Michael D. Harmon

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Experience

Data Science Fellow **Sept. 2016 – Present**
Insight Data Science *New York, NY*

- Created a Python web application for forecasting crime rates in New York City: www.crimetime.online
- Collected and cleaned 10 years of geospatial crime data using Pandas and stored in a SQL database.
- Forecasted local crime rates using seasonal ARIMA models that are trained on police precinct data.
- Wrote unit tests, documentation, and built front end using Flask, HTML, CSS and deployed to AWS.

PhD Researcher & Teaching Assistant **Sept. 2011 – Aug. 2016**
University of Texas at Austin *Austin, TX*

- Developed finite element code in C++ to simulate photoelectrochemical solar cells and optimize cell design.
- Designed and implemented numerical algorithms that reduced computational run time by a factor of 24.
- Created testing framework and wrote documentation webpage: michael-harmon.com/PECS
- Taught 11 undergraduate courses in calculus, linear algebra, differential equations and scientific computing.

Open Source Software Contributor **July 2016**
The deal.ii Finite Element Library *Austin, TX*

- Refactored the C++ library's solver for distributed linear algebra to be more efficient and added unit testing.
- The added functionality was immediately adopted by users and resulted in solve times that are 250× faster.
- Created tutorial for deal.ii's code gallery to teach users to write LDG methods in a distributed framework.

Adjunct Instructor **Sept. 2010 – May 2011**
Fisher College *Boston, MA*

- Planned and taught four courses in algebra and basic statistics to over 60 under-resourced students.

Projects & Skills

Decision Trees: Built, tested and documented a decision tree classifier using Python and Pandas.

Green Buildings: Cleaned NYC building energy data and analyzed it using regression models.

Web Anlaytics: Analyzed Wikimedia's search page click-through rates using Pandas.

Languages: Python, C++, Java, MATLAB, SQL, HTML, LaTeX

Data Science Tools: Git, NumPy, SciPy, Pandas, Scikit-learn, Matplotlib, Bokeh, Spark, Flask

C++ Tools: STL, Boost, MPI, OpenMP, CMake, GDB

Analysis: machine learning, regression, classification, statistics, ensemble methods, time series analysis, clustering, recommender systems, numerical methods

Education

Ph.D. Computational Applied Mathematics, *University of Texas at Austin* **2016**
M.S. Computational Applied Mathematics, *University of Texas at Austin* **2010**
B.A. Mathematics, minor in Physics, *New York University* **2007**

Other

Brazilian Jiu-Jitsu: World Champ, 2×Bronze at Pan Ams, 3×New England Champ, Texas State Champ