Vinod Raman

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https://vinodkraman.github.io

Education

University of Michigan — Ann Arbor, MI
PhD Student in Statistics — 2021 - Present
Thesis Advisor: Ambuj Tewari

University of Michigan — Ann Arbor, MI
BSE Computer Science, BSE Chemical Engineering — 2015 - 2020
Thesis Advisors: Mahdi Cheraghchi, Andrej Lenert, Sindhu Kutty

Publications

*denotes equal contribution

1. **V.Raman***, U.Subedi*, and A.Tewari. On Proper Learnability between Average- and Worst-case Robustness. *NeurIPS*, 2023. https://arxiv.org/abs/2211.05656
2. **V.Raman***, U.Subedi*, and A.Tewari. On the Learnability of Multilabel Ranking. *NeurIPS* (spotlight), 2023. https://arxiv.org/abs/2304.03337
3. S.Hanneke*, S.Moran*, **V.Raman***, U. Subedi*, and A.Tewari. Multiclass Online Learning and Uniform Convergence. *COLT, 2023*. https://arxiv.org/abs/2303.17716
4. **V.Raman**, U.Subedi, and A.Tewari. Probabilistically Robust PAC Learning. *NeurIPS (ML Safety Workshop)*, 2022. https://arxiv.org/abs/2211.05656
5. **V.Raman**, A.Tewari. Online Agnostic Multiclass Boosting. *NeurIPS*, 2022. https://arxiv.org/abs/2205.15113
6. **V.Raman**, T.Burger, and A.Lenert. Design of thermophotovoltaics for tolerance of parasitic absorption. *Optics Express*, 27(22):31757–31772, 2019. https://doi.org/10.1364/OE.27.031757

Works In Submission

*denotes equal contribution

1. **V.Raman***, U.Subedi*, and A.Tewari. A Characterization of Multioutput Learnability. *In Submission*, 2023. https://arxiv.org/abs/2301.02729

Preprints

*denotes equal contribution

1. **V.Raman***, U.Subedi*, and A.Tewari. Online Infinite-Dimensional Regression: Learning Linear Operators. *Preprint*, 2023. https://arxiv.org/abs/2309.06548
2. A.Raman* **V.Raman***, U.Subedi, and A.Tewari. Multiclass Online Learnability under Bandit Feedback. *Preprint*, 2023. https://arxiv.org/abs/2308.04620
3. **V.Raman***, U.Subedi*, and A.Tewari. A Combinatorial Characterization of Online Learning with Bounded Losses . *Preprint*, 2023. https://arxiv.org/abs/2307.03816
4. **V.Raman***, U.Subedi*, and A.Tewari. Online Learning with Set-Valued Feedback. *Preprint*, 2023. https://arxiv.org/abs/2306.06247
5. **V.Raman***, D.Zhang*, Y.Jung, and A.Tewari. Online Boosting for Multilabel Ranking with Top-k Feedback. *Preprint*, 2020. https://arxiv.org/abs/1910.10937

Industry Experience

Wove San Francisco, CA
Software Engineering Intern May - Aug. 2019

- Deployed bot-detection mechanism in Java and Ruby to improve the robustness of customer interaction data against web crawlers
- Engineered and deployed Beta distribution priors for estimating click-to-conversion rates of new ad-placements in Java
- Implemented contextual bandit algorithms for improving click-through-rate and helped design an off-policy bandit evaluation framework in Python

Vertex Pharmaceuticals Boston, MA
Data Intern May - Aug. 2018

- Built a standalone Matlab GUI automating the extraction, cleaning, visualization, and process control trending of raw continuous manufacturing data from Excel and OSIsoft PI databases
- Achieved a 92% reduction in labor hours in production

Teaching

PhD Math Workshop Ann Arbor, MI
Instructor Aug. 2023

- Taught a first-year Ph.D. math workshop focused on linear algebra and probability theory

Graduate Student Instructor Ann Arbor, MI
Instructor Aug. 2021 - May 2023

- Taught STATS 250, STATS 315, and STATS 507
- Lead an interactive laboratory of 30+ students where I teach introductory statistics concepts
- Designed introductory deep learning course for statistics students

AI4ALL Ann Arbor, MI
Instructor May 2021 - Present

- Created interactive lecture material, programming exercises, and fun games on ML topics related to data wrangling and classification
- Lectured and led 30+ highschool on data wrangling and classification
- Developed a novel way of introducing machine learning concepts to students via fill in the blank coding notebooks, and received extremely positive feedback from students

InspiritAI Remote
Instructor May 2021 - Present

- Lectured 100+ highschool students across the world on various ML topics including regression, classification, computer vision, and NLP
- Led 100+ highschool students through “AI for social-good“ projects, where my students built convolutional neural networks capable of detecting pneumonia from Xrays and emotions from faces.
- Improved curriculum by identifying bugs in coding notebooks and adding information to lecture slides

Awards, Scholarships & Honors

NeurIPS 2022 Scholar Award 2022
Outstanding First-Year Ph.D. Student (University of Michigan) 2022
Departmental Outstanding GSI Team Award (University of Michigan) 2022
NSF Graduate Research Fellowship 2022
First-year Rackham Fellowship (University of Michigan) 2021
American Statistical Association Best Poster Award (University of Michigan) 2020
Landes Prize in Technical Communication (University of Michigan) 2019
Future Leaders In Chemical Engineering 2018
Bandemer Scholarship (University of Michigan) 2018
Pursley Scholarship (University of Michigan) 2017
A.H. White Scholarship (University of Michigan) 2017
James B. Angell Scholar (University of Michigan) 2017-2019
Dean's List (University of Michigan) 2015-2020

Software

- **Programming:** Python, C++, Java, Javascript, Matlab, React Native
- **Frameworks:** PyTorch, Tensorflow, DialogFlow, MapReduce, Hadoop, Mockito

References

1. **Ambuj Tewari**, Professor, Statistics, University of Michigan, Ann Arbor MI, USA.
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2. **Mahdi Cheraghchi**, Associate Professor, Computer Science, University of Michigan, Ann Arbor MI, USA.
   Email: mahdich@umich.edu | *Phone*: 734-763-9165
3. **Sindhu Kutty**, Lecturer III, Computer Science, University of Michigan, Ann Arbor MI, USA.
   Email: skutty@umich.edu | *Phone*: 734-647-8821
4. **Andrej Lenert**, Associate Professor, Chemical Engineering, University of Michigan, Ann Arbor MI, USA.
   Email: alenert@umich.edu | *Phone*: 734-647-4107