Qi Guo

400 Dowman Drive, Suite W401
Emory University
Atlanta, Georgia 30322, USA

Phone: +1-404-273-2026
Email: qguo3@emory.edu
Web: http://www.mathcs.emory.edu/~qguo3/

RESEARCH INTERESTS

Information Retrieval, Machine Learning, User Behavior Modeling

EDUCATION

Emory University 09/2007 - Present
Ph.D. Student in Computer Science Advisor: Eugene Agichtein
Thesis Topic: *Predicting Search Intent, Performance, and Relevance from Interaction Data*

Zhejiang University 09/2003 - 06/2007
B.S. in Software Engineering *Summa Cum Laude*

University of Washington 06/2006 - 07/2006
International Outreach and Exchange Program

HONORS & AWARDS

- Best Paper Award, ACM International Conference on Information Retrieval (SIGIR) 2011
- Yahoo! Key Scientific Challenges Award 2009
- SIGIR Student Travel Grant Award 2008, 2011
- Ph.D. Fellowship Award, Graduate School of Emory University 2008 - Present
- Excellent Graduate Award, Zhejiang University 2007
- Excellent Student Scholarship, Zhejiang University 2005 - 2006
- Excellent Student Leader Award, Zhejiang University 2004 - 2006

PROFESSIONAL EXPERIENCE

Intelligent Information Access Lab, Emory University Research Assistant
Atlanta, GA 09/2007 - Present
Investigated user behavior modeling of online information-seeking for web search, mobile search, product search and library search. In particular, studied machine learning techniques in solving problems such as searcher intent detection, search performance evaluation, and result relevance estimation using search interaction data collected from both large-scale real usage logs and user studies. To capture searcher interactions, designed and implemented client-side instrumentation.

Yahoo! Research Research Intern
New York, NY 05/2011 - 07/2011
Investigated automatic multi-document summarization techniques, developed machine learning systems to generate time-sensitive summaries from large-scale text streams for crisis events.

Microsoft Research/Bing Data Mining Research Intern
Seattle, WA 06/2010 - 08/2010
Studied the rationales behind engine switching behavior on session-level. Implemented Instrumentation and conducted company-wide user study to collect data, trained and evaluated models to predict the underlying rationales from short-term user behavior.

Microsoft Research/Bing Data Mining Research Intern
Seattle, WA 07/2009 - 10/2009
Analyzed large-scale search logs and investigated aggregated search engine switching behavior. Trained machine learning models to predict query performance using aggregated interaction data.

eBay Inc./Shopping.com Research Science Intern
Brisbane, CA 06/2008 - 08/2008
Investigated lightweight query clickthrough estimation for product search using pre-retrieval features and implemented a query classifier to identify queries with low expected clickthrough rate.

Microsoft Research Asia Research Intern
Beijing, China 01/2007 - 06/2007
Investigated object recognition techniques and developed software for boundary detection, image segmentation and digit recognition.

PROFESSIONAL SERVICE

- Program Committee Member: SIGIR (2012), AAAI (2012), ECIR (2012), UMWA (2011)
- Conference Reviewer: CHI (2011), NAACL-HLT (2010), SIGIR (2009), WSCD (2009), WSDM (2009, 2010)
- Journal Reviewer: FnTIR (2009), JASIST (2011), TWEB (2010)

TEACHING & ADVISING EXPERIENCE

- Independent Instructor: Emory CS130, Programming in Python, Spring 2011 (Teaching Mentor: Valerie H. Summet)
- Lead Teaching Assistant: Emory CS170, Introduction to Computer Science I, Fall 2010
- Teaching Assistant: Emory CS377, Introduction to Database Systems, Fall 2011
- CS590 Teaching Seminar, Fall 2010
- Graduate School TATTO Teaching Workshop, Summer 2010
- Co-advisor: Ryan P. Kelly (Undergraduate Student), Directed Study on EMU Project, Fall 2008

