Chandan Tankala

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Research Interests

Mathematical foundations of AI and machine learning: stochastic optimization algorithms, neural networks theory, Markov chain algorithms, generative AI algorithms. Recent interests include reinforcement learning and applications of AI to real-world problems.

Education

University of Oregon **Eugene, OR**
Ph.D. in Mathematics *2018–2025*
- **Advisor:** Dr. Krishnakumar Balasubramanian
- **Thesis:** *Mean field Langevin dynamics, mean field neural networks, and mean field Ising models*

Texas A&M University **College Station, TX**
M.S. in Geophysics *2010–2012*
- **Advisor:** Dr. Robert Weiss

National Institute of Technology **Kurukshetra, India**
Bachelor of Engineering *2005–2009*

Awards

2011: Best Poster Presentation Award, British Petroleum Summer Internship

2007: Students-Undergraduate Research Graduate Excellence (SURGE) program, Indian Institute of Technology, Kanpur

Publications

2025: **Dense Associative Memory on the Bures-Wasserstein Space**
Chandan Tankala, Krishnakumar Balasubramanian
Submitted to International Conference on Learning Representations (ICLR)

2025: **Beyond propagation of chaos: A stochastic algorithm for mean field optimization**
Chandan Tankala, Dheeraj M. Nagaraj, Anant Raj
Conference on Learning Theory (COLT) · arXiv:2503.13115

2023: **Fast mixing of a randomized shift-register Markov chain**
David A. Levin, Chandan Tankala
Journal of Applied Probability 60(1): 253-266 · arXiv:2109.05387

Manuscripts in Preparation

Fast sampling from the Curie-Weiss Ising model using informed Markov chains
Chandan Tankala, Quan Zhou, Krishnakumar Balasubramanian
In preparation for submission

Mean field optimization using interacting particle systems
Chandan Tankala, Dheeraj M. Nagaraj, Anant Raj
In preparation for submission

Dense Associative Memory on the Bures-Wasserstein Space II
Chandan Tankala, Dheeraj M. Nagaraj
In preparation for submission

Industry Experience

British Petroleum, Seismic Imaging R&D — **Houston, TX**
Geophysicist — *2012–2015*

- Developed algorithms for inverse problems and seismic imaging
- Implemented stochastic optimization techniques for large-scale signal processing
- Applied machine learning methods to geophysical data analysis

British Petroleum, Seismic Imaging R&D — **Houston, TX**
Geophysicist Intern — *Summer 2011*

- Research on computational methods for seismic data processing

Invited Talks

Mar 2025: University of California, Santa Barbara

Feb 2025: Oregon State University, Corvallis

Mar 2023: University of Washington, Seattle

Teaching Experience

University of Oregon (2018–2023)

Instructor: Calculus I, II, III · Business Calculus · College Algebra · Introduction to Statistics

Taught 18 courses over 6 years, consistently receiving positive student evaluations

Selected Conferences & Workshops

2023: Pacific Northwest Probability Seminar, University of Washington

2022: Pacific Northwest Probability Seminar, University of Washington

2021: CRM-PIMS Summer School in Probability (Virtual)

2020: Online Open Probability School, University of British Columbia

2019: Stochastic Processes and Applications, Northwestern University

Technical Skills

Languages: Python, C++, SQL, MATLAB, R

ML/DL: PyTorch, TensorFlow, JAX, NumPy, SciPy, scikit-learn

Tools: Git, Linux, HPC clusters, Jupyter, LaTeX

References

Professor Krishnakumar Balasubramanian
University of California, Davis

Dr. Dheeraj M. Nagaraj
Research Scientist
Google DeepMind

Professor Robert Weiss
Virginia Tech, Blacksburg

Professor Quan Zhou
Texas A&M University, College Station