# Hui Fang

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## RESEARCH INTERESTS

I am broadly interested in data and information management with a focus on information retrieval (IR). I am especially interested in applying axiomatic analysis to develop effective and robust general information retrieval models that can be applied to any search domains. My other research interests include search result diversification, entity-centric IR, domain specific IR such as enterprise search and infographic search, contextual suggestion and biomedical informatics.

## PROFESSIONAL EXPERIENCE

**Associate Professor**
Department of Electrical and Computer Engineering
(Affiliated with Department of Computer and Information Sciences,
 Institute for Financial Services Analytics, Data Science Institute,
Center for Bioinformatics and Computational Biology)
University of Delaware
2015-Present

**Assistant Professor**
Department of Electrical and Computer Engineering
(Affiliated with Department of Computer and Information Sciences,
 Institute for Financial Services Analytics,
 Center for Bioinformatics and Computational Biology)
University of Delaware
2008-2015

**Assistant Professor**
Department of Computer Science and Engineering
The Ohio State University
2007-2008

**Research Assistant**
Department of Computer Science
University of Illinois at Urbana Champaign
2001-2007

## EDUCATION

**Doctor of Philosophy**
University of Illinois at Urbana-Champaign
July 2007
Thesis: *An Axiomatic Approach to Information Retrieval*
Advisor: ChengXiang Zhai

| **Master of Science** | University of Illinois at Urbana-Champaign |
|---|---|
| | August 2004 |
| | Thesis: *Exploring Gene Expression Data: New Subspace* |
| | *Clustering Model and Evaluation Metrics* |
| | Advisor: ChengXiang Zhai |

| **Bachelor of Science** | Tsinghua University |
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| | July 2001 |

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# HONORS and AWARDS

- JP Morgan Chase Faculty Fellow/Scholar, 2017- present
- Early Career Academic Achievement Alumni Award, CS, University of Illinois at Urbana-Champaign, 2019.
- David L. and Beverley J. C. Mills Career Development Chair, 2016-2020
- College of Engineering Excellence in Teaching Award, University of Delaware, 2013.
- HP Labs Innovation Research Awards, 2010-2012.
- Nominated for ACM Doctoral Dissertation Award, University of Illinois at Urbana-Champaign, 2007.
- ACM SIGIR 2004 Best Paper Award, 2004.   (1 out of 273 international submissions)
- Undergraduate Scholarships, Tsinghua University, 1998-2000.
- Silver Medal in 13th National Olympiad in Informatics (NOI'96) in China, 1996.

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# PUBLICATIONS

## JOURNAL ARTICLES

[J19] "Axiomatic Thinking for Information Retrieval: Introduction to special issue".  Enrique Amigo, Hui Fang, Stefano Mizzaro and ChengXiang Zhai.   Information Retrieval Journal, 23, pages 187-190, 2020. (**IRJ'20**)

[J18].  "Anserini: Reproducible Ranking Baselines Using Lucene". Peilin Yang, Hui Fang and Jimmy Lin. Journal of Data and Information Quality. Volume 10, Issue 4, Pages 16-36, October 2018. (**JDIQ'18**)

[J17] "Report on SIGIR 2017 Workshop on Axiomatic Thinking for Information Retrieval and Related Tasks". Enrique Amigo, Hui Fang, Stefano Mizzaro and ChengXiang Zhai. SIGIR Forum, Volume 51, Issue 3, Pages 88-93, December 2017. (**Forum'17b**)

[J16] "Report on the 2017 ACM SIGIR International Conference Theory of Information Retrieval". Hui Fang, Jaap Kamps, Evangelos Kanoulas, Maarten de Rijke and Emine Yilmaz. SIGIR Forum, Volume 51, Issue 3, Pages 78-87, December 2017. (**Forum'17a**)

[J15] "Opinions Matter: A General Approach to User Profile Modeling for Contextual Suggestion". Peilin Yang, Hongning Wang, Hui Fang and Deng Cai. *Information Retrieval Journal*, Volume 18, Issue 6, pages 586-610, December, 2015. (**IRJ'15**)

