

Timothy N. Rubin

Data Scientist
Tim.Rubin@gmail.com

EDUCATION

Indiana University Cognitive Computing Laboratory	Bloomington, IN 2012-Present
University of California, Irvine Ph.D., Psychology M.A., Psychology <i>Advisor:</i> Mark Steyvers	Irvine, CA 2012 2009
Tufts University B.S. Psychology, <i>Cum Laude</i> Minor in Cognitive Science	Medford, MA May 2004

RESEARCH AND PROFESSIONAL EXPERIENCE

DATA SCIENCE TEAM LEAD

Change Healthcare Emeryville, Ca	2018 – Present
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SENIOR DATA SCIENTIST

SurveyMonkey <i>San Mateo, CA</i>	2016 – 2018
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SENIOR RESEARCH SCIENTIST

Cognitive Computing Laboratory Faculty Researchers: Michael Jones	2013 – 2016
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DATA SCIENCE CONSULTANT

University of Washington Consulting work for: David C. Atkins, Michele Bedard-Gilligan	2012-2013
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GRADUATE RESEARCH WORK (FUNDED)

Statistical Learning Methods for Clinical Psychology Faculty Researchers: Mark Steyvers and David Atkins	2010 - 2012
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Topic Models for Documents and Ontologies Supervising Faculty: Mark Steyvers and Padhraic Smyth	2009 - 2010
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GRADUATE RESEARCH LABORATORIES

Memory and Decision Laboratory <i>University of California, Irvine</i> Faculty Researchers: Mark Steyvers and Michael Lee	2008 - 2012
Movement and Vision Laboratory	2006 - 2008

University of California, Irvine
Faculty Researchers: Charles F. Chubb and Charles E. Wright

Human Information Processing Laboratory

2007 - 2008

University of California, Irvine

Faculty Researcher: George Sperling

ADDITIONAL RESEARCH EXPERIENCE

Undergraduate Thesis Project. *Tufts University*

2003- 2004

Supervising Faculty: Daniel C. Dennett and Phillip Holcomb

Research Internship: Marine Mammal Behavior and Cognition Laboratory

Fall, 2004

Faculty Researcher: Dr. Stan Kuczaj

Research Internship: Kewalo Basin Marine Mammal Laboratory

May-Dec, 2003

RESEARCH GRANTS AWARDED

2014-2015: "Building Statistical Language Processing Algorithms for the Automated Coding of Semi-Structured Interview Data in Clinical Schizophrenia." Indiana University Collaborative Research Grants fund (IUCRG). Funding acceptance rate: <20%. Role: Co-PI. (PI: Michael N. Jones). \$65,434

PUBLICATIONS

Rubin, T.N., Kojeyo, O., Gorgolewski, K.J., Jones, M.N., Poldrack, R.A., Yarkoni, T. (2017) Decoding brain activity using a large-scale probabilistic functional-anatomical atlas of human cognition. *PLOS Computational Biology*.

Papanikolaou, Y., Foulds, J.R., **Rubin, T.N.**, Tsoumakas, G. (2017) Improving Gibbs Sampling Predictions on Unseen Data for Latent Dirichlet Allocation. *Journal of Machine Learning Research*.

Rubin T.N., Koyejo, S., Jones, M.N. Yarkoni, T. (2016) Generalized Correspondence-LDA Models (GC-LDA) for Identifying Functional Regions in the Brain, *Neural Information Processing Systems (NIPS)*. Barcelona, Spain.

Gruenenfelder, T.M., Recchia, G., **Rubin, T.N.**, Jones, M.N. (2015) Graph-Theoretic Properties of Networks Based on Word Association Norms: Implications for Models of Lexical Semantic Memory, *Cognitive Science*.

Rubin, T.N., Chambers, A., Smyth, P., Steyvers, M., (2012) Statistical Topic Models for Multi-Label Document Classification. *Machine Learning*, special issue on Learning from Multi-Label Data.

Atkins, D.C., **Rubin, T.N.**, Steyvers, M., Doeden, M., Baucom, B.R., & Christensen, A. (2012) Novel methods for modeling couple and family text data: An introduction to topic models. *Journal of Family Psychology*.

Rubin T.N., Kievit-Kylar, B., Willits, J.A., Jones, M.N., (2014) Organizing the space and behavior of semantic models, *36th Annual Conference of the Cognitive Science Society*. Quebec, Canada.

Rubin, T.N., Zeigenfuse, M.D., Steyvers, M., (2011) A Model of Concept Generalization and Feature Representation in Hierarchies, *33rd Annual Conference of the Cognitive Science Society*. (41% acceptance rate for talks).

Rubin, T.N., Steyvers, M., (2009) A Topic Model For Movie Choices and Ratings, *9th International Conference on Cognitive Modeling – ICCM 2009*, Manchester, UK.

Rubin, T.N., Lee, M.D., & Chubb, C.F. (2008) Hierarchical Bayesian modeling of individual differences in texture discrimination. *Proceedings of the 30th Annual Conference of the Cognitive Science Society*.

