

# AMY FAN

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## EDUCATION

### University of Arizona

2023-2025

Master of Science, Statistics and Data Science

GPA: 3.75

- Advanced Coursework: Theory of Probability, Theory of Statistics, Advanced Statistical Regression Analysis, Design of Experiments, Statistical Machine Learning, Graphs and Networks
- Academic Awards: Full tuition coverage through competitive teaching opportunities

### University of Arizona

2019-2023

Bachelor of Science, Statistics and Data Science, Molecular and Cellular Biology

GPA: 3.88

- Advanced Coursework: Linear Models, Statistical Computing
- Academic Awards: Magna Cum Laude, Honors, Galileo Circle scholarship \$2500, Data Science Academy Fellow, Wildcat Distinction Tuition Scholarship x4 \$60,000

## WORK EXPERIENCE

### University of Arizona - Capaldi Lab, Machine Learning Researcher

July 2023 - Present

- Independently designing Mask R-CNN and U-Net Neural Networks to segment cell images (.tiff and .nd2)
- Optimizing speed with mixed precision training and GPU

### University of Arizona, Graduate Teaching Assistant

August 2023 - present

- Teaching mathematics and molecular biology (upper-division) coursework: Mendelian genetics, linkage analysis, molecular pathways, and research papers. 100% Master's Tuition waived due to competitive upper-division teaching.
- Designing practice exams, grading assignments and exams, and holding office hours.

### University of Arizona, Undergraduate Research Assistant

January 2022 - July 2023

- Detected selection bias in inference models for genomic structures.
- Engineered statistical equations and pipelines with SLURM to process and visualize datasets in Python and R on a High-Performance Computing cluster.

## LEADERSHIP & ACTIVITIES

### MLH Open Source Hackfest, Winner

October 2024

- Received Best Diversity Equity Inclusion project in global hackfest among 100+ participants and 22+ submissions.

### Music and Medicine Club, President

August 2022 - May 2023

- Founded the club to consolidate a new community of over 30 musicians and STEM students and faculty.

## PROJECTS

### Jane Street Stock Market LSTM | PyTorch

- Developed 7-million parameter LSTM that predicts stock market responders given 10 market features over 200,000 time steps. Generalizes to unseen ticker symbols and 90% of seen ticker symbols.

### Eye'm Watching You - Eye Tracking to Mousepad | OpenCV, DLib, Defang, Flask, HTML

- Architected end-to-end pupil tracker to mousepad motion using OpenCV and DLib with multithreaded calibration of UI and pupil data collection. Performed polynomial fit/smoothing, and deployed a website using Defang with exe file.

### To Do List Webapp | Node.js, React, Express, Postgres, Kinsta

- Designed full-stack web app with React and Express framework including user authentication and encryption that loads user-specific tasks and deploys through Kinsta. Uses custom-styled components and stores data in Postgres database.

### RNA-Seq mini project | HPC, DESeq, fastQC, fastp, STAR, featureCounts

- Determined several influential genes being differentially expressed under test conditions using blood samples from experimental data. Detected significant B-cell and immune GO Term suppression as HIV infection progresses.

### COVID global presence | SQL, AWS, Athena, Tableau

- Analyzed large-scale epidemiological data using Athena and uncovered trends in global spread and at-risk populations. Discovered countries with higher death and differential recovery rates.

## SKILLS

**Languages:** Python, JavaScript, TypeScript, SQL, Bash, R, PowerShell, HTML, CSS

**Frameworks & Libraries:** Node.js, React, Flask, Express, NumPy, Pandas, Scikit-Learn, PyTorch, TensorFlow, PyTest, unittest, OpenCV

**Databases & Tools:** Git, Jupyter notebook, Vercel, Defang, AWS CDK, S3, Glue, Athena, MySQL, Postgres