[J14]    "Latent Entity Space: A Novel Retrieval Approach for Entity-Bearing Queries". Xitong Liu and Hui Fang. *Information Retrieval Journal*, Volume 18, Issue 6, pages 473-503, December, 2015. (**IRJ'15**)

[J13]    "A Novel Methodology for Retrieving Infographics Utilizing Structure and Message Content". Zhuo Li, Sandra Carberry, Hui Fang, Kathleen F. McCoy, Kelly Peterson and Matthew Stagitis. *Data & Knowledge Engineering*, Volume 100, pages 191-210, November 2015. (**DKE'15**)

[J12]    "Quantifying Political Behavior on Mobile Devices over Time: A User Evaluation Study". Lindsay Hoffman and Hui Fang. *Journal of Information Technology & Politics*, Volume 11, Issue 4, pages 435-445, 2014. (**JITP'14**)

[J11]    "Exploiting Entity Relationship for Query Expansion in Enterprise Search". Xitong Liu, Fei Chen, Hui Fang and Min Wang. *Information Retrieval Journal*, Volume 17, Issue 3, pages 265-294, June 2014. (**IRJ'14**)

[J10]    "Wikimantic: Toward Effective Disambiguation of Expansion of Queries". Christopher Boston, Hui Fang, Sandra Carberry, Hao Wu and Xitong Liu. *Data & Knowledge Engineering*, Volume 90, pages 22-37, March 2014. (**DKE'14**)

[J9]     "Leveraging Integrated Information to Extract Query Subtopics for Search Result Diversification". Wei Zheng, Hui Fang, Conglei Yao and Min Wang. *Information Retrieval*. Volume 17, Issue 1, pages 52-73, February 2014. (**IRJ'14**)

[J8]     "An Exploration of Ranking Models and Feedback Methods for Related Entity Finding". Xitong Liu, Wei Zheng and Hui Fang. *Information Processing & Management*, Volume 49, Issue 5, Pages 995-1007, September 2013. (**IPM'13**)

[J7]     "Exploiting Online Discussions to Discover Unrecognized Drug Side Effects". Hao Wu, Hui Fang and Steven J. Stanhope. *Methods of Information in Medicine*, Volume 52, Issue 2, pages 152-159, February 2013. (**Methods'13**)

[J6]     "Diversifying Search Results through Pattern-based Subtopic Modeling". Wei Zheng, Hui Fang, Hong Cheng and Xuanhui Wang. *International Journal on Semantic Web and Information Systems*, Volume 8, Issue 4, pages 37-56, October 2012. (**IJSWIS'12**)

[J5]     "Coverage-based Search Result Diversification". Wei Zheng, Xuanhui Wang, Hui Fang and Hong Cheng. *Information Retrieval*, Volume 15, Issue 5, pages 433-457, October 2012. (**IRJ'12**)

[J4]     "Diagnostic Evaluation of Information Retrieval Models". Hui Fang, Tao Tao and ChengXiang Zhai. *ACM Transactions on Information Systems*, Volume 29, Issue 2, April 2011. (**TOIS'11**)

[J3]     "An Empirical Study of Gene Synonym Query Expansion in Biomedical Information Retrieval". Yue Lu, Hui Fang and ChengXiang Zhai. *Information Retrieval,* Volume 12, Issue 1, pages 51-68, February 2009. (**IRJ'09**)

[J2]     "Web Search Relevance Feedback", Hui Fang and ChengXiang Zhai. *Encyclopedia of Database Systems*, pages 3493-3497, 2009.

[J1]     "A Study of Statistical Methods for Function Prediction of Protein Motifs". Tao Tao, ChengXiang Zhai, Xinghua Lu and Hui Fang. *Applied Bioinformatics*, Volume 3, No. 2-3, pages 115-124, 2004.

