

# Joshua Vendrow

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## EDUCATION

### UCLA

*B.S in Computer Science*  
*B.S in Mathematics*

SEPTEMBER 2018 - JUNE 2022

GPA: 3.93 / 4

## SELECTED COURSEWORK

CS 226: ML for Bioinformatics  
CS 181: Formal Languages and Automata  
CS 146: Machine Learning  
CS 180: Algorithms and Complexity  
CS 111: Operating Systems

EE 239AS: Reinforcement Learning  
EE 247: Neural Nets and Deep Learning  
EE 236A: Linear Programming  
EE 133A: Applied Computing  
EE 133B: Optimization

Math 171: Stochastic Processes  
Math 170A/B: Probability Theory  
Math 131A/B: Real Analysis  
Math 115A: Linear Algebra

## SKILLS

**Languages:** Python, C++, Bash,  
MATLAB, LaTeX

**Packages:** TensorFlow, PyTorch,  
scikit-learn, NumPy

## SOFTWARE DEVELOPMENT

**fnnls** – An implementation of the  
fast nonnegative least squares algorithm  
[[PyPi](#)] [[Github](#)]

**Network Dictionary Learning** – Methods  
for learning and reconstructing networks  
[[PyPi](#)] [[Github](#)]

## 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](#)]

## EXPERIENCE

### RingCentral — Software Engineering Intern

JUNE 2017 - JULY 2017 | Belmont, CA

Created an automated testing program using JavaScript and Node.js to  
assess media quality. Measured video quality by comparing pixel-wise  
square difference with reconstructed images.

## RESEARCH

### UCLA Applied Math — Funded Research Assistant

AUGUST 2019 - PRESENT | Los Angeles, CA

Advised by Prof. Deanna Needell. Completed projects in computer vision,  
network science, tensor decomposition, and optimization. Highlights:

- Developed a model for hierarchical tensor decomposition and  
demonstrated applications to video data and document analysis [1].
- Developed a method for object localization using neural network outputs  
and matrix factorization with results comparable to state of the art [2].

### UCLA Applied Math — NSF REU Program

JUNE 2020 - JULY 2020 | Los Angeles, CA

Research Experience for Undergraduates funded by the National Science  
Foundation. Took part in two REU Projects:

- *Machine learning approaches to predict synchronization of coupled  
oscillators on heterogeneous graphs.*
- *Analyzing California Innocence Project Cases using Factorization Methods.*

## PUBLICATIONS

[1] **J. Vendrow**, J. Haddock, D. Needell. "Neural Nonnegative CP  
Decomposition For Hierarchical Tensor Analysis." Submitted, 2020.

[2] E. Sizikova\*, **J. Vendrow\***, R. Grotheer, J. Haddock, L. Kassab, A.  
Kryshchenko, T. Merkh, M. Rajapaksha, H. V. Vo, C. Wang, K. Leonard, D.  
Needell. "Weakly-Supervised Object Localization using Semi Supervised  
Non-Negative Matrix Factorization." Submitted, 2020.

[3] **J. Vendrow**, J. Haddock, E. Rebrova, D. Needell. "On a Guided Nonnegative  
Matrix Factorization." arXiv preprint, 2020. [[arXiv](#)] [[Github](#)]

[4] 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](#)]

[5] **J. Vendrow**, J. Haddock, D. Needell, L. Johnson. "Feature Selection on  
Lyme Disease Patient Survey Data." arXiv preprint, 2020. [[arXiv](#)] [[Github](#)]

[6] E. Schonfeld, E. Vendrow, **J. Vendrow**, E. Schonfeld. "On the Relation of  
Gene Essentiality to Intron Structure: A Computational and Deep Learning  
Approach." bioRxiv preprint, 2020. [[bioRxiv](#)] [[Github](#)]

\*authors contributed equally