

Ola Oni

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EDUCATION

Weill Cornell Medicine, Cornell University

Ph.D. Computational Biology and Medicine, GPA: A+

Thesis: Deep Matrix Factorization for Predicting Genetic Interactions in Perturbation Screens

Supervisor: Dr. Thomas Norman

New York, NY, USA

Expected 2023

McMaster University

M.Sc. Computational Science and Engineering, GPA: A

Thesis: Multi-Platform Genomic Data Fusion with Integrative Deep Learning

Supervisor: Dr. Sanzheng Qiao

Hamilton, ON, Canada

May 2019

University of Waterloo

B.Sc. Biochemistry/Biotechnology sp., GPA: A-

Thesis: Biophysical Modeling of G-quadruplex DNA Aptamers and Graphene Oxide Interactions

Supervisor: Dr. Juewen Liu

Waterloo, ON, Canada

April 2017

RESEARCH EXPERIENCE

Memorial Sloan Kettering Cancer Center

Graduate Researcher. Computational & Systems Biology Program. Supervisor: Dr. Thomas Norman.

New York, NY, USA

Feb 2019 – Present

- Building computational pipeline for designing optimized CRISPR-Cas13 genetic screens.
- Designing state-of-the-art machine learning models for analyzing massively parallel assays to identify gene regulators in cancer and systemic sclerosis.
- Developing deep matrix factorization algorithms for predicting genetic interactions in pooled genetic perturbation screens.

Rotation 2. Metastasis & Tumor Ecosystems Center. Supervisor: Dr. Dana Pe'er.

Nov 2019 – Jan 2020

- Assisted in the investigation of drivers of lung cancer metastasis in the tumor micro-environment.
- Developed a collective matrix factorization algorithm for inferring immune and cancer cell-cell interactions from scRNA-seq data^[5].

Rotation 1. Center for Molecular Oncology. Supervisor: Dr. Michael F. Berger.

June 2019 – Oct 2019

- Assisted in the analysis of plasma cell-free DNA to retrospectively study disease progression and investigate potential mechanisms of resistance in a cohort of metastatic lung cancer patients.
- Analyzed copy number alterations, structural variants and single nucleotide variations on ultra deep DNA sequencing data.

McMaster University, School of Computational Science and Engineering

Graduate Researcher

Hamilton, ON, Canada

Sept 2017 – May 2019

- Developing and implementing novel machine learning algorithms for the multimodal predictive analysis of cancer types.
- Developed distributed Apache Spark pipelines to implement deep learning algorithms on genomic data (RNASeq, miRNA, SNV, and DNA Methylation)^[3].
- Designed method to use gated multimodal units for bimodal information fusion^[2].

Environment Canada, Emergencies Science and Technology Section
Chemical Analyst

Ottawa, ON, Canada
Jan 2016 – Aug 2016

- Assisted in the design of experiments for the isolation of naphthenic acids through primary secondary amine and silica gel solid phase extraction with resolution on orbitrap LC-MSD.
- Designed software to streamline data transfer from analytical instruments and for chemical fingerprinting of target compounds from GC-QTOF, LC-MSD, and SPME-GC-FID.
- Analyzed analytical data and designed software to illustrate results in python and perform statistical analysis in R.

TEACHING

McMaster University, Department of Computing and Software
Teaching Assistant - CS/SE 4X03 - Scientific Computation

Hamilton, ON, Canada
Jan 2018 – May 2019

- Present weekly tutorials to over 150 undergraduate students.
- Develop lessons to teach numerical methods, data fitting, and calculus.
- Provide mentorship and after class assistance to students.

PUBLICATIONS

Peer-Reviewed

- 1 Zhang, Z., **Oni, O.**, & Liu, J. (2017). New insights into a classic aptamer: binding sites, cooperativity and more sensitive adenosine detection. Nucleic acids research, 45(13), 7593-7601.

Conference Proceedings

- 2 **Oni, O.**, & Qiao, S. (2019). Model-Agnostic Interpretation of Cancer Classification with Multi-Platform Genomic Data. In Proceedings of the 10th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics (pp. 34-41). ACM. (Acceptance Rate: 27%)

Technical Reports

- 3 **Oni, O.** (2018). Distributed and Modular Deep Learning for Kidney Cancer Classification in Apache Spark. Department of Computing and Software, McMaster University.
- 4 **Oni, O.**, Ross, A., Heisey, J. (2017). Principle Component Analysis for Facial Recognition. Department of Computing and Software, McMaster University.

TECHNICAL SKILLS

Analytical: Machine Learning, Bioinformatics, Regression, Clustering, PCA & Dimensionality Reduction, Biostatistics

Programming: Python (scikit-learn, numpy, scipy, pandas, requests), R, Matlab, C, Bash, SQL, Spark, LaTeX

Web Design: HTML, CSS, JavaScript, Django, Node.js