## CONFERENCE AND WORKSHOP PAPERS

[C94]   "Predicting Question Reponses to Improve the performance of Retrieval-based Chatbot". Disen Wang and Hui Fang. To appear in Proceedings of *the 36th European Conference on Information Retrieval*, short paper, 2021. (**ECIR'21**)

[C93]   "Covidex: Neural Ranking Models and Keyword Search Infrastructure for the COVID-19 Open Research Dataset". Edwin Zhang, Nikhil Gupta, Raphael Tang, Xiao Han, Ronak Pradeep, Kuang Lu, Yue Zhang, Rodrigo Nogueira, Kyunghyun Cho, Hui Fang and Jimmy Lin.  Proceedings of the First Workshop on Scholarly Document Processing, pages 31-41, Nov 19, 2020.

[C92]   "Aspect based Background Document Retrieval for News Articles".  Kuang Lu and Hui Fang. In Proceedings of the 2019 Text Retrieval Conference, 2020. (**TREC'20**)

[C91]   "Length Adaptive Regularization for Retrieval-based Chatbot Models". Disen Wang and Hui Fang. In Proceedings *of the 2020 International Conference on the Theory of Information Retrieval*, 2020.  (**ICTIR'20b**)

[C90]   "Utilizing Utilizing Axiomatic Perturbations to Guide Neural Ranking Models". Zitong Cheng and Hui Fang.  In Proceedings *of the 2020 International Conference on the Theory of Information Retrieval*, 2020.  (**ICTIR'20a**)

[C89]   "An Adaptive Response Matching Network for Ranking Multi-turn Chatbot responses". In Proceedings of the International Conference on Applications of Natural Language to Information Systems, 2020 (**NLDB'20**).

[C88]   "Highway BERT for Passage Ranking". Di Zhao and Hui Fang. In Proceedings of the 2019 Text Retrieval Conference, 2019. (**TREC'19**)

[C87]   "Leveraging Entities in Background Document Retrieval for News Articles". Kuang Lu and Hui Fang. In Proceedings of the 2019 Text Retrieval Conference, 2019. (**TREC'19**)

[C86]   "Exploring Query Formatting for Conversational Information Seeking". Disen Wang and Hui Fang. In Proceedings of the 2019 Text Retrieval Conference, 2019. (**TREC'19**)

[C85]    "Are we on the right track? An examination of information retrieval methodologies". Enrique Amigo, Hui Fang, Stefano Mizzaro and ChengXiang Zhai.  In Proceedings of the 41st Interantional ACM SIGIR Conference on Research and Development in Information Retrieval, 2018 (**SIGIR'18**).

[C84]   "Key Terms Guided Expansion for Verbose Queries in Medical Domain", Yue Wang and Hui Fang. In Proceedings of the 14th Asia Information Retrieval Societies Conference, 2018 (**AIRS'18**).

[C83]   "Silent Day Detection on Microblog Data". Kuang Lu and Hui Fang. In Proceedings of the International Conference on Applications of Natural Language to Information Systems, 2018 (**NLDB'18**).

[C82] "Paragraph as Lead – Finding Background Documents for News Articles". Kuang Lu and Hui Fang. In Proceedings of the 2018 Text Retrieval Conference, 2018. (**TREC'18**)

[C81] "Exploring Post Retrieval Techniques for Bio-medical Domain Retrieval". Yue Wang and Hui Fang. In Proceedings of the 2018 Text Retrieval Conference, 2018. (**TREC'18**)

[C80]    "Improving Retrieval Effectiveness for Temporal-Constrained Top-K Query Processing". Hao Wu, Kuang Lu and Hui Fang. In Proceedings of the 13th Asia Information Retrieval Societies Conference, 2017 (**AIRS'17**).

[C79]    "Learning2extract for Medical Domain Retrieval". Yue Wang, Kuang Lu and Hui Fang. In Proceedings of the 13th Asia Information Retrieval Societies Conference, 2017 (**AIRS'17**).

[C78]    "Extracting User-Reported Mobile Application Defects from Online Reviews". Yue Wang, Hongning Wang and Hui Fang. In Proceedings of 2017 IEEE ICDM Workshop on Sentiment Elicitation from Natural Text for Information Retrieval and Extraction, 2017. (**SENTIRE'17**).