REFERRED CONFERENCE PAPERS

- **Q. Guo**, and E. Agichtein. "Beyond Dwell Time: Estimating Document Relevance from Cursor Movements and other Post-click Searcher Behavior", to appear in the 21st International World Wide Web Conference (WWW), 2012 **(12% accepted)**.
- **Q. Guo**, R. W. White, Y. Zhang, B. Anderson, and S. Dumais. "Why Searchers Switch: Understanding and Predicting Engine Switching Rationales", Proceedings of the 34th ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2011 **(19% accepted)**.
- M. Ageev, **Q. Guo**, D. Lagun, and E. Agichtein. "Find It If You Can: A Game for Modeling Different Types of Web Search Success Using Interaction Data", Proceedings of the 34th ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2011 **(19% accepted)**. **(Best Paper Award)**

- **Q. Guo** and E. Agichtein. "Ready to Buy or Just Browsing? Detecting Web Searcher Goals from Interaction Data", Proceedings of the 33rd ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2010 **(17% accepted)**.
- **Q. Guo** and E. Agichtein. "Towards Predicting Web Searcher Gaze Position from Mouse Movements"(WIP), Proceedings of the 28th ACM Conference on Human Factors in Computing Systems (CHI), 2010.
- **Q. Guo**, R. W. White, S. Dumais, J. Wang, and B. Anderson. "Predicting Query Performance Using Query, Result, and User Interaction Features", Proceedings of the 9th International Conference on Adaptivity, Personalization and Fusion of Heterogeneous Information (RIAO), 2010.
- **Q. Guo**, E. Agichtein, C. Clarke and A. Ashkan. "In the Mood to Click? Towards Inferring Searcher Receptiveness to Advertising", Proceedings of the ACM/IEEE International Conference on Web Intelligence (WI), 2009 **(25% accepted)**.
- A. Ashkan, C. Clarke, E. Agichtein and **Q. Guo**. "Estimating Ad Clickthrough Rate through Query Intent Analysis.", Proceedings of the ACM/IEEE International Conference on Web Intelligence (WI), 2009 **(18% accepted)**.
- A. Ashkan, C. Clarke, E. Agichtein and **Q. Guo**. "Classifying and Characterizing Query Intent in Sponsored Search.", Proceedings of the 31st European Conference on Informational Retrieval (ECIR), 2009 **(30% accepted)**.

REFERRED CONFERENCE POSTERS & WORKSHOP PAPERS

- **Q. Guo**†, D. Lagun†, D. Savenkov†, and Q. Liu. "Improving Relevance Prediction by Addressing Biases and Sparsity in Web Search Click Data", Proceedings of the WSDM workshop on Web Search Click Data, 2012.
- **Q. Guo**, S. Yuan and E. Agichtein. "Detecting Success in Mobile Search from Interaction"(poster), Proceedings of the 34th ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2011 **(32.5% accepted)**.
- **Q. Guo** and E. Agichtein. "Exploring Searcher Interactions for Distinguishing Types of Commercial Intent"(poster), Proceedings of the 19th International World Wide Web Conference (WWW), 2010.
- J. Kiseleva, **Q. Guo**, E. Agichtein, D. Billsus and W. Chai. "Unsupervised Query Segmentation Using Click Data: Preliminary Results"(poster), to appear in the 19th International World Wide Web Conference (WWW), 2010.
- E. Agichtein and **Q. Guo**. "Towards Inferring Web Searcher Intent from Behavior Data", Proceedings of the CHI Workshop on Studying Online Behaviour, 2010.
- **Q. Guo** and E. Agichtein. "Beyond Session Segmentation: Predicting Changes in Search Intent With Client-Side User Interactions"(poster), Proceedings of the 32nd ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2009 **(34% accepted)**.
- **Q. Guo**, R. Kelly, S. Deemer, A. Murphy, J. Smith, and E. Agichtein. "EMU: The Emory User Behavior Modeling System for Automatic Library Search Evaluation: Preliminary Results"(poster), Proceedings of the 9th Joint Conference on Digital Libraries (JCDL), 2009.
- **Q. Guo**, E. Agichtein, C. Clarke and A. Ashkan. "Understanding 'Abandoned' Ads: Towards Personalized Commercial Intent Inference via Mouse Movement Analysis", Proceedings of the SIGIR Workshop on Information Retrieval in Advertising, 2008.
- A. Ashkan, C. Clarke, E. Agichtein and **Q. Guo**. "Characterizing Query Intent From Ad Clickthrough Data", Proceedings of the SIGIR Workshop on Information Retrieval in Advertising, 2008.
- **Q. Guo** and E. Agichtein. "Exploring Client-Side Instrumentation for Personalized Search Intent Inference", Proceedings of the AAAI Workshop on Intelligent Techniques for Web Personalization & Recommender Systems, 2008.

