Harshil Kamdar

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Education

Bachelors of Science - Physics, Astronomy — Expected: May 2016
Minors - Mathematics, Computer Science
University of Illinois at Urbana-Champaign

Research Experience

Laboratory for Cosmological Data Mining (PI: Robert Brunner): University of Illinois at Urbana-Champaign
- *Research Assistant* — November 2013 – Present

- 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

Center for Complex Systems (PI: Alfred Hubler): University of Illinois at Urbana-Champaign
- *Research Assistant* — January 2013 – August 2013

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

Skills

Programming Languages: Python, C, C++, Matlab, Lisp, Java
Operating Systems: Linux/Unix system, Windows
Software: Mathematica, LaTeX, Montage, HEALPix, OpenMP/MPI

Publications

- **Kamdar, H.M.**, Turk, M.J., Brunner, R.J., *Machine Learning and Cosmological Simulations I: Semi-Analytical Models.* MNRAS (Accepted; in press)
- **Kamdar, H.M.**, Turk, M.J., Brunner, R.J., *Machine Learning and Cosmological Simulations II: Hydrodynamical Simulations.* MNRAS (Submitted)
- **Kamdar, H.M.**, Turk, M.J., Brunner, R.J., *Machine Learning and Cosmological Simulations III: N-body Simulations* MNRAS (in prep.)

Posters and Presentations

- *Poster:* Undergraduate Research Symposium, *A Probabilistic Correlation Function*, April 2014, Urbana, IL
- *Poster:* Annual Computational Science and Engineering Meeting, *A Probabilistic Correlation Function*, April 2014, Champaign, IL
- *Poster:* Undergraduate Research Symposium, *Modeling Galaxy Formation and Evolution in Large Cosmological Simulations Using Machine Learning*, April 2015, Urbana, IL (finalist: Best Poster)
- *Poster:* Department of Physics Research Symposium, *Machine Learning and Cosmological Simulations*, October 2015, Urbana, IL

Activities

Outdoor Adventure Club — Vice President, Society for Physics Students — Member, Physics Van (Outreach club) — Member, Grader for Astronomy 330 (Extraterrestrial Life), Champaign County Humane Society — Volunteer, Physics Peer Mentor, Astronomy Club — Member, Photography Club — Member, Students for Environmental Concerns — Member

Honors and Awards

- University Achievement Scholar (2012 - Present)
- Liberal Arts and Sciences Edmund James Scholar (2012 - Present)
- Harry E. Preble Award for Undergraduate Research (2014, 2015)
- Dean's List (Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015)
- Blue Waters Fellowship (2015 - 2016)