Genome Campus**, *Next Generation Sequencing Bioinformatics*, University of Witswatersrand, Johannesburg, South Africa, (Travel Grant).
- 2016 **H3Africa**, *H3ABioNet Introduction to Bioinformatics Course (IBT)*, University of Ibadan, Nigeria, (Training Grant).

Publications

- 2023 **Ezekannagha, C.**, Welzel, M., Heider, D., Hattab, G., *DNAsmart: Multiple Attribute Ranking Tool for DNA Data Storage Systems*, Computational and Structural Biotechnology Journal, <https://doi.org/10.1016/j.csbj.2023.02.016>.
- 2022 **Ezekannagha, C.**, Becker, A., Heider, D., Hattab, G., *Design considerations for advancing data storage with synthetic DNA for long-term archiving*, Materials Today Bio, <https://doi.org/10.1016/j.mtbio.2022.100306>.
- 2022 Kaya, G., **Ezekannagha, C.**, Heider, D., Hattab, G., *Context-Aware Phylogenetic Trees for Phylogeny-based Taxonomy Visualization*, Frontiers in Genetics, <https://doi.org/10.3389/fgene.2022.891240>.
- 2021 Olagunju, T., **Ezekannagha, C.**, Gisel, A., *3'-Tag RNA-Sequencing*, EMBnet journal, <https://doi.org/10.14806/ej.26.A.968>.

Selected Conferences

- 2022 IEEE Visualization Conference (VIS). Oklahoma City, Chicago, USA. (attendee)
- 2022 24th EG Conference on Visualization (EuroVis). Rome, Italy. (attendee, Student Volunteer)
- 2022 The 1st International Conference on Data storage in Molecular Media (DSMM). Bielefeld, Germany. (Presenter)
- 2021 IEEE Visualization Conference (VIS). New Orleans, Louisiana, USA. (attendee)
- 2021 11th EG Workshop on Visual Computing for Biology and Medicine (VCBM). Paris, France. (attendee)
- 2021 Symposium on Interdisciplinary Bioinformatics and Biomedical Data Science (IBB-MDS). Marburg, Germany. (attendee)
- 2020 IEEE Visualization Conference (VIS). Salt Lake City, Utah, USA. (attendee)
- 2020 Eurographics & Eurovis (EGEV). Norrköpping, Sweden. (attendee)
- 2019 The 1st Nigerian Bioinformatics Conference (NBC): Bioinformatics in the era of genomics in Africa. Nigerian Institute of Medical Research (NIMR), Lagos, Nigeria. (Poster)
- 2018 The International Association of Research Scholars and Fellow 21th Annual Symposium on "Sustainable Graduate Research for Transformation of Africa's Agro-food and Industrial Utilization". IITA Ibadan, Nigeria
- 2017 The International Association of Research Scholars and Fellow 20th Annual Symposium on "Contribution of IITA Graduate Research in Transforming African Agriculture". IITA Ibadan, Nigeria

Teaching

- 2022 **Seminar**, *Introduction to Bioinformatics*, Department of Mathematics and Computer Science, University of Marburg. Marburg, Germany. 1 SEM.
(tutor)
- 2021–2022 **Projektarbeit (group student project)**, *DNA Storage Encodings*, Department of Mathematics and Computer Science, University of Marburg. Marburg, Germany..
(tutor, co-organizer)
- 2021 **Lecture**, *Data Visualization*, Department of Mathematics and Computer Science, University of Marburg. Marburg, Germany. 1 SEM.
(co-tutor)
- 2020–2022 **Seminar**, *Biological Data Visualization*, Department of Mathematics and Computer Science, University of Marburg. Marburg, Germany. 3 SEM.
(co-tutor)

Advising and Supervision

Masters

students

- Florian Schwarz, M.Sc. CS, 7.2023
- Minh Nguyen, M.Sc. Business Informatics (BI), 3.2023

Bachelors

students

- Chu Xiao, B.Sc. CS, 08.2023

Research

Assistants

- Ihsan Tri Heldian, Student Assistant, 02.2023
- David Sonnabend, CS Projektarbeit, 10.2022
- Khawla Elhadri, CS Projektarbeit, 10.2022
- Samuel Becker, CS Projektarbeit, 10.2022
- Felix Klein, CS Projektarbeit, 10.2022
- Raffael Schön, CS Projektarbeit, 10.2022
- Leon Wimbes, CS Projektarbeit, 10.2022
- Lucas Staus, CS Projektarbeit, 10.2022

Projects

Bioinformatics

- A Computational pipeline for Genome annotation and Metabolic Pathway Reconstruction in plants (A case Study of Cassava)
- CAPT: Context-Aware Phylogenetic Tool for Phylogeny-based Visualization
- DNAsmart: Multiple Attribute ranking tool for DNA data storage systems

Computer Science

Design and Implementation of GPA calculator

Skills

Language Igbo(Native), English(Fluent), German(Elementary)

IT skills

- Programming: JavaScript(React, D3), R, Python
- Database: SQL, MySQL
- Scripting: UNIX Shell, XHTML
- Office productivity: Microsoft Office Suite, LaTeX
- Machine Learning: TensorFlow, Scikit-learn

Additional Bioinformatics, Data Visualization, Web Development skills

Soft skills

- Excellent organizational and communication skills
- Good Interpersonal skills with a great ability to function in a multicultural environment
- Ability to work effectively and productively in a team