

# Joshua Vendrow

CS/Math student with significant experience in software development and ML.  
Seeking AI/ML experiences in industry and academia to broaden skills & exposure.

## EDUCATION

### UCLA – B.S. Computer Science and Applied Mathematics

3.94 GPA | Dean's Honors List | September 2018 – June 2022

## EXPERIENCE

### UCLA Applied Math — Research Assistant

AUGUST 2019 - PRESENT | Los Angeles, CA

- Wrote and published papers in top conferences and academic journals (see below).
- Collaborated with professors, postdocs, and PhDs to complete projects in computer vision, network science, deep learning, and optimization.
- Designed and implemented deep learning models using TensorFlow and Pytorch.

### LymeDisease.org — Research Intern

JANUARY 2021 - MARCH 2021 | Los Angeles, CA

- Set up ML workflow and preprocessing for large scale medical patient data.
- Identified factors contributing to high antibiotic response in Lyme patients.

### NSF REU — Undergraduate Researcher

JUNE 2020 - JULY 2020 | Los Angeles, CA

- Created program to preprocess handwritten text from CA Innocence Project; used Google Cloud computing workflow for character recognition.
- Applied ML models to identify potential inmates to investigate for exoneration.

### RingCentral — Software Engineering Intern

JUNE 2017 - JULY 2017 | Belmont, CA

- Created an automated testing program to assess quality of streaming data passed over a server connection with JavaScript and Node.js using WebSocket.

## OPEN SOURCE PROJECTS

### Fast Nonnegative Least Squares

- Implemented the FNNLS algorithm from an influential paper by Bro and De Jung.
- Outperformed the popular SciPy package in execution time for random matrices.
- Set up CI/CD workflow using Travis CI for automated testing and maintainability.
- Released open source PyPI Python Package: [[PyPi](#)] [[Github](#)]

### Network Dictionary Learning

- Collaborated with a professor and postdoc to develop a method for learning structure from large-scale network data.
- Optimized the codebase to improve computational efficiency by 5x.
- Outperformed state of the art models in the link prediction task.
- Released open source PyPI Python Package: [[PyPi](#)] [[Github](#)] [[arXiv](#)]

## PUBLICATIONS

[1] J. Vendrow, J. Haddock, D. Needell, L. Johnson. "On a Guided Nonnegative Matrix Factorization." *IEEE ICASSP, to appear*, 2021. [[arXiv](#)] [[Github](#)]

[2] J. Vendrow, J. Haddock, E. Rebrowa, D. Needell. "Feature Selection from Lyme Disease Patient Survey Data." *Algorithms*, 2020. [[Journal](#)] [[Github](#)]

[3] E. Schonfeld, E. Vendrow, J. Vendrow, and E. Schonfeld. "On the Relation of Gene Essentiality to Intron Structure: A Computational and Deep Learning Approach." *Life Science Association*, 2021. [[Journal](#)] [[BioRxiv](#)] [[Github](#)]

## CONTACT

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## SKILLS

Python, Java, C/C++  
Javascript, CSS, HTML

AWS, Git, Unix/Linux

TensorFlow, PyTorch,  
scikit-learn, NumPy, SciPy,  
Cirq, Qiskit

Data Visualization,  
Multithreading, CI/CD

## SELECTED COURSEWORK

### Graduate

Quantum Programming  
Reinforcement Learning  
Neural Nets / Deep Learning  
ML for Bioinformatics  
Convex Optimization  
Linear Programming

### Undergraduate - CS

Operating Systems  
Software Construction Lab  
Applied Numerical Computing  
Machine Learning  
Algorithms and Complexity  
Formal Languages / Automata

### Undergraduate - Math

Optimization & Data Analysis  
Stochastic Processes  
Probability Theory  
Discrete Math  
Real Analysis  
Linear Algebra

## CLASS PROJECTS

EE 239AS: Applying Proximal Policy Optimization to OpenAI Environments  
[[Report](#)] [[Github](#)]

EE 247: Classifying Movement Related EEG Data using Neural Networks  
[[Report](#)] [[Github](#)]

CS M226: Predicting Synapse Connections in Fly Brains  
[[Report](#)] [[Github](#)]