Harshil Kamdar

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Education

Harvard University — Cambridge, MA

Ph.D. Astronomy and Astrophysics — 2016-Present

M.S. Computational Science & Engineering — 2016-Present

Awards: Department of Energy Computational Science Graduate Fellow ($200k+ award)

Relevant Coursework: Stochastic Methods for Data Analysis, Inference and Optimization; Advanced Machine Learning; Noise and Data Analysis in Astrophysics; Advanced Numerical Methods; Parallel Computing

University of Illinois at Urbana-Champaign — Urbana, IL

B.A. Physics, Astronomy (minors in Mathematics, Computer Science) — 2014

Awards: Robert E. Hetrick Senior Thesis Prize, Stanley J. Wyatt Memorial Award ($500 award), NSF Blue Waters Computational Internship ($5k award), Harry E. Preble Award for Undergraduate Research ($1k award)

Publications [Citations: 80+]

Green, G., Ting, Y.S., **Kamdar, H.M.**, et al., 2020, *in preparation.*

Deep Potential: Learning the Gravitational Potential from Phase-Mixed Tracers

Speagle, J., Zucker, C., Cargile, P., et al., 2020, *in preparation.*

Mapping the Milky Way in 5-D with 170 Million Stars at High Galactic Latitude

Kamdar, H.M., Conroy, C., Ting, Y.S., et al., 2020, *submitted to Astrophysical Journal.* [arXiv:2007.10990]

Spatial and Kinematic Clustering of Stars in the Galactic Disk

Kamdar, H.M., Conroy, C., Ting, Y.S., et al. 2019, *Astrophysical Journal Letters*, 884(2), L42. [arXiv:1904.02159]

Stars that Move Together Were Born Together

Kamdar, H.M., Conroy, C., Ting, Y.S., et al. 2019, *Astrophysical Journal*, 884 (2), 173. [arXiv:1902.10719]

A Dynamical Model for Clustered Star Formation in the Milky Way Disk

Kamdar, H.M., Turk, M.J., and Brunner, R.J. 2016, *Monthly Notices of the Royal Astronomical Society*, 457, 1162 [arXiv:1510.07659]

Machine Learning and Cosmological Simulations II: Hydrodynamical Simulations

Kamdar, H.M., Turk, M.J., and Brunner, R.J. 2016, *Monthly Notices of the Royal Astronomical Society*, 455, 642 [arXiv:1510.06402]

Machine Learning and Cosmological Simulations I: Semi-Analytical Models

Selected Contributed, Invited, and Public Talks (4 of 16)

Department of Energy Computational Science Graduate Fellowship Program Review – Arlington, VA — July 2020

The Milky Way in Seven Dimensions

International Astronomical Union Symposium 353 – Shanghai, China — June 2019

Clustering in the Milky Way

KITP Program: Dynamical Models for Stars and Gas in Galaxies in the Gaia Era – Santa Barbara, CA — March 2019

The Assembly History of the Milky Way Disk

Machine Learning Journal Club, Harvard University – Cambridge, MA — March 2018, April 2018

Machine Learning and Cosmological Simulations

Technical Skills

Programming and Computation: Python, PyTorch, PyMC3, CUDA, TensorFlow, AWS, C, OpenMP/MPI, Matplotlib, NumPy, SciPy, JAX, Pandas, Scikit-Learn, D3.js, Git, R

Machine Learning and Statistics: Clustering, Bayesian inference, neural networks and deep learning, Markov chain Monte

Carlo (MCMC), normalizing flows

Selected Leadership Experience

Communicating Science Conference (ComSciCon; https://comscicon.com) Cambridge, MA

Leadership Team Chair August 2020 – present
Renewals Chair June 2019 – July 2020
Logistics Organizing Committee Chair May 2018 – July 2020

- Organized 3 national conferences to date on written and oral communication skills for graduate students in all fields of science & engineering
- Co-chair and coordinate volunteer Leadership Team of more than 15 people
- Led fundraising and management of nearly $300,000 budget to date from more than 10 university and professional society partners
- Past chair of 12-graduate student organizing committee; inviting expert speakers, advertising workshops, and reviewing 1,000+ applications from across the country per event

Resident Tutor, Mather House Cambridge, MA

Fellowships Tutor, Hiring Tutor, Intramurals Tutor August 2017 – present

- Provide academic advising and residential support to students in an undergraduate house at Harvard College
- Support and edit students' applications for the Rhodes, Marshall, Churchill, and other fellowships
- Co-lead a hiring team of 10+ tutors to read 400+ applications every year to recruit 2-10 new tutors every year.

GSAS Graduate Student Council Cambridge, MA

Representative 2016 – 2020

- Represent the Graduate School of Arts & Sciences at the Harvard-wide Graduate Student Council
- Drafted resolutions and released statements on issues affecting graduate students across the university

Science by the Pint Cambridge, MA

Organizer and Moderator 2016 – 2018

- Organized events at local pubs where STEM professors present their research in an informal setting

Personal

Citizenship: USA

Languages: English, Gujarati, Hindi