

Kevin Ghorbani

Contact Information

www.kevinghorbani.com
www.github.com/Kevin3727
www.linkedin.com/in/kevin-ghorbani
List of Publications: inspirehep.net/author/profile/Kevin.Ghorbani.1

kevin3727@gmail.com
(608) 285-2834

Skills

Expertise: Data Science and Quantitative Analysis, Big Data Queries, Data Mining, Statistics, Predictive Modeling, Data Visualization, Research and Problem Solving

Languages: *Expert:* Python (3.5 and 2.7), C/C++, Shell (bash script), SQL *Prior-experience:* Matlab, Fortran, R

Machine Learning Techniques: *Expert:* AdaBoost, Regression, Decision Tree, Random Forest, Support Vector Machine using scikit-learn, TensorFlow and Keras

Tools: *Expert:* NumPy, SciPy, pandas, Matplotlib, Jupyter, Subversion, Git, condor, UNIX/Linux, *Prior-experience:* Flask, HTML

Experiences

2014 – present

WIPAC/University of Wisconsin-Madison

Research Assistant

- Testing a hypothesis to discover eV-sterile neutrinos from IceCube neutrino detector data in an international collaboration of over 350 scientists
- Produced an analysis with the tightest constraints ever for statistical fit of such particles
- Increased the efficiency of neutrino event selection by over 100% using machine learning techniques and eliminating the background events to one in one billion
- Developed a new energy reconstruction technique to increase the resolution
- Implemented a new technique using machine learning classifiers to separate different types of events seen by the detector modules to be able to detect over 12,000 neutrino events per year (from previously 2,000 by the collaboration)
- Working with large datasets and massive computational processes on CPU and GPU clusters
- Performed detector data calibration using statistical methods
- Analyzing data/simulation compatibility of event hits' time-residual statistical distributions in the IceCube detector modules to study Antarctic ice models in our simulations
- Teaching programming skills (incl. Python and machine learning) to graduate students and post-doctoral researchers

2012 – 2014

Lorentz Institute

Research Assistant

- Produced simulations and studied type-I and type-II cosmic strings using C++
- Simulated cosmic strings' interaction of different properties
- Created a model to predict cosmic strings' behavior during interactions

2008 – 2011

Institute for Research in Fundamental Sciences

Researcher

- Data reduction of raw images from Hubble Space Telescope and retrieved scientific data
- Analyzing galactic image channels to determine their redshift properties via photometry
- Performing statistical analysis on images of galaxy clusters in order to estimate the dark matter properties in the area

Education

Ph.D. in Physics (2014-present)

Wisconsin IceCube Particle Astrophysics Center

University of Wisconsin-Madison

Master of Science in Physics (2012-2014)

Leiden University

Bachelor of Science in Physics (2007-2011)

Sharif University of Technology