

Robert V. Lindsey

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Fields of Interest

Computational Cognitive Modeling

Bayesian Machine Learning

Education

Ph.D. Computer Science; University of Colorado at Boulder, expected 2013.

B.S. Computer Science, Philosophy; Rensselaer Polytechnic Institute, 2008. *Summa Cum Laude*.

Academic Experience

University of Colorado, Department of Computer Science

Research Assistant, Prof. Michael Mozer, August 2008–present.

Description: This research focuses on the development of computational models of human fact learning. We emphasize the creation of practical techniques for improving learning in educational settings. Currently, we are working with the University of Colorado's foreign language departments to develop an online tutoring system that utilizes our modeling research.

Grader, CSCI 4446/5446: Chaotic Dynamics, January 2010–May 2010.

Description: I graded homework for a nonlinear dynamics and chaos theory class.

J.D. Power and Associates, Web Intelligence Research Division

Intern, May 2010–December 2010.

Description: I developed a topic modeling technique that finds and works with “topical phrases.” It uses ideas from Bayesian changepoint detection to represent phrases; discovering phrases in the model is the problem of detecting these changepoints. Notably, the topic model does not make a bag-of-words assumption and instead follows an n -gram distribution within each phrase, where the n -gram distributions are smoothed using Pitman-Yor processes.

Rensselaer Polytechnic Institute, Department of Cognitive Science

Undergraduate Researcher, CogWorks Laboratory, August 2005–May 2008.

Description: I participated in a number of undergraduate research projects under the supervision of Prof. Wayne Gray. These projects involved developing algorithms to compute semantic relatedness, programming a distributed genetic algorithm for use on TeraGrid, developing an artificial agent to play the game Tetris, programming cognitive models of human behavior in a visual search environment, and conducting psychological studies on human participants using eye-tracking hardware.

University of Oklahoma, Department of Computer Science

Undergraduate Researcher, Symbiotic Computing Laboratory, May 2007–August 2007.

Description: This summer research position involved programming embedded systems for robot navigation and developing a wireless interface and GUI to control mobile robots. My supervisor was Prof. Andrew Fagg.

Honors, Awards, & Fellowships

NSF Graduate Research Fellowship Program. Fall 2010–present.

Dean's Graduate Assistantship, University of Colorado, Fall 2008–Spring 2009.

Dean's Outstanding Merit Scholarship, University of Colorado, Fall 2008–Spring 2009.

University Fellowship, University of Colorado, Fall 2008–Spring 2009.

Graduate Student Research and Community Development Award, University of Colorado, Spring 2009.

NSF Graduate Research Fellowship Program Honorable Mention, Spring 2009.

Academic citation for excellence in Capstone Experience in Philosophy, Rensselaer Polytechnic Institute, Spring 2008.

Upsilon Pi Epsilon, Rensselaer Polytechnic Institute, Fall 2007–Spring 2008.

Undergraduate Research Award in Cognitive Science, Rensselaer Polytechnic Institute, Spring 2008.

NSF Research Experiences for Undergraduates, University of Oklahoma, Summer 2007.

Dean's List, Rensselaer Polytechnic Institute, Fall 2005–Spring 2008.

Leadership Award, Rensselaer Polytechnic Institute, Fall 2005–Spring 2008.

President's Award, Rensselaer Polytechnic Institute, Fall 2005.

Recent Grants

NSF Graduate Research Fellowship. Effective Fall 2010 - Fall 2013. Cumulative Amount: \$90,000 in stipends and \$31,500 in tuition.

Intelligent Tutoring Systems. Temporal Dynamics of Learning Center, Trainee Grant. Effective March 4, 2011 through December 31, 2011. Amount: \$2,000.

Learning and Retention During Different Schedules of Spaced Retrieval Practice. Temporal Dynamics of Learning Center, Trainee Grant. Effective March 4, 2011 through December 31, 2011. Amount: \$2,000.

Brain-Computer Interfaces for Mobile Robotics. Engineering Excellence Fund, University of Colorado at Boulder. Effective March 1, 2010 through June 30, 2010. Amount: \$800.

Intelligent Tutoring Systems. Temporal Dynamics of Learning Center, Trainee Grant. Effective January 14, 2010 through December 31, 2010. Amount: \$1,050.

