

NESAR RAMACHANDRA

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PROFILE

PhD candidate in computational cosmology. Specialization in quantitative analysis and visualizations. Experienced in machine learning and parallel programming.

EDUCATION

Candidate for Ph.D in Physics

August 2013 - July 2018 (expected)

Department of Physics and Astronomy, The University of Kansas, Lawrence, KS. GPA: 4.0/4.0

Integrated M.Sc. (Hons.) in Physics

August 2008 - July 2012

Birla Institute of Technology and Science (BITS) Pilani, India

RECENT WORK EXPERIENCE

Summer Fellow, Argonne National Laboratory

June - August 2017

Implemented Deep Neural Network algorithms for analysis of Gravitational lensing simulations for upcoming ground and space telescopes. Project can be accessed here: github.com/hep-cce/ml_classification_studies

Research Assistant, University of Kansas

August 2013 - Present

Cosmological simulations using massively parallel codes on supercomputing clusters (C/C++ with MPI). Spatial clustering and classification algorithms, and visualizations of large datasets using Python

Head Teaching Assistant, University of Kansas

August 2015 - May 2016

Coordinated and managed Teaching Assistants in the Department of Physics and Astronomy. Implemented performance analysis using statistical tools on lab/quiz grades of nearly 4000 students in 12 courses.

TECHNICAL SKILLS

Software and Programming : Python (numpy, scipy, mpi4py, scikit-learn, pandas, matplotlib, mayavi, Keras, TensorFlow), R, C/C++, LaTeX, Mathematica, ParaView, MeshLab, Parallel programming using MPI and CUDA.

Statistical/Mathematical Methods : numerical integrations, differential equations, classification, Bayesian analysis, network analysis, regression, clustering, feature analysis, machine learning

SELECTED HONORS AND AWARDS

Center for Computational Excellence summer fellowship grant for the research in computational cosmology at Argonne National Laboratory.

National Science Foundation grant for the Canadian-Mexican-American conference in Oaxaca, Mexico.

Graduate Research Award (2015-16 academic year) by The University of Kansas.

INSPIRE (Innovation in Science Pursuit for Inspired Research) scholarship (2008-2012) from the Department of Science and Technology, Government of India

SELECTED PUBLICATIONS

Dark matter haloes: a multistream view, Ramachandra et al; Monthly Notices of the Royal Astronomical Society (MNRAS). September 2017

Tracing the cosmic web, Libeskind et al (incl. Nesar Ramachandra), MNRAS, September 2017

Topology and geometry of the dark matter web: A multi-stream view, Ramachandra et al, MNRAS. May 2017

SELECTED WORKSHOPS

Machine Learning @ ANL, Argonne Leadership Computation Facility.

July 2017

Scaling to Petascale Institute, Blue Waters project, Argonne National Laboratory

June 2017

Emulation and Uncertainty Quantification workshop, Statistical and Applied Mathematical Sciences Institute (SAMSI), Research Triangle Park, North Carolina.

April 2017

Applied statistics in Astrophysics Workshop, SAMSI, Research Triangle Park, North Carolina.

August 2016