[C77]    "Towards Privacy-Preserving Evaluation for Information Retrieval Models Over Industry Data Sets." Peilin Yang, Mianwei Zhou, Yi Chang, ChengXiang Zhai and Hui Fang. In Proceedings of the 13th Asia Information Retrieval Societies Conference, 2017 (**AIRS'17**).

[C76]    "A Measurement Study on Amazon Wishlist and Its Privacy Exposure", Yue Li, Nan Zheng, Haining Wang, Kun Sun, and Hui Fang. In Proceedings of IEEE ICC 2017. (**ICC'17**)

[C75]    "Can Short Queries be Even Shorter?". Peilin Yang and Hui Fang. In Proceedings *of the 2017 International Conference on the Theory of Information Retrieval*, 2017.  (**ICTIR'17**)

[C74]    "Axiomatic Thinking for Information Retrieval and Related Tasks". Enrique Amigo, Hui Fang, Stefano Mizzaro and ChengXiang Zhai. In Proceedings of the 40th International ACM SIGIR Conference on Research and Development in Information Retrieval, 2017. (**SIGIR'17**).

[C73]    "The Lucene for Information Access and Retrieval Research (LIARR) Workshop at SIGIR 2017". Leif Azzopardi, Matt Crane, Hui Fang, Grant Ingersoll, Jimmy Lin, Yashar Moshfeghi, Harrisen Scells, Peilin Yang and Guido Zuccon. In Proceedings of the 40th International ACM SIGIR Conference on Research and Development in Information Retrieval, 2017. (**SIGIR'17**).

[C72]    "Anserini: Enabling the Use of Lucene for Information Retrieval Research". Peilin Yang and Hui Fang and Jimmy Lin. In Proceedings of the 40th International ACM SIGIR Conference on Research and Development in Information Retrieval, 2017. (**SIGIR'17**).

[C71]    "Combining Term-based and Concept-based Representation for Clinical Retrieval", Yue Wang and Hui Fang. In Proceedings of the 2017 Text Retrieval Conference, 2017. (**TREC'17**)

[C70]    "Evaluating Axiomatic Retrieval Models in the Core Track", Yue Wang, Peilin Yang and Hui Fang. In Proceedings of the 2017 Text Retrieval Conference, 2017. (**TREC'17**)

[C69]    "Silent Day Detection in Real-time Summarization Track". Kuang Lu, Peilin Yang and Hui Fang. In Proceedings of the 2017 Text Retrieval Conference, 2017. (**TREC'17**)

[C68]    "A Reproducibility Study of Information Retrieval Models". Peilin Yang and Hui Fang. In Proceedings *of the 2016 International Conference on the Theory of Information Retrieval*, 2016.  (**ICTIR'16**)

[C67]    "Estimating Retrieval Performance Bound for Single Term Queries". Peilin Yang and Hui Fang. In Proceedings *of the 2016 International Conference on the Theory of Information Retrieval*, short paper, 2016.  (**ICTIR'16**)

[C66]  "Extracting Useful Information from Clinical Notes". Yue Wang and Hui Fang. In Proceedings of *the 2016 Text REtrieval Conference*, 2016. (**TREC'16)**

[C65]  "Query Performance Prediction and Topic Shift in Microblog Retrieval". Kuang Lu and Hui Fang. In Proceedings of *the 2016 Text REtrieval Conference*, 2016. (**TREC'16)**

[C64]  "Towards Less Biased Web Search". Xitong Liu and Hui Fang. In Proceedings *of the 2015 International Conference on the Theory of Information Retrieval*, short paper, 2015. (**ICTIR'15**) [SEP]

[C63]  "Combining Opinion Profile Modeling with Complex Content Filtering for Contextual Suggestion". Peilin Yang and Hui Fang. In Proceedings of *the 2015 Text REtrieval Conference*, 2015. (**TREC'15)**

[C62]  "Event Oriented Query Expansion for News Event Queries". Kuang Lu and Hui Fang. In Proceedings of *the 2015 Text REtrieval Conference*, 2015. (**TREC'15)**

[C61]  "Analytical Performance Modeling for Top-K Query Processing". Hao Wu and Hui Fang. *In Proceedings of the 23rd ACM International Conference on Information and Knowledge Management*, 2014. (**CIKM'14**) (21% acceptance)

