Albert Ho

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EDUCATION

University of California, San Diego　　　　　　　　　　　　　　　　　　　La Jolla, CA
Bachelor's of Science, Computer Science (3.8 GPA)　　　　　　　　　　　Expected June 2026
- Relevant coursework: Data Structures and Algorithms, AI: Probabilistic Models, Software Engineering, Engineering Probability and Statistics, Theory of Computation
- Summer URS Philip and Elizabeth Hiestand Scholarship for Engineering majors award

EXPERIENCE

Student Research Intern　　　　　　　　　　　　　　　　　　　　October 2024 - Present
University of California, San Diego Health — Hojun Li Lab
- Engineered a scalable Python-based bioinformatics pipeline for parsing BAM alignment files from Oxford Nanopore's Dorado platform, enabling efficient detection and quantification of A-to-I RNA editing events.
- Developed a computationally optimized algorithm to calculate per-base modification frequencies, leveraging ONT's statistical models and vectorized **Pandas/Numpy** operations to minimize runtime and memory overhead.
- Implemented automated genomic feature annotation using **interval tree data structures**, producing reproducible, research-ready datasets that support downstream analyses.
- Applied advanced dimensionality reduction (UMAP) and differential gene expression analysis on single-cell transcriptomic datasets, uncovering novel regulatory programs in hematopoietic stem and progenitor cells.
- Evaluated and benchmarked scRNA-seq algorithms, demonstrating reconstruction performance comparable to consensus NMF approaches for identifying gene expression modules.
- Engineered a reproducible, scalable workflow for more than 57,000 single-cell profiles using **R**, **Seurat**, and **Python**/**Pandas**, improving pipeline maintainability and computational efficiency.

Data Science Intern　　　　　　　　　　　　　　　　　　　July 2024 - August 2024
Lawrence Livermore National Laboratory
- Developed a production-ready machine learning pipeline for ventricular arrhythmia classification, benchmarking **Logistic Regression**, **Random Forest**, and deep learning models.
- Achieved **99% recall** by designing and hyperparameter-tuning a sequence-to-sequence **convolutional neural network**, significantly improving diagnostic sensitivity.
- Processed and labeled large datasets (over 16,000 samples) using **Pandas** dataframes for training and testing.

PROJECTS

Residual Network Stock Predictor | *Python, Pandas, Numpy, Sklearn, yfinance*　　　January 2025
- Designed and implemented a **residual neural network** from scratch to predict real-time S&P 500 readings, achieving results within 5% of state-of-the-art baselines in stock price forecasting.
- Utilized the yfinance API to retreive real time data and processed financial data using **Pandas** and **NumPy**.

MewsiCat | *Python, JavaScript, React Native, AWS, Expo*　　　　　November 2023 - May 2024
- Implemented mobile social networking application incorporating the Spotify API and interactive sprites/modules.
- Guided a team of four to create and design a mobile application's user interface and experience (UX/UI).
- Developed full-stack integration for data processing and retrieval through **AWS**, **JavaScript**, and **Python** scripts.

Earth Equity | *React, JavaScript, HTML, Tailwind CSS, D3.js*　　　　　　　October 2023
- Led a team of 5 to develop a full-stack web application for NASA Space Apps Hackathon; leveraging NASA time-series datasets through stock market trend indicators for data visualization.
- Integrated interactive database displays and modules utilizing **React framework**, **Tailwind CSS**, and **D3.js**.
- Incorporated the integration of data from **Python** data-scrapping algorithms utilizing **Javascript** scripts.
- Presented finalized web application and explained implementation to a panel of professionals.

TECHNICAL SKILLS

Languages: Python, R, C/C++, HTML, CSS, JavaScript, Java
Frameworks: Agile, React, Node.js, WordPress, Tailwind CSS
Developer Tools: Git, Github, Visual Studio Code, Firebase, PyCharm, XCode, Unreal Engine, Codacy
Libraries: scikit-learn, sklearn, tensorflow, PyTorch, Jupyter, pandas, NumPy, Matplotlib, D3.js
Certifications: CodePath Certificate in Intro to Android Mobile Development