# Noah Daniel Stein

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## Education

**Massachusetts Institute of Technology**

Ph.D. in Electrical Engineering and Computer Science; Cumulative GPA: 5.0 / 5.0    June 2011

S.M. in Electrical Engineering and Computer Science; Ernst A. Guillemin Thesis Award, $1^{st}$ place    June 2007

**Cornell University College of Engineering**

B.S. with honors in Electrical and Computer Engineering, minor in Applied Mathematics    May 2005

Cumulative GPA: 4.22 / 4.3 ($2^{nd}$ out of 668 graduating students in the College of Engineering)

## Objective

A machine learning or data science position in a collaborative environment where I can connect the clean, abstract ideas of math to the messy world of real data, while keeping contact with the research community

## Background

- Clustering, classification, regression; neural nets, matrix / tensor factorization, probabilistic inference;
- Linear, semidefinite, and convex optimization; game theory; theory of computation;
- Signal processing; information theory; control theory; electromagnetics;
- Real, convex, and functional analysis; measure theory; probability;
- Algebra; topology; algebraic topology; differential geometry

## Experience

**Analog Devices | Analog Garage – Cambridge, MA**    Fall 2011 - present

(was **Analog Devices | Lyric Labs** and before that **Lyric Semiconductor, Inc.**)

*Senior Research Scientist* (2015 - present)

*Research Scientist* (2011 - 2014)

Technical work

- Led technical team on audio source separation ("cocktail party problem") algorithm development
- Created and implemented sparse nonnegative tensor factorization methodology for audio source separation
  - directional cues from 1 mm square microphone array, smaller than previously believed theoretical limits
  - modular framework to vary models of sources, acoustics, and side information; batch vs. streaming operation
- Oversaw data collection to evaluate and characterize source separation quality, improved algorithms in response
- Developed neural network approach for weakly supervised anomaly detection, applied to machine health
- Investigated GPS/accelerometer/gyroscope sensor fusion with Kalman, Bingham, and particle filters
- Led technical due diligence for investment in an audio event classification startup
- Obtained four US patents with one more pending, granted one German patent

Organizational and management work

- Supervised three full-time research scientists and seven summer internships
- Led hiring for algorithms team
- Organized weekly symposia and reading groups

**MIT Laboratory for Information and Decision Systems (LIDS)**    Fall 2005 - Summer 2011

*Graduate Research Assistant*

- Studied game theory with emphasis on new algorithms for computing equilibria of infinite games
- Constructed a hierarchy of solutions trading off between strength of prediction and efficient computation
- Presented this work at twelve conferences yielding three journal papers as first author with two more in progress

**Lyric Semiconductor, Inc. – Cambridge, MA**    Summer - Winter 2007

*Summer Research Intern / Consultant*

- Explored abstract mathematical models of analog circuits for next-generation cellular technologies
- Used this analysis in conjunction with my EE background to make recommendations to the circuit design team

**Preferred tools** - Mac, python3, numpy / scipy, TensorFlow, git, LaTeX