

Isaac Olatunji

Email: istol2023@gmail.com

Website: tisl91.github.io

Phone number: +1-585-303-3673

EDUCATION

M.S. in Bioinformatics at Rochester Institute of Technology, Rochester NY.
2021 - 2023.

Introduction to Computer Science (Certificate), Harvard University.
2023.

Bachelor of Dental Surgery, University of Lagos, Lagos, Nigeria.
2009 - 2016.

SKILLS

- Programming Languages: Python, R, C/C++, SQL, Linux
- Libraries and Tools: Pandas, NumPy, Matplotlib, Sklearn, OpenCV, Keras, TensorFlow, Pytorch, OpenSlide, Tiatolbox, PathML, HISAT2, DESEQ2, Tuxedo package, Chimera, Modeller, PyRx, Slurm.
- Databases: MySQL, Google BigQuery
- Concepts: Machine Learning, Deep Learning, Convolution Neural Networks, Graph Neural Networks, Transformer, Computational Pathology, Molecular Biology, Genomics, Proteomics, Homology Modelling, RNA-Seq Analysis, Protein Function Prediction, Molecular Docking, Algorithms, Statistics, Dentistry, Medicine.

PUBLICATIONS AND PROJECTS

- Olatunji I and Cui F (2023) **Multimodal AI for prediction of distant metastasis in carcinoma patients.** *Front. Bioinform.* 3:1131021. doi: 10.3389/fbinf.2023.1131021
- Isaac Olatunji, Feng Cui. **Machine Learning Predicts Genes Associated with Cancer Metastasis.** Poster Presentation. AI@RIT Summit. 2022.
- Isaac Olatunji. **Potential application of tumor suppressor microRNAs for targeted therapy in head and neck cancer:** A mini-review. *Oral Oncology*, Volume 87, 2018, Pages 165-169, ISSN 1368-8375. <https://doi.org/10.1016/j.oraloncology.2018.10.038>
- **Prediction of Distant Metastasis from Histopathology Images With Gene Expression as Intermediate.**
- **Breast Cancer Nuclei Segmentation on Histopathology Images:** A Convolutional Neural Network based independent project where U-net architecture was coded from scratch using Tensorflow library, and other python libraries. Model was trained for identification of nuclei in histopathology images.
- **Assessment of ligand protein binding in statins-HMG Co-A reductase complex**
Molecular docking of various statin class ligands (ex. simvastatin, pravastatin, etc) to the HMG Co-A reductase protein using AutoDock Vina in the PyRx software in order to assess their binding affinities. Visualization and analysis of the various statin-HMG Co-A complex interactions based on features like hydrophobicity, and B factor in the UCSF Chimera software.
- **Differential gene expression analysis in sulphoraphane treated versus vehicle treated obese rats.**
Aim was to investigate if any of the Differentially Expressed Genes (DEGs) are related to the leptin receptor or Nuclear Factor Erythroid 2 Related Factor (NRF2) pathways. Data acquisition from SRA, Quality Control, Alignment, Count Matrices, Differential Gene Expression Analysis, Visualization, DEGs interpretation.
- **Machine Learning Predicts Cancer Recurrence and Metastasis in Head and Neck Cancer:** A project in R that assessed ability of three types of machine learning algorithm (Naïve Bayes, SVM- with linear, polynomial, radial basis kernel functions, and Random Forest) to accurately predict cancer recurrence and metastasis from patients clinical data downloaded from TCGA.
- **Molecular Modelling and Proteomics Course Individual Projects**
 - Python implementation of Chou Fasman algorithm for protein secondary structure prediction.
 - Sequence specific retention calculator for calculation of retention time in reverse phase chromatography.
 - Python scripts within Chimera software for download and manipulation of PDB data.
- **Diagnose Your Toothache**
A novel algorithm to diagnose pain of dental origin from information about patient's symptoms, and medical history. (Python, MySQL)

EMPLOYMENT HISTORY

Feng Cui Lab

Research Assistant. June 2023 to Present

- Application of AI methods for analysis of biomedical data.
- Literature review.
- Research.

Thomas H. Gosnell School of Life Sciences

Graduate Teaching Assistant Jan 2022 to Dec 2022.

General Biology Laboratory

- Delivered lab instructions to two classes of twenty-eight students.
- Graded students' submissions.
- Held office hours.

EHA Clinics

Dental Team Lead · Sep 2019 to May 2021 · FCT, Nigeria.

- Worked with Informatics team to create a digitized dental patient evaluation form.
- Actively involved in writing of standard operating procedures.
- Performed administrative duties and was point of communication between dental department, and upper management.
- Diagnosis and treatment of patients with oral, and maxillofacial pathologies.

ACTIVITIES

Google CS Research Mentorship Program (CSRMP) Alumni Research Presenter

2023

- Presented a publication to current CSRMP as an Alumnus.

Google CS Research Mentorship Program (CSRMP)

2023

- Mentorship from Google Researchers towards a computer science research career.

Undergraduate football (soccer) coach

2013 to 2015.

- Won the ULADS cup with the team twice and came 1st runner up once.
- Decided tactics, lead training sessions, players selection and co-ordination, man management.

Pioneer Member of ULADS (University of Lagos Association of Dental Students) Senate

2015 to 2016.

- Actively participated in in-house debates and worked with the executives towards better welfare of association members.