Michael T. Lock

New York, NY
(717) 433-7782
mike.tull.lock@gmail.com

www.linkedin.com/in/mtlock
www.github.com/mtlock
www.ma.utexas.edu/users/mlock

Experience

Insight Data Science — New York, NY
Data Science Fellow — *September 2016 - present*

- Built *Tweet Off* (www.mtlock.xyz), a political sentiment classifier for presidential election tweets
- Used natural language processing techniques to develop a text classifier
- Leveraged text classifier to create a probabilistic model for hashtag comprehension
- Final product incorporated a multi-layered approach to help detect for sarcasm and intent of speech
- Developed dashboard to track hashtag evolution

Mathematical Sciences Research Institute — Berkeley, CA
Postdoctoral Fellow in Differential Geometry — *January 2016 - May 2016*

- Proved lack of stability in the behavior of a family of quantum mechanical operators
- Investigated interplay between real and complex geometric structures

The University of Texas — Austin, TX
RTG Postdoctoral Fellow in Mathematics — *August 2013 - December 2015*

- Solved ground state problem for Schrödinger operators on compact domains
- Made first contribution towards proving the 25-year-old Bando-Kasue-Nakajima conjecture

Education

University of Wisconsin — Madison, WI
Ph.D. in Mathematics — *May 2013*
Thesis: Index theorems for anti-self-dual and self-dual orbifolds
Received the Excellence in Mathematical Research Award

- Developed perturbation methods to explore geometric phenomena occurring in four dimensions
- Answered long-standing number theoretic question for Dedekind sums

Columbia University — New York, NY
B.A. in Mathematics with Honors — *May 2008*
Senior Thesis: A formula for the Khovanov homology of $(2, n)$ *torus knots*

Technical Skills

Python: NumPy & SciPy, scikit-learn, nltk, pandas, matplotlib, SQL, jupyter notebook

Sample Projects:

- Used K-Means clustering and PCA to study relations between collections of stocks taking log returns and volatility as measures and a rolling window approach to observe evolution and stability
- Predictively modeled score differentials of NFL games using linear regression methods, and developed an indicator for bias in the point spread using logistic regression
- Developed program to automatically detect instances of heightened nerve activity from nerve recording input for NASA funded project at PSU Heart & Vascular Institute