

Curriculum Vitae

PATRICK LAVICTOIRE

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Technical Skills

- Languages: Python (proficient), Java (rusty), MATLAB (very rusty)
- Machine learning (numpy, scikit-learn), deep learning (TensorFlow)
- Exposure to Lucene, Hadoop
- Theoretical background in mathematics, probability theory, theory of machine learning

Employment

- 2017– **Research Scientist, Lyft Inc:** I'm embedded on the Locations team, writing algorithms to better infer driver locations from noisy phone sensor data. I'm still new there as of this writing; milestones coming soon, if my experiments go as planned!
- 2015–2017 **Research Fellow, Machine Intelligence Research Institute:** MIRI is a nonprofit doing fundamental research on topics in artificial intelligence safety. After collaborating with MIRI during my academic days, I worked with them for the past two years. During that time, I:
- developed new lines of research and written them up on MIRI's research forum
 - used TensorFlow to replicate recent experiments in machine learning and deep learning, and worked on some deep learning projects of my own
 - contributed to an agenda of theoretical problems in machine learning that may be useful in designing robustly safe systems
 - ran several research workshops for dozens of participants from academia and industry
- 2013–2014 **Principal Engineer (Search Sciences), Quixey:** I was a machine learning expert and data scientist within an app search engine startup, taking a unique role within the (5-10 person) Search Sciences team. In my time at Quixey, I:
- vastly simplified the core machine-learned model, leading to a major improvement according to our relevance metrics
 - helped develop the ranking algorithms for new verticals (searching within apps) and new languages (Chinese)

- reformed the training and testing practices for the main search engine, doubling the speed of data collection
- developed tools to quickly test a change without collecting additional data
- developed new machine-learned features incorporating relevant metadata for search ranking
- successfully pushed for the company's first concrete policy on responsible data collection
- served as a mathematical consultant for architectural decisions across the company

2010–2013 **Visiting Assistant Professor, University of Wisconsin–Madison:** This was a three-year postdoctoral position in pure mathematics. I published research in harmonic analysis, maximal inequalities, and ergodic theory; and I taught 8 courses at the undergraduate level.

Education

2010 PhD, University of California at Berkeley, Mathematics (advisor: Michael Christ)
 2005 BA, University of Chicago, Mathematics

Grants

2012–13 National Science Foundation, Analysis Grant DMS-1201314

Publications and Selected Preprints

1. Jessica Taylor, Eliezer Yudkowsky, Patrick LaVictoire, and Andrew Critch, *Alignment for Advanced Machine Learning Systems*, preprint. <https://intelligence.org/files/AlignmentMachineLearning.pdf>
2. Patrick LaVictoire, Benja Fallenstein, Eliezer Yudkowsky, Mihaly Barasz, Paul Christiano and Marcello Herreshoff, *Program Equilibrium in the Prisoner's Dilemma via Löb's Theorem*, presented at AAAI 2014, MIPC Workshop.
3. Patrick LaVictoire, Andrew Parrish, and Joseph Rosenblatt, *Multivariable averaging on sparse sets*, Transactions of the AMS 366 (2014), 2975-3025
4. Patrick LaVictoire, *Pointwise Convergence for Subsequences of Weighted Averages*, Colloquium Mathematicum 124 (2011), 157–168.
5. Patrick LaVictoire, *Universally L^1 -Bad Arithmetic Sequences*, Journal d'Analyse Mathématique 113 (2011, no. 1), 241–263.
6. Patrick LaVictoire, *An L^1 Ergodic Theorem for Sparse Random Subsequences*, Mathematical Research Letters 16 (2009), no. 5, 849–859.

Hobbies

Social dancing (blues, waltz, swing); puns and pun competitions; weird themed parties; board games (current favorite: Race for the Galaxy); friendly arguments about abstract ideas