Joshua Vendrow

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Research Interests

Computer Vision, Network Science, Matrix / Tensor Factorization, Optimization
Deep Learning, AI Fairness, Transparency and Interpretability

Education

University of California, Los Angeles
Expected Graduation, June 2022.
B.S., Computer Science.
B.S., Applied Mathematics.
- Minor in Philosophy
- 3.94/4 GPA

Work Experience

Apple Inc.
Data Science Intern, June 2021 - September 2021
- Developed and implemented deep learning models for computer vision applications.

LymeDisease.org
Research Intern, January 2021 - March 2021
- Set up ML workflow and preprocessing for large scale medical patient data.
- Identified factors contributing to high antibiotic response in Lyme patients.

RingCentral
Software Engineering Intern, June 2017 - July 2017
- Created an automated testing program to assess quality of streaming data passed over a server connection with JavaScript and Node.js using WebSocket.

Research Experience

University of California, Los Angeles, Mathematics Department
Research Assistant, August 2019 - Present
- Advisor: Deanna Needell
- Collaborated with professors, postdocs, and PhDs to complete projects in computer vision, network science, deep learning, and optimization.

Harvey Mudd College, Mathematics Department
Research Assistant, August 2021 - Present
- Advisor: Jamie Haddock

University of California, Los Angeles, Computational Applied Mathematics REU
NSF Research Experience for Undergraduates (REU), June 2020 - July 2020
- Advisor: Deanna Needell
- Topic: Data Science for Innocence

NSF Research Experience for Undergraduates (REU), June 2020 - July 2020
- Advisor: Hanbaek Lyu
- Topic: ML approaches to oscillator and clock synchronization

Languages and Skills
Python, Java, C/C++, Javascript, CSS, HTML
TensorFlow, PyTorch, scikit-learn, NumPy, SciPy, Cirq, Qiskit

Activities and Societies

Tau Beta Pi, The Engineering Honors Society
Tutoring and Social chair, 2019-2021

AI Robotics Ethics Society (AIRES)
External Vice President, 2020-2021

Awards and Honors

University of California, Los Angeles, Dean's Honors List
Quarterly Award for academic excellence, Fall 2018 - Spring 2021

Carlmont High School, Valedictorian
Class size of 600, 2018

Mathematical Association of America, AMC Honor Roll and AIME Qualifier
Awarded to top 5% of AMC 12 Participants, 2017

Publications
Avaiable from `www.joshvendrow.com`

Journal Publications

J. Vendrow, J. Haddock, D. Needell, L. Johnson."Feature Selection from Lyme Disease Patient Survey Data." Algorithms, 2020.

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

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.

Conference Publications

E. Vendrow, J. Vendrow. "Realistic Face Reconstruction from Deep Embeddings." NeurIPS Workshop on Privacy in Machine Learning (PriML), 2021.

J. Vendrow, J. Haddock, E. Rebrova, D. Needell. "On a Guided Nonnegative Matrix Factorization." Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), 2021.

J. Vendrow, J. Haddock, D. Needell. "Neural Nonnegative CP Decomposition for Hierarchical Tensor Analysis." Proc. 53rd Asilomar Conf. on Signals, Systems and Computers, to appear, 2021.

Preprints

H. Lyu, Y. Kureh, J. Vendrow, M. A. Porter. "Learning low-rank latent mesoscale structures in networks." In peer review at Nature Communications. `https://arxiv.org/abs/2102.06984`, 2021.

J. Vendrow, J. Haddock, D. Needell. "A Generalized Hierarchical Tensor Decomposition." Submitted. `https://arxiv.org/abs/2109.14820`, 2021.

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 Nonnegative Matrix Factorization." Submitted, 2020.

H. Bassi, R. Yim, R. Kodukula, J. Vendrow, C. Zhu, and H. Lyu. "Learning to predict synchronization of coupled oscillators on heterogeneous graphs." Submitted. `https://arxiv.org/abs/2012.14048`, 2020.

R. Budahazy, L. Cheng, Y. Huang, A. Johnson, P. Li, J. Vendrow, Z. Wu, D. Molitor, E. Rebrova, and D. Needell. "Analysis of Legal Documents via Non-negative Matrix Factorization Methods." Submitted. `https://arxiv.org/abs/2104.14028`, 2021.

Software & Code

J. Vendrow, J. Haddock. *Fast nonnegative least-squares.* `https://pypi.org/project/fnnls/`, 2020.

H. Lyu, Y. Kureh, J. Vendrow, M. A. Porter. *Network Dictionary Learning.* `https://pypi.org/project/ndlearn/`, 2020

J. Vendrow, H. Lyu. *NNetwork.* `https://pypi.org/project/NNetwork/`, 2020.