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]

[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]

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

[3] L. Johnson, M. Shapiro, R. Stricker, **J. Vendrow**, J. Haddock, D. Needell. "Antibiotic Treatment Response In Persistent Lyme Disease: Why Do Some Patients Improve While Others Do Not?" ***Healthcare***, 2020. [Journal]