

JOHN AITKEN

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EDUCATION

University of Florida

B.S. Computer Science (3.88), B.A. Biochemistry (3.53)

August 2022 - Present

Gainesville, FL

· Relevant Coursework:

Linear Algebra for Data Science, Probability, Fundamentals of Machine Learning (Graduate level), Bioinformatics, Organic Chemistry, Biochemistry, Data Structures and Algorithms, Software Engineering

EXPERIENCE

Undergraduate Research Assistant

University of Florida

February 2024 - Present

Gainesville, FL

- Developed and tested kinetics model to examine mechanism of Oxalate Decarboxylase (OxDC)
- Mapped electron hole-hopping pathways in different configurations of crystal OxDC using EHPATH and PyMol

Volunteering Miami

Co-founder

July 2019 - May 2022

Miami, FL

- Programmed original website for **volunteeringmiami.org** from scratch using ReactJS and Amazon Web Services.
- Built RESTful API using an AWS Lambda function written in NodeJS that interacted with a PostgreSQL database hosted on AWS RDS.
- Used Bootstrap as CSS framework for styling, architected designs from scratch in HTML5.
- Website designed to help students find community service opportunities in the greater Miami area; sought to simplify applications by automatically packaging student information. Onboarded next generation of programmers and managers for the project. They've since expanded to regions outside Miami.

PROJECTS

Fine-tuning Faster R-CNN for Handwritten Digit Detection

Team member

November 2024 - December 2024

Gainesville, FL

- Used transfer learning to fine-tune a Faster R-CNN model with a ResNet50 backbone for object detection and identification on a custom handwritten digit dataset encoded in YOLO.
- Explored effects of data augmentation and image transformations on model performance measured via IoU and mAP-50.
- Write-up and code can be found on the project GitHub repository **here**

Clips for a Cause

Full-stack developer

February 2024 - May 2024

Gainesville, FL

- Developed a single-page application using Next.js for a fictional charity aimed at collecting donations for community haircuts.
- Implemented authentication for donors and barbers via AWS Cognito.
- Built a PostgreSQL database deployed on AWS RDS for storage and retrieval of account information and donation history.
- Integrated responsive UI/UX features using TailwindCSS.
- Code can be found in repository **here**

Exploration of Post-Mortem Human Brain Tissue RNA-Seq Data

August 2023 - December 2023

Team member

Gainesville, FL

- Performed differential expression and enrichment analysis on RNA-seq data from the anterior cingulate cortex of patients diagnosed with schizophrenia relative to control patients using R for data analysis.
- Used k-Means, PAM, and hierarchical clustering as well as predictive modeling with a linear SVM to identify 33 genes that had statistically significant levels of differential expression between the two groups.
- Presented findings as final project for a course on Bioinformatics. Slides can be found **here** and the repository containing the code and final report can be found **here**

TECHNICAL STRENGTHS & INTERESTS

Programming Languages	Python, R, C++, Javascript
Data Analysis	NumPy, Pandas, Scikit-learn, PyTorch, dplyr, mlr3
Data Visualization	Matplotlib, Seaborn, ggplot2
Database Systems	PostgreSQL, MongoDB, MySQL
Front-end Development	Next.js, TailwindCSS, Svelte, React
Cloud Platforms	AWS, Digital Ocean, Azure
Interests	Theory of Mind, Home Chemistry, History of Science