John L. Karlen

CONTACT INFORMATION

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EDUCATION

University of Massachusetts, Amherst, MA

- M.S., Computer Science — August 2015 to May 2018
- B.S., Physics — August 2009 to May 2014
- B.A., Computer Science — August 2009 to May 2014

PROGRAMMING LANGUAGES

Python, R, SQL, UNIX, MATLAB, Java

INDUSTRY EXPERIENCE

- June 2015 - continuing: Data Scientist at MassMutual Life Insurance.
  Project areas included Random Survival Forests, XGBoost for mortality modeling; Longitudinal Survival Analysis for claims settlement, fraud detection, and cross-sales predictions; time-series forecasting for call center volume; and stochastic sampling for the generalized assignment problem applied to optimizing underwriter queues.

RESEARCH EXPERIENCE

- Summer 2015 - continuing
  Built and published an R software package that calculates a feature strength metric, Maximal Depth of Minimal Subtree, for Random Forests. The package is called ClimbeR, and can be found on CRAN.
- Summer 2013: AMALTHEA Machine Learning REU at Florida Institute of Technology:
  Built and tested a new ML technique: a non-linear parametrized principle component analysis variant, based on hyperspherical Kernel PCA techniques. Intended to illustrate underlying structure in the data through non-linear transformation.
- Summer 2012: Gravitational Wave IREU, Hannover, Germany
  Built and tested a Mach-Zhender Interferometer optical setup that employs phase modulation for the purpose of testing a technique called Deep Phase Modulation.
- Fall 2011 - Summer 2014: Research at UMass LIGO group
  Applied ML technique developed at AMALTHEA to signal detection for gravitational wave search problems. Worked with Gravitational Wave(GW) numerical injection simulations, which vary parameters in models of GW signals and inject them into noise streams to observe the sensitivity of detection algorithms to different GW signal parameters.

CONFERENCE TALKS

[1] John Karlen, James Clark, Laura Cadonati. Optimizing Segment Length and Sampling Rate in Bayesian Algorithms for Gravitational Wave Searches. In: 2013 Northeast Undergraduate Research Development and Symposium (NURDS), Biddeford, ME. March 10–11, 2013.

[2] John Karlen, Shraddha Singh, Georgios Anagnostopoulos, James Clark, Laura Cadonati. Applications of Machine Learning Algorithm in Gravitational Wave Searches. In: 2013 Syracuse Physics Undergraduate Research Day & Open House, Syracuse, NY. November 9, 2013.