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: Summer Undergraduate Research Grant for Excellence (SURGE) program, Indian Institute of Technology, Kanpur

Publications

2026: **Dense Associative Memory on the Bures-Wasserstein Space**
Chandan Tankala, Krishnakumar Balasubramanian
International Conference on Learning Representations (ICLR) · arXiv:2509.23162

2025: **Beyond propagation of chaos: A stochastic algorithm for mean field optimization**
Chandan Tankala, Dheeraj M. Nagaraj, Anant Raj
Conference on Learning Theory (COLT) 291: 1-31 · arXiv:2503.13115

2025: **Mean field Langevin dynamics, mean field neural networks, and mean field Ising models**
Chandan Tankala
Ph.D. Dissertation, University of Oregon · ProQuest

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

Publications in Preparation

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, Krishnakumar Balasubramanian
In preparation for submission

Industry Experience

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

- Developed and deployed deep learning algorithms on BP's HPC clusters for large-scale geophysical data analysis
- Developed algorithms for inverse problems and seismic imaging
- Implemented stochastic optimization techniques for large-scale signal processing
- Collaborated with computational scientists to scale algorithms from workstation prototypes to production HPC environments

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

- Research on computational methods for seismic data processing on parallel computing architectures
- Worked on MPI and job scheduling systems for large-scale scientific computing

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