[C60]  "Document Prioritization for Scalable Query Processing". Hao Wu and Hui Fang. *In Proceedings of the 23rd ACM International Conference on Information and Knowledge Management*, 2014. (**CIKM'14**) (21% acceptance)

[C59]  "A Study of Concept-based weighting Regularization for Medical Records Search". Yue Wang, Xitong Liu and Hui Fang. To appear in *the 52nd Annual Meeting of the Association for Computational Linguistics,* 2014. (**ACL'14**)

[C58]  "Identifying Important Features for Graph Retrieval". Zhuo Li, Sandra Carberry, Hui Fang and Kathleen McCoy. To appear in *the 25th International Conference on Computational Linguistics*, 2014. (**COLING'14**)

[C57]  "VIRLab: A Platform for Privacy-Preserving Evaluation for Information Retrieval". Hui Fang and ChengXiang Zhai. To appear in *the SIGIR 2014 Privacy-Preserving IR Workshop, 2014.* (**PIR'14**)

[C56]  "Infographics Retrieval, a New Methodology". Zhuo Li, Sandra Carberry, Hui Fang, Kathleen McCoy and Kelly Peterson. To appear in *the 19th International Conference on Application of Natural Language to Information Systems*, 2014. (**NLDB'14**)

[C55]  "An Exploration of Tie-Breaking for Microblog Retrieval". Yue Wang, Hao Wu and Hui Fang. In Proceedings of *the 36th European Conference on Information Retrieval*, short paper, pages 713-719, 2014. (**ECIR'14**)

[C54]  "Exploration of Opinion-aware Approach to Contextual Suggestion". Peilin Yang and Hui Fang. In Proceedings of *the 2014 Text REtrieval Conference*, 2014. (**TREC'14)** (No. 1 group in the TREC 2014 Contextual Suggestion track) [SEP]

[C53]  "Entity Came to Rescue- Leveraging Entities to Minimize Risks in Web Search". Xitong Liu, Peilin Yang and Hui Fang. In Proceedings of *the 2014 Text REtrieval Conference*, 2014. (**TREC'14)** (No. 1 group in the TREC 2014 Web track) [SEP]

[C52]   "Concept-based Tie-breaking and Maximal Marginal Relevance Retrieval in Microblog Retrieval". Kuang Lu and Hui Fang. In Proceedings of *the 2014 Text REtrieval Conference*, 2014. (**TREC'14**)

[C51]   "Explore the Query Expansion Methods for Concept Based Representation". Yue Wang and Hui Fang. In Proceedings of *the 2014 Text REtrieval Conference*, 2014. (**TREC'14)**

[C50]   "An Incremental Approach to Efficient Pseudo Relevance Feedback". Hao Wu and Hui Fang. In Proceedings of *the 36th International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 553-562, 2013. (**SIGIR'13**) (19.9% acceptance)

[C49]   "iPLUG, Personalized List Recommendation in Twitter". Lijiang Chen, Yibing Zhao, Shimin Chen, Hui Fang, Chengkai Li and Min Wang. In Proceedings of *the 14th International Conference on Web Information System Engineering*, pages 88-103, 2013. (**WISE'13**) (24.7% acceptance)

[C48]   "Automatic Detection of Ambiguous Terminology for Software Requirements". Yue Wang, Irene Manotas, Kristina Winbladh and Hui Fang. *In Proceedings of the 18th International Conference on Application of Natural Language to Information Systems*, pages 25-37, 2013. (**NLDB'13**)

[C47]   "Opinion-based User Profile Modeling for Contextual Suggestions". Peilin Yang and Hui Fang. In Proceedings *of the 4th International Conference on the Theory of Information Retrieval*, short paper, 2013. (**ICTIR'13**)

[C46]   "Tie Breaker: A Novel Way of Combining Retrieval Signals". Hao Wu and Hui Fang. In Proceedings of *the 4th International Conference on the Theory of Information Retrieval*, short paper, 2013. (**ICTIR'13**)

