Joshua Vendrow

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Education

Massachusetts Institute of Technology
PhD Candidate in EECS. GPA: 5.0/5
August 2022 - Present

University of California, Los Angeles
B.S. in Computer Science, Applied Mathematics. GPA: 3.95/4
September 2018 - June 2022.

Publications

Avaiable from `www.joshvendrow.com`. * denotes equal contribution.

B. Cohen-Wang, J. Vendrow, A. Madry. "Ask Your Distribution Shift if Pre-Training is Right for You." Distribution Shift (DistShift) Workshop, NeurIPS, 2023.

A. Tam*, J. Vendrow*, A. Madry. "Data Attribution for Segmentation Models." Attributing Model Behavior at Scale (ATTRIB) Workshop, NeurIPS, 2023.

K. Georgiev*, J. Vendrow*, H. Salman, S. Park, A. Madry. "The Journey, Not the Destination: How Data Guides Diffusion Models." Challenges of Deploying Generative AI Workshop, ICML, 2023.

J. Vendrow*, S. Jain*, L. Engstrom, A. Madry. "Dataset Interfaces: Diagnosing Model Failures Using Controllable Counterfactual Generation." Data-centric Machine Learning Researh (DMLR) Workshop, ICML, 2023.

H. Lyu, Y. Kureh, J. Vendrow, M. A. Porter. "Learning low-rank latent mesoscale structures in networks." Nature Communications, 2023.

J. Vendrow, J. Haddock, D. Needell. "A Generalized Hierarchical Tensor Decomposition." Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), 2022.

H. Bassi, R. Yim, R. Kodukula, J. Vendrow, C. Zhu, and H. Lyu. "Learning to predict synchronization of coupled oscillators on heterogeneous graphs." Scientific Reports, 2022.

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.

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.

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.

Work Experience

Apple Inc.
ML Engineer Intern, January 2022 - March 2022
- Researched and developed deep learning models for core vision technologies within the SIML (Systems Intelligence Machine Learning) computer vision team.

Apple Inc.
Data Science Intern, June 2021 - September 2021
- Developed deep learning and computer vision models within Security team.
- Set up data pipeline, training, and evaluation using CoreFlow and Turi.
- Deployed CoreML model into IOS software to run demo on the newest iPhone.

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

Massachusetts Institute of Technology, CSAIL
Graduate Researcher, August 2022 - Present
- Advisor: Aleksander Mądry

University of California, Los Angeles, Mathematics Department
Research Assistant, August 2019 - July 2022
- Advisor: Deanna Needell

Harvey Mudd College, Mathematics Department
Research Assistant, August 2021 - August 2022
- 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

Awards

IEEE SPS Travel Grant
Support for travel to ICASSP Conference in Singapore, 2022
UCLA URC-Sciences Travel Grant
Support for travel for undergraduates in sciences and engineering, 2022

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.