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 • Scala • SQL • Mathematica
Previously used:
R • C++ • Haskell • Matlab
Web development (mostly Flask)
Related tools:
GCE/AWS • Python scientific stack
TensorFlow • Spark • Git • Linux
Regex

THEORY
Machine Learning:
Model selection • Regularization
Dimensionality reduction • NLP
Various classification, regression, and clustering algorithms
Related theory:
Probability • Statistics • Calculus
Linear algebra

EXPERIENCE

PIT RHO | Contract Data Scientist
Present | Remote

- Successfully implemented several financial models in TensorFlow for use in a web application.
- Reduced the runtime of existing models from tens of seconds to less than a second.
- Quickly got up to speed in the workflow of an agile development team and the relevant domain knowledge for the project.
- Completed all work for the contract well in advance of the deadline, and with more features than required.

RTI INTERNATIONAL | Contract Scientist
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++.
  - Verified the device could be created an 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

Finding interesting arXiv articles (Current)

- Built a Scala application to scrape metadata from all 1.3 million articles on arXiv and processed with Spark SQL on Google Compute Engine.
- Currently exploring different RNN models (bidirectional, LSTM, etc.) in TensorFlow for accurately finding articles similar to given target articles.

Predicting NFL player statistics

- Created an application to predict fantasy football scores of current NFL players given a large Postgres database of past statistics.
- SQL queries optimized with window functions and materialized views were used to take the data from its raw form to a useful state.
- Optimized with respect to a number of algorithms on players of each position, including k-nearest neighbors, ridge regression, support vector regression, tree-based methods, 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.