# Andrew K. Massimino

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⌂ *andymass*

## Education

**Dec. 2018** — **Ph. D. in Electrical and Computer Engineering**, *Georgia Institute of Technology*, Atlanta, GA.
Signal processing & machine learning. Doctoral dissertation.–*Learning to adapt under practical sensing constraints*

**Aug. 2017** — **Master of Science, Mathematics**, *Georgia Institute of Technology*, Atlanta, GA.

**Master of Science, Electrical and Computer Engineering**, *Georgia Institute of Technology*, Atlanta, GA.

**May 2011** — **Bachelor of Engineering**, *The Cooper Union for the Advancement of Science and Art*, New York, NY.
Electrical Engineering. Full Tuition Merit-Based Scholarship. *Magna Cum Laude*

## Work Experience

**Aug. 2019 – Present** — **Goldman Sachs**, *Associate, Fraud Modeling*, New York, NY.
Marcus, Consumer & Investment Management Division.

- Develop machine learning models for fraud detection in consumer businesses, including Apple Card and deposits to prevent millions of dollars in fraud loss per year.
- Validate and deploy high-performance models within rigorous firm and regulatory frameworks.
- Use Python and PySpark to aggregate large amounts of transaction data to create reports; communicate analyses and business metrics to stakeholders.
- Define requirements for implementation of fraud machine learning capabilities in collaboration with multiple engineering teams. Build and deploy production ETL tasks for feature and attribute creation.
- Design and implement guidelines for team's automated testing and continuous deployment workflows; create a framework for standardizing feature pipelines, easing transition from model development to production.

**Jan. 2013 – Dec. 2018** — **Georgia Tech**, *Graduate Research Assistant*, Atlanta, GA.
Areas of expertise: Statistical signal processing, machine learning, recommendation systems, applied mathematics, probability, statistics, regression, estimation, inference, and optimization.

- Developed novel methods with theoretical guarantees for active learning from pairwise comparison observations using a preference model to adaptively and rapidly estimate a user's favorite movies, music, foods, etc.
- Created new theory and algorithms for active information acquisition in applications with query constraints, applicable in numerous situations including imaging, recommender systems, rapid information retrieval tasks, targeted advertising, and psychological studies; validated approaches via Matlab and Python.
- Managed and mentored a team of 4 undergraduate students performing biomedical research using machine learning techniques on sensor data to analyze wheel-chair seat posture to prevent injury from 2015 – 2016.

**June 2009 – Aug. 2011** — **Bloomberg L.P.**, *Software Development Intern, Research and Development*, New York, NY.
Internal Systems, Sales Reporting and Workflow (May 2010 – Aug. 2011)

- Used C#, C++, Javascript, Java, and SQL to develop customer relationship management (CRM) applications used by company sales representatives, including user interface, back-end, and relational database design. Used Microsoft BING map and address geocoding technologies to build a new map-based CRM tool allowing sales representatives to plan trips and discover points of interest nearby their prospective clients.

User Interface Infrastructure (June 2009 – Aug. 2009)

- Enhanced SVN tool by writing a plugin in C++ to improve team's code development workflow. Created a prototype to evaluate Microsoft WPF (C#) for modernizing financial product user interfaces.

## Skills

**Languages** — C, C++, Python (PySpark, NumPy, Pandas, SciPy), SQL, Matlab, Perl, Vimscript, Javascript, C#.

**Software** — LaTeX, Git, Vim, MS SQL Server, TensorFlow, Google Cloud Platform; Linux, Windows.

## Open source contributions

**Nov. 2017 – present**  **Repeated contributor to the vim editor.**
Including submitting accepted patches, bug reports, and works in progress for the development of new features.

**Match-up (vim plugin) ★ 580+,** author, github.com/andymass/vim-matchup.
Improves the editor's ability to highlight, navigate, and operate on sets of matching text.

**Tradewinds (vim plugin) ★ 80,** author, github.com/andymass/vim-tradewinds.
Allows moving an editor window into a new split of its neighboring windows.

## Teaching

**Fall 2012**  **Teaching Assistant for the Intro to Digital Signal Processing class,** *Georgia Tech*, Atlanta, GA.
Instructed 2–3 lab sessions each week for the introductory digital signal processing course, assisting students with Matlab and fundamental concepts in signal processing; verified lab progress and graded assignments.

**Spring 2010 & 2011**  **Instructor of a Matlab Seminar,** *The Cooper Union*, New York, NY.
Prepared and delivered weekly lectures, created and graded assignments.

## Awards

**2012 – 2016**  Georgia Tech President's Fellowship.

**2014**  Algorithms and Randomness Center (ARC) Student Fellowship.

**2011**  Dale E. Zand Prize for Outstanding Achievement in Electrical Engineering (Cooper Union).

## Publications

G. Canal, **A. K. Massimino**, M. A. Davenport, and C. Rozell. Active embedding search via noisy paired comparisons. In *Proc. Int. Conf. on Machine Learning (ICML)*, Long Beach, CA, June 2019. U.S. provisional patent application 62/800,686 filed February 4, 2019.

**A. K. Massimino** and M. A. Davenport. As you like it: Localization via paired comparisons. *Submitted*, February 2018. Preprint available on arXiv: https://arxiv.org/abs/1802.10489.

**A. K. Massimino** and M. A. Davenport. The geometry of random paired comparisons. In *Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, New Orleans, LA, March 2017.

M. A. Davenport, **A. K. Massimino**, D. Needell, and T. Woolf. Constrained Adaptive Sensing. *IEEE Trans. Signal Processing*, 64(20):5437–5449, October 2016. (available arXiv:1506.05889).

**A. K. Massimino** and M. A. Davenport. Binary stable embedding via paired comparisons. In *Proc. IEEE Work. on Statistical Signal Processing (SSP)*, Palma de Mallorca, Spain, June 2016. Presented at poster session.

M. G. Moore, **A. K. Massimino**, and M. A. Davenport. Randomized multi-pulse time-of-flight mass spectrometry. In *IEEE Int. Work. on Comput. Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Cancun, Mexico, December 2015.

M. A. Davenport, **A. K. Massimino**, D. Needell, and T. Woolf. Constrained adaptive sensing. In *Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Cambridge, United Kingdom, July 2015. Attended.

**A. K. Massimino** and M. A. Davenport. One-bit matrix completion for pairwise comparison matrices. In *Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Lausanne, Switzerland, July 2013. Presented at poster session.