

DAVID KARAPETYAN

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<http://davidkarapetyan.com>

EXPERIENCE

Head Data Scientist

Rudin Management
New York City, NY

June 2015–Sep 2015

- Designed and implemented a **machine learning forecasting and analytics engine** for predicting states in commercial and non-commercial buildings for Rudin Management, a leading real estate developer in NYC.
- Greatly improved upon building predictions made by a team of Columbia University Ph.D and masters degree statisticians (a three year project that was ultimately abandoned) based upon a number of different metrics, including: cross-validation accuracy, random forest out-of-bag scores, mean and variance of residuals, max/min residuals, and others.
- Implementation uses **parallel programming in Python**, with modules including **scikit-learn**, **pandas**, **matplotlib**, **statsmodels** and **numpy**. Data is stored in and read from **SQL**, **MongoDB**, and **HDF5**.
- Models used for the forecasting include **Random Forests**, **Gradient Boosted Trees**, **ARIMA(X)**, **SARIMA(X)**, and **SVM**.

Quantitative Analyst

Ernst & Young
New York City, NY

June 2014–June 2015

- Used **Monte Carlo and Finite Difference** to determine fair value of client instruments.
- Designed and performed **stress-tests** for investment bank clients pricing models for **CCAR** purposes. Evaluated the impact on **PV and option Greeks**.
- Provide data analysis of trade desk definitions and descriptions, and report anomalies to client. Trades included **forex USD and G10 pairs**, **G10 and emerging market pairs**, **trades with long and short expiry**, **Asian options**, **barriers**, and a variety of others.

Visiting Assistant Professor

University of Rochester
Rochester, NY

July 2012–July 2014

- Researcher of partial differential equations, in particular nonlinear evolution equations.
- Publications list with doctoral thesis at <http://davidkarapetyan.com/pdfs/publications.pdf>
- Taught courses on Numerical Analysis, Linear Algebra, Differential Equations, and Financial Mathematics.

EDUCATION

University of Notre Dame

- **Ph.D**, Mathematics
- Awarded the **Schmitt Fellowship**.
- Nominee for ND Shaheen Graduate School Award for top student.

Aug 2007–May 2012

University of California, Berkeley

- **B.S.**, Mathematics and **B.A.**, English Literature.
- Awarded the **Regents Scholarship**. Full scholarship.

Aug 2000–May 2004

TECHNICAL SKILLS

- Languages: Python (full SciPy stack, Flask), Scala, R, C/C++, HTML5, Bash, L^AT_EX.
- Operating Systems: Unix (Debian/Ubuntu, FreeBSD, OS X) , Windows (XP, Vista, 7)

HONORS, AWARDS, AND EXTRACURRICULAR ACTIVITIES

- Chess Expert http://www.chessdryad.com/articles/mi/article_165.htm