Harshil M. Kamdar

Curriculum Vitae

Harvard University,
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Education

Ph.D in Astronomy and Astrophysics — 2016 – Present
Harvard University, Cambridge, MA, USA

B.S. in Physics — 2012 – 2016
B.S. in Astronomy
University of Illinois, Urbana, IL, USA

Honors & Awards

DOE Computational Science Graduate Fellowship	2016 – Present
Robert E. Hetrick Senior Thesis Prize	2016
Blue Waters Fellowship	2015 – 2016
Harry E. Preble Award for Undergraduate Research	2014, 2015
Finalist for Best Poster Undergraduate Research Symposium	2015
Deans List	2013, 2014, 2015
University Achievement Scholar	2012 – 2016

Research Experience

Undergraduate Research Assistant — 2013 – Present
Supervisors: Prof. Robert J. Brunner, Prof. Matthew J. Turk

- Modeling galaxy formation and evolution in cosmological simulations using machine learning techniques
- Large astronomical mosaics using Caltech/JPL's Montage on Blue Waters
- A weighted, fast two-point correlation function to make cosmological measurements more accurate
- Making probability distribution functions for photometric redshifts on MICE data using MLZ

Undergraduate Research Assistant — 2015 – 2016
Supervisors: Prof. Jeff P. Filippini

- Data analysis for the CMB experiment SPIDER

Undergraduate Research Assistant — 2012 – 2013
Supervisors: Prof. Alfred Hubler

- Analyzed the Lyapunov stability of a theoretical open dissipative system made of capacitors
- Ran several simulations in Matlab to reinforce theoretical predictions

Professional Experience

Resident Assistant (Hendrick House, IL) — 2013 – Present
Student (Caltech Gravitational Wave Astrophysics School) — 2015

Technical Experience

Python, C, C++, Matlab, Lisp, Java, OpenMP/MPI, Mathematica, LaTeX, Montage, HEALPix, HPC

First Author Publications

3. Populating N-body Simulations Using Machine Learning;
Kamdar, H.M., Turk, M.J., Brunner, R.J., Submitted (MNRAS)

2. Machine Learning and Comsological Simulations II: Hydrodynamical Simulations; **Kamdar, H.M.**, Turk, M.J., Brunner, R.J., *MNRAS*, 457 1162
1. Machine Learning and Comsological Simulations I: Semi-Analytical Models; **Kamdar, H.M.**, Turk, M.J., Brunner, R.J., *MNRAS*, 455, 642

Talks & Posters

Talk: Machine Learning and Cosmological Simulations
Kamdar, H.M.; Turk, M.J., Brunner, R.J.
Astrophysics, Cosmology, and Gravitation Seminar, Urbana, IL (Feb 2016)

Talk: Machine Learning and Cosmological Simulations
Kamdar, H.M.; Turk, M.J., Brunner, R.J.
Dept. of Physics Symposium, Urbana, IL (Feb 2016)

Poster: Machine Learning and Cosmological Simulations
Kamdar, H.M.; Turk, M.J., Brunner, R.J.
Presentation # 342.05, 227th AAS Conference, Kissimmee, FL (Jan 2016)

Talk: Mock Catalogs using Machine Learning
Kamdar, H.M.; Turk, M.J., Brunner, R.J.
DES Chicagoland Meeting, Urbana, IL (Dec 2015)

Poster: Machine Learning and Cosmological Simulations
Kamdar, H.M.; Turk, M.J., Brunner, R.J.
Dept. of Physics Symposium, Urbana, IL (Oct 2015)

Poster: Modeling Galaxy Formation and Evolution using Machine Learning
Kamdar, H.M.; Turk, M.J., Brunner, R.J.
Undergraduate Research Symposium, Urbana, IL (April 2015)

Poster: A Probabilistic Correlation Function
Kamdar, H.M.; Brunner, R.J.
Undergraduate Research Symposium, Urbana, IL (April 2014)

Poster: A Probabilistic Correlation Function
Kamdar, H.M.; Brunner, R.J.
Annual Computational Science and Engineering Meeting, Urbana, IL (April 2014)

Press Release Machine Learning could solve riddles of galaxy formation, November 2015

Teaching Experience

Physics Tutor	2013 – Present
SPLASH@UIUC	2015