†The first three authors contributed equally to this work.

- **Q. Guo** and E. Agichtein. "Exploring Mouse Movements for Inferring Query Intent"(poster), Proceedings of the 31st ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2008.

SOFTWARE

- EMU: The Emory User Behavior Modeling System for Automatic Library Search Evaluation. Released and deployed in Emory University Libraries.

PROJECTS

- **Estimating Search Result Relevance**: Investigated mining implicit relevance feedbacks from rich searcher interactions to improve relevance estimation of search results.
- **Summarizing Time-Sensitive Crisis Events**: Investigated summarization techniques, designed and developed machine learning-based systems for updating summaries of crisis events from news article streams in a timely fashion.
- **Predicting Searcher Success**: Investigated the prediction of searcher success by analyzing and modeling session-level searcher behavior, designed and developed game-like infrastructure for conducting large-scale remote users studies. Also, extended the analysis to mobile search, analyzing the association between touch-screen specific interactions such as zooming, pinching and sliding with searcher success.
- **Predicting Searcher Gaze Position**: Investigated the relationship between user interactions (in particular, mouse movements) and gaze position. Applied machine learning techniques to automatically inferring when the gaze position is coordinated with the mouse position and predicting searcher gaze position without an eye tracker.
- **Understanding Engine Switching Behavior**: Investigated search engine switching event through both session-level behavior and aggregated interaction measures, built machine learning models to predict underlying switching rationales and query performance from behavioral data.
- **Modeling Web Search Intent**: Analyzed logs of interaction data, applied machine learning techniques to predicting searcher goals and future ad clickthrough. In particular, characterized and classified commercial intent by analyzing clickthrough data, estimated ad clickthrough rates from intent analysis, and explored a new class of search behavior models that incorporate fine-grained user interactions with the search results.
- **Enhancing Product Search**: Investigated query segmentation for product search using sequence labeling techniques. In particular, explored automatic label generation from clickthrough logs for a scalable solution. Also, investigated lightweight query clickthrough estimation for product search using pre-retrieval features and implemented a query classifier to predict clickthrough.
- **Evaluating Library Search**: Developed the Emory EMU (The Emory System for Managing and Mining User Behavior data) to support automatic, user-centric behavior based evaluation of the effectiveness of the library search tools.

PRESENTATIONS

- "Why Searchers Switch: Understanding and Predicting Engine Switching Rationales", SIGIR (Beijing, China), 2011.
- "ViewSer: Enabling Large-Scale Remote User Studies of Web Search Examination and Interaction", SIGIR (Beijing, China), 2011.
- "Pinch, Zoom, and Slide: Touch Screens Shown Helpful for Detecting Success in Mobile Search", SIGIR (Beijing, China), 2011.
- "Time-Sensitive Summarization", Yahoo! (New York, NY), 2011.
- "Why Searchers Switch? Understanding Engine Switching Rationales", Microsoft (Seattle, WA), 2010.

- "Towards Predicting Web Searcher Gaze Position from Mouse Movements", CHI (Atlanta, GA), 2010.
- "Characterizing Engine Switching and Identifying DSAT Switching Queries", Microsoft (Seattle, WA), 2009.
- "Modeling Session-level Searcher Receptiveness to Advertising to Predict Ad Clickthrough", Yahoo! KSC (Sunnyvale, CA), 2009.
- "Learning to Filter Queries", eBay/Shopping.com (Brisbane, CA), 2008.
- "Exploring Mouse Movements for Inferring Query Intent", SIGIR (Singapore), 2008.
- "Understanding 'Abandoned' Ads: Towards Personalized Commercial Intent Inference via Mouse Movement Analysis", IRA (Singapore), 2008.
- "Exploring Client-Side Instrumentation for Personalized Search Intent Inference", ITWP (Chicago, IL), 2008.

SKILLS

- Programming Languages: Java, Python, C/C++, C#, Matlab, R, Javascript, LaTeX
- Operating Systems: MS Windows, MacOS, Linux, Solaris

REFERENCES

Available upon request.