[C45]   "A Diagnostic Study of Search Result Diversification Methods". Wei Zheng and Hui Fang. In Proceedings of *the 4th International Conference on the Theory of Information Retrieval*, short paper, 2013. (**ICTIR'13**)

[C44]   "Leveraging Related Entities for Knowledge Base Acceleration". Xitong Liu and Hui Fang. In Proceedings of *the 4th International Workshop on Web-Scale Knowledge Representation, Retrieval and Reasoning*, pages 1-4, in conjunction with CIKM 2013, 2013. (**Web-KR'13**)

[C43]   "An Opinion-aware Approach to Contextual Suggestions". Peilin Yang and Hui Fang. In Proceedings of *the 2013 Text REtrieval Conference*, 2013. (**TREC'13)** (No. 1 group in the TREC 2013 Contextual Suggestion track)

[C42]   "Evaluating the Effectiveness of Axiomatic Approaches in Web Track". Peilin Yang and Hui Fang. In Proceedings of *the 2013 Text REtrieval Conference*, 2013. (**TREC'13)** (No. 1 group for the diversity task and No. 2 group for the ad-hoc task in the TREC 2013 Web track)

[C41]   "A Related Entity based Approach for Knowledge Base Acceleration". Xitong Liu, Jerry Darko and Hui Fang. In Proceedings of *the 2013 Text REtrieval Conference*, 2013. (**TREC'13**). (No.3 group based on the primary measure, i.e., F_1 on the vital only retrieval objective, in the TREC 2013 KBA track)

[C40]   "Tie-breaker: A New Perspective of Ranking and Evaluation for Microblog Retrieval". Yue Wang, Jerry Darko and Hui Fang. In Proceedings of *the 2013 Text REtrieval Conference*, 2013. (**TREC'13**)

[C39]   "Relation-based Term Weighting Regularization". Hao Wu and Hui Fang. In Proceedings of *the 34th European Conference on Information Retrieval*, pages 109-120, 2012. (**ECIR'12**) (21% acceptance)

[C38]   "Exploiting Concept Hierarchy for Result Diversification". Wei Zheng, Hui Fang and Conglei Yao. *In Proceedings of the 21st ACM International Conference on Information and Knowledge Management*, pages 1844-1848, short paper, 2012. (**CIKM'12**) (27.8% acceptance)

[C37]   "Entity Centric Query Expansion for Enterprise Search".  Xitong Liu, Hui Fang, Fei Chen and Min Wang. In Proceedings of *the 21st ACM International Conference on Information and Knowledge Management*, pages 1955-1959, short paper, 2012. (**CIKM'12**) (27.8% acceptance)

[C36]   "Wikimantic: Disambiguation for Short Queries". Boston, Sandra Carberry and Hui Fang. In Proceedings o*f the 17th International Conference on Application of Natural Language to Information Systems*, pages 140-151, 2012. (**NLDB'12**)

[C35]   "Entity Profile based Approach in Automatic Knowledge Finding". Xitong Liu and Hui Fang. In Proceedings of *the 2012 Text REtrieval Conference*, 2012. (**TREC'12**) (No.1 group (based on two measures) and No. 2 group (based on the other two measures) in the TREC 2012 KBA track)

[C34]   "An Exploration of Ranking-based Strategy for Contextual Suggestions". Peilin Yang and Hui Fang. In Proceedings of *the 2012 Text REtrieval Conference*, 2012. (**TREC'12**) (No. 3 group in the TREC 2012 Contextual Suggestion track)

[C33]   "Exploiting Domain Thesaurus for Medical Record Retrieval". Miguel A. Callejas P, Yue Wang and Hui Fang. In Proceedings of *the 2012 Text REtrieval Conference*, 2012. (**TREC'12**) (No. 4 group for the automatic runs in the TREC 2012 Medical Records track)

[C32]   "Concept Detection and Using Concept in Ad-hoc Microblog Search". Hao Wu and Hui Fang. In *Proceedings of the 2012 Text REtrieval Conference*, 2012. (**TREC'12**)