Bayesian Optimization of Human Fact Learning. Temporal Dynamics of Learning Center, Trainee Grant. Effective January 14, 2010 through December 31, 2010. Amount: \$1,500.

Perceptual Learning via Attentional Saliency. Temporal Dynamics of Learning Center, Trainee Grant. Effective July 1, 2009 through December 31, 2010. Amount: \$1,400.

Professional Activities

Reviewer for the 33rd Annual Meeting of the Cognitive Science Society. Spring 2011.

Occasional reviewer for the journal *Cognitive Science*. Spring 2011.

Member of the Cognitive Science Society. Summer 2008–present.

Teaching Assistant, Temporal Dynamics of Learning Center Trainee Boot Camp. University of California, San Diego. La Jolla, CA. August 2009.

Temporal Dynamics of Learning Center Trainee Committee member. Fall 2009–present.

Software Contractor. Los Gatos, CA. Summer 2008.

Session chair, Evaluating Judgments and Meaning. 30th Annual Meeting of the Cognitive Science Society. Washington, D.C. July 25, 2008.

President of the New York Eta Chapter of Upsilon Pi Epsilon. Fall 2007–Spring 2008.

Member of the Association for Computing Machinery. Fall 2007–Fall 2008.

Member of Rensselaer Polytechnic Institute's Minds and Machines Program. Fall 2005–Spring 2008.

Google Ambassador, Rensselaer Polytechnic Institute. Fall 2007–Spring 2008.

Publications

Lindsey, R., Headden, W. P. III, & Nicolov, N. (In preparation). A Phrase-Discovering Topic Model Using Pitman-Yor Processes. In preparation.

Michael Mozer, Harold Pashler, Matthew Wilder, Robert Lindsey, Matt Jones, and Michael Jones. Improving human judgments by decontaminating sequential dependencies. In J. Lafferty, C. K. I. Williams, J. Shawe-Taylor, R.S. Zemel, and A. Culotta, editors, *Advances in Neural Information Processing Systems 23*, pages 1705–1713. 2010.

Lindsey, R., Lewis, O., Pashler, H., & Mozer, M. C. (2010). Predicting students' retention of facts from feedback during training. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Michael Mozer, Harold Pashler, Nicholas Cepeda, Robert Lindsey, and Ed Vul. Predicting the optimal spacing of study: A multiscale context model of memory. In Y. Bengio, D. Schuurmans, J. Lafferty, C. K. I. Williams, and A. Culotta, editors, *Advances in Neural Information Processing Systems 22*, pages 1321–1329. 2009.

Lindsey, R., Mozer, M. C., Cepeda, N. J., & Pashler, H. (2009). Optimizing Memory Retention with Cognitive Models. In A. Howes, D. Peebles, R. Cooper (Eds.), *9th International Conference on Cognitive Modeling — ICCM 2009*, Manchester, UK.

Lindsey, R., Stipicevic, M., Veksler, V.D., & Gray, W.D. (2008). BLOSSOM: Best Path Length on a Semantic Self-Organizing Map. *30th Annual Meeting of the Cognitive Science Society*, Washington, D.C.

Lindsey, R., Veksler, V. D., Grintsveyg, A., & Gray, W. D. (2007). Effects of Corpus Selection on Measuring Semantic Relatedness. *Proceedings of the 8th International Conference on Cognitive Modeling*, Ann Arbor, MI.

Refereed Poster Abstracts

Grintsveyg, A., Veksler, V. D., Lindsey, R., & Gray, W. D. (2007). Vector Generation from an Explicitly-defined Multidimensional Space. *Proceedings of the 8th International Conference on Cognitive Modeling*, Ann Arbor, MI.

Veksler, V. D., Grintsveyg, A., Lindsey, R., & Gray, W. D. (2007). A Proxy for All Your Semantic Needs. *Proceedings of the 29th Annual Meeting of the Cognitive Science Society*, Nashville, TN.

Miscellaneous

Computer Skills: Matlab, Python, C++, C, PHP, JavaScript, Scheme, LISP, Java, Prolog, Visual Basic 6, HTML, BASH, SQL, Linux, L^AT_EX, Nutch/Lucene, Parallel programming with MPI