

# Michael D. Harmon

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## Experience

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### 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](http://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](http://michael-harmon.com/PECS)
- Taught 11 undergraduate courses in calculus, linear algebra, differential equations and scientific computing.

### Open Source Software Contributor

June 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

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**Random Forests:** Built and tested a random forest regression and classification library in Python.

**Green Buildings:** Data driven recommendations for reducing NYC building energy usage.

**Web Analytics:** Analyzed Wikimedia's search page click-through rates using Python and Pandas.

**Recommender Systems:** Blog post on working with collaborative filtering algorithms in Python.

**Interactive Graphics:** Blog post on using Python & Bokeh to create interactive visualizations.

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

**Data Science Tools:** Git, SciPy stack, Pandas, Scikit-learn, Bokeh, Spark, Flask

**Analysis:** machine learning, statistics, regression, classification, ensemble methods, time series analysis, clustering, collaborative filtering, numerical methods

## Education

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**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

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**Brazilian Jiu-Jitsu:** 17 years as competitor, 12 years coaching athletes to win local, national and world titles.

**Titles:** World Champion, 2×Bronze at Pan Americans, 3×New England Champion, Texas State Champion