

Yisong Yue

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Cornell University
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Research Interests Machine Learning, Structured Prediction, Online Algorithms, Information Retrieval, Learning to Rank

Education **Cornell University** 2005 - 2010
Ph.D. Candidate in Computer Science
Graduate Minor in Statistics
Thesis Committee: Thorsten Joachims (advisor), Robert Kleinberg, Christopher Burges, Ping Li, John Hopcroft
Coursework includes: programming languages, theory of computation, approximation algorithms, convex analysis, computer vision, machine learning, applied statistics, statistical principles, probability theory, probabilistic graphical models, theory of information networks

University of Illinois at Urbana-Champaign 2001 - 2005
Bachelor of Science in Computer Science
Graduated with Highest Honors (Summa Cum Laude)

Illinois Math and Science Academy 1998 - 2001

Honors and Awards Microsoft Research Graduate Fellowship, 2008-2010
Google Student Award Winner, NYAS Machine Learning Symposium, 2009
Yahoo! Key Scientific Challenges Award, 2008
Outstanding TA Award, Cornell Department of Computer Science, 2006, 2007
Dean's List, UIUC College of Engineering, 2002, 2003, 2004, 2005
Finalist, Scientific Blogging University Writing Competition, 2009

Research Appointments **Cornell University** *May 2006 - Present*
Position: Research Assistant / Research Fellow. Developed machine learning approaches for learning and prediction problems in information retrieval. Developed new structured prediction and on-line learning problem formulations and algorithmic solutions. Under supervision of Thorsten Joachims and Robert Kleinberg.

Google, Inc. *June 2009 - September 2009*
Position: Search Quality Analyst Intern. Developed techniques for automatically evaluating and optimizing information retrieval systems using implicit user feedback such as click data. Analyzed presentation bias effects in user click behavior. Under supervision of Rajan Patel.

Microsoft Research *May 2007 - August 2007*
Position: Research Intern. Explored stochastic optimization techniques for optimizing rank-based performance measures. Analyzed empirical optimality conditions of learning to rank algorithms. Under supervision of Christopher Burges.

Service

SVM-map Software

<http://projects.yisongyue.com/svmmmap/>

Software package for structural support vector machine training to optimize for mean average precision.

SVM-div Software

<http://projects.yisongyue.com/svmdiv/>

Software package for structural support vector machine training for diversified retrieval.

Reflections Projections 2004

<http://www.acm.uiuc.edu/conference>

Co-organized Reflections Projections 2004. Reflections Projections is a student-run computing conference at UIUC, typically drawing in hundreds of students from the Midwest region.

Illini Book Exchange

<http://www.illinibookexchange.com>

Worked on development, management and marketing of Illini Book Exchange (IBX). IBX is a free book exchange website for UIUC students, first launched in December 2002. Since then, over \$1 million worth of transactions has taken place via IBX.

Teaching Experience

Tutorials

- “Learning to Rank.” co-taught with Filip Radlinski, NESCAI '08 Tutorial, Ithaca, NY, May 2008
- “An Introduction to Structured Output Learning Using Support Vector Machines.” Microsoft Research Web Learning Group, Redmond, WA, August 2007.

Lectures & Sections Taught

- Introduction to Programming (Fall 2005 - Spring 2006). Taught weekly section for introductory course in computer programming.

Students & Projects Advised

- Aaron Sidford, Undergraduate Senior Thesis (Spring 2008), “Online Local Search Optimization of Search Engines using Clickthrough Data.” Co-advised with Thorsten Joachims
- Artificial Intelligence & Robotics Practicum (Fall 2007). Advised fifteen undergraduate student projects, including prediction of sporting event outcomes, learning to play board games, automatic music generation, object tracking and navigation of wheeled robots, and learning to walk using six-legged hexapod robots.

Teaching Assistant Appointments

- **AI/Robotics Practicum** (Fall 2007). Taught by Hod Lipson
- **Networks** (Spring 2007). Taught by Jon Kleinberg and David Easley.
- **Empirical Methods in Machine Learning** (Fall 2006). Taught by Rich Caruana.
- **Introduction to Programming** (Spring 2006). Taught by K.-Y. Daisy Fan.
- **Introduction to Programming** (Fall 2005). Taught by K.-Y. Daisy Fan.

