

Robert Elliott Tillman

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Citizenship: United States
Previous Visas: United Kingdom

Education

- **Carnegie Mellon University** Pittsburgh, PA, United States
Ph.D. Program in Logic, Computation, and Methodology *August 2007 - present*
- **Carnegie Mellon University** Pittsburgh, PA, United States
M.S. Program in Machine Learning *August 2007 - present*
- **Tulane University** New Orleans, LA, United States
B.S. Psychology, B.A. Philosophy, Mathematics Minor *August 2003 - May 2007*
 - *Summa cum laude* and of the top 10 graduates in 2007 (out of approximately 2000)
 - Honors Thesis: “Formal systems for nonmonotonic reasoning,”
Committee: Thomas Sattig (Director), Michael Mislove, Donald Lee
- **University of St. Andrews** St. Andrews, FIFE, United Kingdom
Junior Year Abroad (Tulane Honors) Program *September 2005 - May 2006*
 - Undergraduate Dissertation: “Probabilistic preconditions in default logic,”
Director: Peter Clark

Technical Skills

Quantitative: Machine Learning, Probabilistic Graphical Models (Learning and Inference),
Mathematical Statistics, Multivariate Analysis, Datamining, Stochastic Processes, Bayesian
Statistics, Monte Carlo Methods, Numerical Analysis, Optimization, Experimental Design,
Econometrics, Causal Inference Methods, Options Pricing Theory

Programming: MATLAB, Java, C, C++, C#, Perl, PHP, SQL, R, SAS, SPSS

Markup: L^AT_EX, DOT, HTML, XML

Operating Systems: Linux (Ubuntu, Debian, Fedora, Red Hat), UNIX, OpenBSD, MacOS X,
Microsoft Windows (through Vista)

Graduate Coursework Highlights: Advanced Machine Learning, Probabilistic Graphical Models,
Mathematical Statistics, Applied Statistics and Experimental Design, Algorithms, Databases and
Datamining, Stochastic Processes, Advanced Probability, Bayesian Statistics and Computational
Methods, Options Pricing Theory

Research Interests

Causal Inference, Probabilistic Graphical Models (Learning and Inference), Kernel Methods and Hilbert
Space Embeddings of Distributions, Computational Statistics, Numerical Linear Algebra, Applications in
Brain Imaging, Computational Psychology, the Biomedical Domain, and Quantitative Finance

Publications and Reports

- **R. E. Tillman**, A. Gretton and P. Spirtes, “Nonlinear directed acyclic structure learning with weakly additive noise models,” To appear in *Advances in Neural Information Processing Systems 22 (NIPS 2009)*, 2010.
- P. Spirtes, C. Glymour, R. Scheines and **R. E. Tillman**, “Automated search for causal relations: theory and practice,” To appear.
- **R. E. Tillman**, “Structure learning with independent non-identically distributed data,” In *Proceedings of the 26th Annual International Conference on Machine Learning (ICML 2009)*, 2009.
- **R. E. Tillman** and P. Spirtes, “When causality matters for prediction: investigating the practical tradeoffs,” To appear in *Proceedings of NIPS 2008 Workshop on Causality: Objectives and Assessment*, 2009.
- **R. E. Tillman**, D. Danks and C. Glymour, “Integrating locally learned causal structures with overlapping variables,” In *Advances in Neural Information Processing Systems 21 (NIPS 2008)*, 2009.
- **R. E. Tillman**, “Learning Bayesian network structure from distributed data with overlapping variables,” Technical Report, CMU-PHIL-82, Carnegie Mellon University. 2008.

Selected Work Experience

- **Microsoft Corporation, Research Division** Redmond, WA, United States
Machine Learning and Applied Statistics Group *May 2009 - August 2009*
Mentor: Chris Meek
Project description: Using prior knowledge about the distribution of MSN web traffic demographics to optimize the delivery and increase the order capacity for guaranteed targeted display advertisements, led to new theoretical results in efficient finite sample inference using junction trees

Awards and Honors

- **Travel Award to Present at NIPS 2008 Workshop on Causality**
- **Carnegie Mellon University Graduate Fellowship**
- Logic, Computation, and Methodology Ph.D. Program
- **Phi Beta Kappa Honor Society**
- **Karlem Riess Memorial Award**
- awarded annually to a Phi Beta Kappa inductee for breadth and depth in the arts and sciences
- **William Wallace Peery Society**
- top 10 Tulane graduates in each year’s class (out of approximately 2000 in 2007)
- **Tulane University Dean’s List** (all semesters)
- **Phi Eta Sigma Honor Society**
- **Tulane University Scholarship**

- **Armed Forces Communications and Electronics Association Scholarship**

Journal and Conference Reviewing

Journals:

Journal of Machine Learning Research

Statistics and Computing

Conferences:

25th International Conference on Uncertainty in Artificial Intelligence (**UAI 2009**) - Program Committee

23rd Annual Conference on Neural Information Processing Systems (**NIPS 2009**)

Workshops:

NIPS 2008 Workshop on Causality: Objectives and Assessment

Graduate Coursework

Graduate Courses Taken at Carnegie Mellon University:

- 36-752, *Advanced Probability* (Steve Hanneke), Fall 2009
- 80-820, *Computational Models of Cognition* (David Danks, Clark Glymour), Fall 2009
- 10-702/36-702, *Statistical Machine Learning* (Larry Wasserman, John Lafferty), Spring 2009
- 36-724, *Applied Bayesian and Computational Methods* (Surya Tokdar), Spring 2009
- 15-826, *Multimedia Databases and Datamining* (Christos Faloutsos), Spring 2009
- 10-708, *Probabilistic Graphical Models* (Carlos Guestrin), Fall 2008
- 15-853, *Algorithms in the "Real World"* (Guy Blelloch), Fall 2008
- 36-711, *Statistical Computing* (Surya Tokdar), Fall 2008
- 80-812, *Seminar on Causation* (Peter Spirtes, Clark Glymour), Fall 2008
- 10-701/15-781, *Machine Learning* (Eric Xing), Spring 2008
- 36-708, *Linear Models and Experimental Design* (Jong Soo Lee), Spring 2008
- 36-911/80-815, *Seminar on Foundations of Statistics* (Teddy Seidenfeld), Spring 2008
- 10-705/36-705, *Intermediate Statistics* (Matthew Harrison), Fall 2007
- 80-616, *Probability and Artificial Intelligence* (David Danks), Fall 2007
- 80-600, *Minds, Machines and Knowledge* (Horacio Arló-Costa), Fall 2007

Graduate Courses Audited at Carnegie Mellon University:

- 45-814, *Options* (Duane Seppi), Fall 2009
- 21-651, *General Topology* (Giovanni Leoni), Fall 2009
- 21-620/621, *Real Analysis and Lebesgue Integration* (Jack Schaeffer), Fall 2008

Graduate Courses Taken at Tulane University (while undergraduate student)

- MATH-603, *Stochastic Processes* (Zachariah Dietz), Spring 2007
- NSCI/PSYC-657, *Cognitive Neuroscience* (Edward Golob), Spring 2007
- NSCI/PSYC-609, *Applied Statistics II* (David Corey), Fall 2006
- MATH/PHIL-607, *Mathematical Logic* (Graeme Forbes), Lagniappe 2006 (summer make up semester after Hurricane Katrina)
- MATH/PHIL-694, *Modal Logic and Montague Grammar* (Graeme Forbes), Spring 2005