

Kevin Lyons

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EDUCATION

UNIVERSITY OF ROCHESTER

PHD IN PHYSICS

Anticipated, currently ABD
 Spring 2017 | Rochester, NY

MS IN PHYSICS

Spring 2014 | Rochester, NY

STONY BROOK UNIVERSITY

BS IN PHYSICS

BS IN ASTRONOMY

Spring 2008 | Stony Brook, NY

SKILLS

PROGRAMMING

Python • Mathematica • R • SQL

PREVIOUSLY USED:

C++ • Haskell • Matlab • IDL

Web development (mostly Flask)

RELATED TOOLS:

Python scientific stack • Git

Linux • Regular expressions

THEORY

MACHINE LEARNING:

Model selection • Regularization
 Dimensionality reduction

Various classification, regression,
 and clustering algorithms

RELATED THEORY:

Probability • Statistics • Calculus

Linear algebra

EXPERIENCE

UNIVERSITY OF ROCHESTER | RESEARCH ASSISTANT

2012 - Present | Rochester, NY

- Published four journal articles in quantum parameter estimation, with a strong emphasis on probability and statistics in theoretical physics.
- Successfully aided experimental collaborators with difficult problems in situations where results were required very quickly, including
 - Proving a quantum cryptography scheme was secure (with high probability) against eavesdropping attacks.
 - Diagnosing a subtle problem where experimental data was not repeatable or consistent with models.

RTI INTERNATIONAL | INDEPENDENT CONTRACTOR

2012 - 2016 | Research Triangle Park, NC

- Performed an intensive technical and financial analysis to aid in the development of a medical physics invention.
 - Needed to quickly learn new concepts in nuclear physics, engineering, and finance.
 - Successfully optimized the device and helped verify technical performance with simulations in C++.
 - Also verified the device could be created and operated competitively using net present value and levelized cost analysis.
- Prepared documents and presentations for large funding proposals (e.g. for venture capital).

Note: All work for the past 5 years has been on a full-time telecommuting basis as part of distributed teams.

PROJECTS

PREDICTING NFL PLAYER STATISTICS

- Created an application to predict fantasy football scores of current NFL players given a large Postgres database of past statistics.
- Large, nontrivial SQL queries were needed to take the data from its raw form to a useful state.
 - Query speeds were greatly increased using materialized views and window functions.
- Optimized with respect to a number of algorithms on players of each position, including k -nearest neighbors, ridge regression, support vector regression, and feedforward neural networks.
- Current results compared against anecdotal evidence available online suggest the model can outperform average human fantasy football players, and likely even have a positive expected return on fantasy football bets.
 - Performance measures of predicted lineups will be made concrete by scraping data from available fantasy football contests to determine the actual distribution of scores.