INVITED TALKS

"Mixture Models for Multi-label Classification and Hierarchical Category Representations". Center for Innovation and Creativity, University of Colorado, Boulder. May 22nd, 2013.

"Machine learning approaches to classification and prediction, and their relevance to cognitive science". *Cognitive lunch talk series*, Indiana University. Aug 22nd, 2012.

"Statistical Topic Models for Multi-Label Document Classification", *AI/ML Weekly Seminar*, Donald Bren School of Information and Computer Sciences, UC Irvine. Jan 24th, 2011.

CONFERENCE TALKS

Rubin T.N., Jones, M.N., Koyejo, O., Yarkoni, T., "Neurotopics: Unsupervised learning for discovering function regions of the brain". *45th Annual Meeting for the Society for Computers in Psychology – SCiP 2015*. Chicago, IL. Presented: November 19th, 2015.

Willits, J.A., **Rubin T.N.**, Jones, M.N., "If you want to know which semantic model is best, don't compare semantic models". *45th Annual Meeting for the Society for Computers in Psychology – SCiP 2015*. Chicago, IL. Presented: November 19th, 2015.

Rubin T.N., Kievit-Kylar, B., Willits, J.A., Jones, M.N., "Organizing the space and behavior of semantic models". *36th Annual meeting of the Cognitive Science Society – CogSci 2014*. Quebec, Canada. Presented: July 26th, 2014.

Rubin T.N., Willits, J.A., Kievit-Kylar, B., Jones, M.N., "An organizing framework for the comparison of semantic models". *47th Annual meeting of the Society For Mathematical Psychology – MathPsych 2014*. Quebec, Canada. Presented: July 21st, 2014.

Rubin, T.N., Molnick J., Wilcox-O'Hearn L.A., Yarkoni, T., M.N. "Neurotopics: Learning the associations between linguistic features and regions of brain activation from a corpus of neuroimaging publications". *43rd Annual Meeting for the Society for Computers in Psychology – SCiP 2013*. Toronto, Canada. Presented: November 14th, 2013.

Willits, J., Kievit-Kylar, B., **Rubin, T.N.**, & Jones, M.N. (2013). "Semanticore.org: A web-based portal for semantic models and psycholinguistic data". *43rd Annual Meeting for the Society for Computers in Psychology – SCiP 2013*. Toronto, Canada. Presented: November 14th, 2013.

Rubin, T.N., Zeigenfuse, M.D., Steyvers, M., "A Model of Generalization and Feature Representation Across Graph Hierarchies". *44th Annual Meeting of the Society for Mathematical Psychology – MathPsych 2011*. Boston, MA. Presented: July 17th, 2011.

Rubin, TN, Steyvers, M. "Probabilistic Modeling of Human Choices and Preferences using Ratings Data". *The 42nd Annual Meeting of the Society for Mathematical Psychology – MathPsych 2009*. Amsterdam, Netherlands. Presented: August 2nd, 2009.

Rubin, TN, Steyvers, M., "Modeling Movie Choices and Ratings". *The Institute for Mathematical Behavioral Sciences, Graduate Student Conference*. Irvine, CA. Presented: May 13th, 2009.

Rubin, T.N., Chubb, C., Wright, C.E., Sperling, G. "Spatiotemporal Dynamics of the Perception of Dot Displays". University of California Irvine. *Department of Cognitive Sciences, Colloquium*. Irvine, CA. Presented: June 6th, 2008.

CONFERENCE POSTERS

Rubin, T.N., (2017) Modeling Survey Completion Rates and Completion Time using Large-scale Data. *AAPOR 2017*. New Orleans, LA. Presented: May 20th, 2017.

Rubin T.N., Koyejo, S., Jones, M.N. Yarkoni, T, (2016) Generalized Correspondence-LDA Models (GC-LDA) for Identifying Functional Regions in the Brain, *30th Annual Conference on Neural Information Processing Systems (NIPS 2016)*. Barcelona, Spain. Presented: December 7th, 2016.

Rubin T.N., Jones, M.N., Yarkoni, T. (2015) Large-scale functional mapping of brain activity using a joint spatial and semantic topic model, *OHBM 2015*. Honolulu, HI. Presented: June 18th, 2015.

Rubin T.N., Jones, M.N., (2013) Accounting for the nature of human response selection in evaluating semantic models. *43rd Annual Meeting for the Society for Computers in Psychology – SCiP 2013*. Toronto, Canada. Presented: November 14th, 2013.

Rubin T.N., Steyvers M., (2011) Modeling Category Generalization via Distributed Representations Across Graph Hierarchies, *First Southern California Machine Learning Workshop (SoCaML 2011)*. Irvine, CA. Presented: September 9th, 2011.

Rubin T.N., Zeigenfuse M.D., Steyvers M., (2011) A Model of Concept Generalization and Feature Representation in Hierarchies, *33rd Annual Conference of the Cognitive Science Society*. Boston, MA. Presented: July, 22nd, 2011.