[C31]   "Exploiting Ontologies for Search Result Diversification". Wei Zheng and Hui Fang. **Exploiting Ontologies for Search Result Diversification**. In *Proceedings of the 2012 Text REtrieval Conference*, 2012. (**TREC'12**) (No. 3 category B group for the diversity task in the TREC 2012 Web track)

[C30]   "Finding Relevant Information of Certain Types from Enterprise Data". Xitong Liu, Hui Fang, Cong-Lei Yao and Min Wang. In Proceedings of *the 20th ACM International Conference on Information and Knowledge Management*, pages 47-56, 2011. (**CIKM'11**) (15% acceptance)

[C29]   "A Comparative Study of Search Result Diversification". Wei Zheng and Hui Fang. In Proceedings of *the ECIR workshop on Diversity in Document Retrieval*, 2011. (**DDR'11**)

[C28]   "An Exploration of Query Term Deletion". Hao Wu and Hui Fang. In Proceedings of *the ECIR workshop on Information Retrieval Over Query Sessions*, 2011. (**SIR'11**)

[C27]   "A Study of Semantic Search in SemSearch 2011". Xitong Liu, Cong-Lei Yao and Hui Fang. **I**n Proceedings of *the 4th International Semantic Search Workshop*, in conjunction with WWW 2011, 2011. (**SemSearch'11**)

[C26]   "A Study of Pattern-based Subtopic Discovery and Integration in the Web track". Wei Zheng and Hui Fang. In Proceedings of *the 2011 Text REtrieval Conference*, 2011. (**TREC'11**) (No. 2 category B group for the diversity task in the TREC 2011 Web track)

[C25]   "An Exploration of New Ranking Strategies for Medical Record Tracks". Hao Wu and Hui Fang. In Proceedings of *the 2011 Text REtrieval Conference*, 2011. (**TREC'11**)

[C24]   "Time-Sensitive Weighting for Microblog Retrieval". Hao Wu and Hui Fang. In Proceedings of *the 2011 Text REtrieval Conference*, 2011. (**TREC'11**)

[C23]   "Building Reusable Test Collections Through Experimental Design". Ben Carterette, Evangelos Kanoulas, Virgil Pavlu and Hui Fang. In Proceedings of *the 33rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 547-554, 2010. (**SIGIR'10**) (17% acceptance)

[C22]   "Query Aspect based Term Weighting Regularization in Information Retrieval". Wei Zheng and Hui Fang. In Proceedings of *the 32nd European Conference on Information Retrieval*, pages 344-356, 2010. (**ECIR'10**) (22% acceptance)

[C21]   "A Retrieval System based on Sentimental Analysis". Wei Zheng and Hui Fang. In Proceedings of *the 4th Workshop on Human-Computer Interaction and Information Retrieval*, HCIR Challenge, 2010. (**HCIR'10**)

[C20]   "A Study of Entity Search in Semantic Search Workshop". Xitong Liu and Hui Fang. In Proceedings of *the 3rd International Semantic Search Workshop*, in conjunction with WWW 2010, 2010. (**SemSearch'10**)

[C19]   "University of Delaware at Diversity Task of Web Track 2010". Wei Zheng and Hui Fang. In Proceedings of *the 2010 Text REtrieval Conference*, 2010. (**TREC'10**)

[C18]   "Axiomatic Approaches to Information Retrieval – Universit of Delaware at TREC 2009 Million Query and Web Tracks". Wei Zheng and Hui Fang. In Proceedings of *the 2009 Text REtrieval Conference*, 2009. (**TREC'09**) (No. 1 group in the TREC 2009 Million Query track)

[C17]   "UDEL/SMU at TREC 2009 Entity Track". Wei Zheng, Swapna Gottipati, Jing Jiang and Hui Fang. In Proceedings of *the 2009 Text REtrieval Conference*, 2009. (**TREC'09**)

[C16]   "Million Query Track 2009 Overview". Ben Carterette, Virgil Pavlu, Hui Fang and Evangelos Kanuolas. In Proceedings of *the 2009 Text REtrieval Conference*, 2009. (**TREC'09**)

