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 last 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.*" arXix preprint, 2020. [arXiv] [Github]

[4] **J. Vendrow**, J. Haddock, D. Needell, L. Johnson. "*Feature Selection from Lyme Disease Patient Survey Data.*" *Algorithms*, 2020. [Journal] [Github]

[5] 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]

[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