Reviewing

Journals

- Data Mining and Knowledge Discovery
- Information Processing & Management
- Information Retrieval
- Journal of Artificial Intelligence Research

- Neural Networks
- Transactions on Knowledge and Data Engineering
- Transactions on the Web

Conferences

- SIGIR 2008, 2009, 2010
- ICML 2007, 2008, 2009, 2010
- NIPS 2008, 2009
- ECML/PKDD 2008
- SoCG 2010

Book Chapters

- Introduction to Information Retrieval, Chapter 18, Matrix decompositions & latent semantic indexing

- Invited Articles** T. Joachims, T. Hofmann, Y. Yue, C.-N. Yu. (2009). “Predicting Structured Objects with Support Vector Machines.” Communications of the ACM (CACM), Research Highlight, 52(11), 97–104, November 2009.
- Journal Papers** Y. Yue, J. Broder, R. Kleinberg, T. Joachims. “The K -armed Dueling Bandits Problem.” Journal of Computer and System Sciences (JCSS), Special Issue on Learning Theory, (in submission).
- Conference Papers** Y. Yue, Y. Gao, O. Chapelle, Y. Zhang, T. Joachims. (2010). “Learning More Powerful Test Statistics for Click-Based Retrieval Evaluation.” In Proceedings of the ACM Conference on Information Retrieval (SIGIR), Geneva, Switzerland, July 2010.
- Y. Yue, R. Patel, H. Roehrig. (2010). “Beyond Position Bias: Examining Result Attractiveness as a Source of Presentation Bias in Clickthrough Data.” In Proceedings of the World Wide Web Conference (WWW), Raleigh, NC, USA, April 2010.
- Y. Yue, J. Broder, R. Kleinberg, T. Joachims. (2009). “The K -armed Dueling Bandits Problem.” In Proceedings of the Conference on Learning Theory (COLT), Montreal, Quebec, Canada, June 2009.
- Y. Yue, T. Joachims. (2009). “Interactively Optimizing Information Retrieval Systems as a Dueling Bandits Problem.” In Proceedings of the International Conference on Machine Learning (ICML), Montreal, Quebec, Canada, June 2009.
- Y. Yue, T. Joachims. (2008). “Predicting Diverse Subsets Using Structural SVMs.” In Proceedings of the International Conference on Machine Learning (ICML), Helsinki, Finland, July 2008.
- Y. Yue, T. Finley, F. Radlinski, T. Joachims. (2007). “A Support Vector Method for Optimizing Average Precision.” In Proceedings of the ACM Conference on Information Retrieval (SIGIR), Amsterdam, The Netherlands, July 2007.
- Additional Presentations** “Interactively Optimizing Information Retrieval Systems as a Dueling Bandits Problem.” New York Academy of Sciences Machine Learning Symposium, New York, NY, November 2009.
- “Diversified Retrieval as Structured Prediction.” Google Search Quality Reading Group, Mountain View, CA, August, 2009.

“Towards Interactive Approaches to Learning to Rank.” SIGIR 2009 Workshop on Learning to Rank, Boston, MA, July 2009.

“Diversified Retrieval as Structured Prediction.” SIGIR 2009 Workshop on Redundancy, Diversity, and Interdocument Relevance **Invited Talk**, Boston, MA, July 2009.

“Information Retrieval as Structured Prediction.” UMass Amherst Machine Learning Seminar **Invited Talk**, Amherst, MA, April 2009.

“Interactively Optimizing Information Retrieval Systems as a Dueling Bandits Problem.” Cornell University AI Seminar, Ithaca, NY, February 2009.

“Structured Prediction and Active Learning for Information Retrieval.” Microsoft Research Asia **Invited Talk**, Beijing, China, August 2008.

“Predicting Diverse Subsets Using Structural SVMs.” Cornell University AI Seminar, Ithaca, NY, April 2008.

“A Support Vector Method for Optimizing Average Precision.” Microsoft Research Machine Learning Discussion Group, Redmond, WA, July, 2007.

“A Support Vector Method for Optimizing Rank-based Performance Measures.” Cornell University AI Seminar, Ithaca, NY, April, 2007.

**Workshop
Papers**

Y. Yue. (2009). “Online Gradient Descent using Interactive User Feedback.” NIPS Workshop on Analysis and Design of Algorithms for Interactive Machine Learning, Whistler, Canada, December 2009.

Y. Yue, T. Joachims. (2008). “Interactively Optimizing Information Systems as a Dueling Bandits Problem.” NIPS Workshop on Beyond Search: Computational Intelligence for the Web, Whistler, Canada, December 2008.

Y. Yue, C. Burges. (2007). “On Using Stochastic Perturbation Stochastic Approximation for Learning to Rank; and, the Empirical Optimality of LambdaRank.” NIPS Workshop on Machine Learning for the Web, Whistler, Canada, December 2007.

Manuscripts

Y. Yue. “The Contextual Dueling Bandits Problem.” May, 2009.

**Other Work
Experience**

Architecture Engineer Intern, NVIDIA Corporation *Summer 2005*

Software Design Engineer Intern, Microsoft Corporation *Summer 2004*

Software Design Engineer Intern, Microsoft Corporation *Summer 2003*

References

Thorsten Joachims

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