Rubin T.N., Lee M.D., DeYoung M., Steyvers M., (2010) Wisdom of the Crowds Effects in Prediction of Future Outcomes; A case study using Fantasy Football Rankings, *43rd Annual Meeting of the Society for Mathematical Psychology (SMP 2010)*. Portland, OR. Presented: Sunday, August 8th, 2010.

Rubin T.N., Holloway A., Smyth P., Steyvers M. (2009), Modeling Tag Dependencies in Tagged Documents. *Neural Information Processing Systems Conference; "Applications for Topic Models: Text and Beyond" Workshop*. Whistler, BC. Presented: December 11th, 2009.

Rubin T.N., Steyvers, M., (2009) A Topic Model for Movie Choices and Ratings. *The 9th International Conference on Cognitive Modeling*. Manchester, UK. Presented: July 25th, 2009.

Rubin, T.N., Lee, M.D., & Chubb, C.F. (2008). Hierarchical Bayesian modeling of individual differences in texture discrimination. *The 30th Annual Conference of the Cognitive Science Society*. Washington, DC. Presented: July 24th, 2008.

Rubin T.N., Chubb CF, Wright C.E., Drew S.A., Sperling G.(2008) Visual Perception of Briefly Presented Dot Displays. *Joint Symposium on Neural Computation*. Irvine, CA. Presented: May 31st, 2008.

Rubin T.N., Chubb C.F., Wright C.E., Drew SA, Sperling G. (2008) Spatiotemporal Dynamics of the Perception of Dot Displays. *Vision Sciences Society Meeting (VSS 2008)*. Naples, FL. Presented: May 10th, 2008.

Drew S.A., Chubb C.F., Erlich T., **Rubin T.N.**, Sperling G. (2008). Binary versus Graded Filters for Selectively Attending to Dots of Different Contrasts, *Vision Sciences Society Meeting*. Naples, FL. Presented: May 10th, 2008.

AWARDS, HONORS

Social Sciences Summer Fellowship	2007-2011
Student Travel Award, <i>44th Annual Meeting of the Society for Mathematical Psychology</i>	2011
Student Travel Award, <i>43rd Annual Meeting of the Society for Mathematical Psychology</i>	2010
Student Travel Award, <i>42nd Annual Meeting of the Society for Mathematical Psychology</i>	2009
<i>Cum Laude</i> . B.S. Psychology, Tufts University.	2004
MacJannet Merit Scholarship, Tufts University.	2002
Dean's List, Tufts University.	1999-2004

RELEVANT SKILLS

Programming Languages: Python, SQL, MATLAB, R, \LaTeX , BUGS, SPSS, Excel, Java, C/C++ (some), HTML (some).

PROFESSIONAL ACTIVITIES

Ad-Hoc Reviewing, *AI Magazine* (Magazine)
Ad-Hoc Reviewing, *Behavior Research Methods* (Journal)
Ad-Hoc Reviewing, *Journal of Machine Learning Research* (Journal)
Ad-Hoc Reviewing, *Psychological Review* (Journal)
Ad-Hoc Reviewing, *Cognitive Science Society* (Conference)
Ad-Hoc Reviewing, *International Conference on Machine Learning, ICML* (Conference)
Ad-Hoc Reviewing, *Transactions on Multimedia Computing, Communications, and Applications* (Journal)
Ad-Hoc Reviewing, *Mathematical Problems in Engineering* (Journal)

PROFESSIONAL AFFILIATIONS

Cognitive Science Society	Student Member 2008-Present
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Society for Mathematical Psychology

Student Member
2009-Present

Vision Sciences Society

Student Member
2007-2008

Society for Neuroscience

Student Member
2007-2008

RELEVANT COURSEWORK

Psych. 200a	Discrete Math and Probability Theory
Psych. 200b	Introduction to Mathematical Statistics
Psych. 200c	Experimental Design
Psych. 205a	Computational and Research Methods Using Matlab
Psych. 205b	Experiments in Matlab
Psych. 237a	Bayesian Cognitive Modeling
Psych. 214	Advanced Cognitive Modeling
Psych. 234a	Mathematical Models of Cognitive Processes
Psych. 212	Learning, Memory and Knowledge Organization
Psych. 214	Decision Making and Problem Solving
Stats. 200 a	Intermediate Probability Theory
CompSci. 273a	Machine Learning
CompSci. 274a	Probabilistic Learning

ADDITIONAL PROGRAMS

Graduate Summer School: Probabilistic Models of Cognition (IPAM 2011)

TEACHING EXPERIENCE

TA, Psychology 114M	Matlab Programming	1 quarter
TA, Social Science 10B	Probability and Statistics	2 quarters
TA, Psychology 21A	Adolescent Psychology	2 quarters
TA, Psychology 191	Language and Brain	1 quarter
TA, Social Science 5D	US/World Geography	1 quarter
TA, Psychology 172AW	American Culture	1 quarter