[C15]   "A Study of Methods for Negative Relevance Feedback". Xuanhui Wang, Hui Fang and ChengXiang Zhai. In Proceedings of *the 31st Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 219-226, 2008. (**SIGIR'08**) (17% acceptance)

[C14]   "A Re-examination of Query Expansion Using Lexical Resources". Hui Fang. In Proceedings of *the 46th Annual Meetings of the Association for Computational Linguistics*, pages 139-147, 2008. (**ACL'08**) (25% acceptance)

[C13]    "Improve Retrieval Accuracy for Difficult Queries using Negative Feedback". Xuanhui Wang, Hui Fang and ChengXiang Zhai. In Proceedings of *the 16th ACM International Conference on Information and Knowledge Management*, pages 991-994, short paper, 2007. (**CIKM'07**) (26% acceptance)

[C12]    "A Study of Poisson Query Generation Model for Information Retrieval". Qiaozhu Mei, Hui Fang and ChengXiang Zhai. In *Proceedings of the 30th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 319-326, 2007. (**SIGIR'07**) (18% acceptance)

[C11]    "Term Feedback for Information Retrieval with Language Models". Bin Tan, Atulya Velivelli, Hui Fang and ChengXiang Zhai. In *Proceedings of the 30th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 263-270, 2007. (**SIGIR'07**) (18% acceptance)

[C10]    "Probabilistic Models for Expert Finding". Hui Fang and ChengXiang Zhai. In Proceedings of *the 29th European Conference on Information Retrieval*, pages 418-430, 2007. (**ECIR'07**) (19% acceptance)

[C9]    "Semantic Term Matching in Axiomatic Approaches to Information Retrieval". Hui Fang and ChengXiang Zhai. In Proceedings of *the 29th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 115-122, 2006. (**SIGIR'06**) (19% acceptance)

[C8]    "Language Models for Expert Finding – UIUC TREC 2006 Enterprise Track Experiments". Hui Fang, Lixin Zhou and ChengXiang Zhai. In Proceedings of *the 2006 Text REtrieval Conference*, 2006. (**TREC'06**)

[C7]    "An Exploration of Axiomatic Approaches to Information Retrieval". Hui Fang and ChengXiang Zhai. In Proceedings of *the 28th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 480-487, 2005. (**SIGIR'05**) (19% acceptance)

[C6]    "An Axiomatic Approach to IR – UIUC TREC 2005 Robust Track Experiments". Hui Fang and ChengXiang Zhai. In Proceedings of *the 2005 Text REtrieval Conference*, 2005. (**TREC'05**) (No. 5 group in the TREC 2005 Robust track)

[C5]    "Interactive Construction of Query Language Models – UIUC TREC 2005 HARD Track Experiments". Bin Tan, Atulya Velivelli, Hui Fang and ChengXiang Zhai. In Proceedings of *the 2005 Text REtrieval Conference*, 2005. (**TREC'05**)

[C4]    "UIUC/MUSC at TREC 2005 Genomics Track". ChengXiang Zhai, Xinghua Lu, Xu Ling, Xin He, Atulya Velivelli, Xuanhui Wang, Hui Fang and Azadeh Shakery. In Proceedings of *the 2005 Text REtrieval Conference*, 2005. (**TREC'05**) (No.4 group in the TREC 2005 Genomics Track)

[C3]    "A Formal Study of Information Retrieval Heuristics". Hui Fang, Tao Tao and ChengXiang Zhai. In Proceedings of *the 27th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 49-56, 2004. (**SIGIR'04**) (22% acceptance, **Best Paper Award**)

[C2]    "An Exploration of Formalized Information Retrieval Heuristics". Hui Fang, Tao Tao and ChengXiang Zhai. In Proceedings of *the SIGIR 2003 Workshop on Mathematical/Formal Methods in Information Retrieval*, 2003. (**MFIR'03**)

[C1]    "Improving the Robustness of Language Models – UIUC TREC 2003 Robust and Genomics Experiments". ChengXiang Zhai, Tao Tao, Hui Fang and Zhidi Shang. In Proceedings of *the 2003 Text REtrieval Conference*, 2003. (**TREC'03**)

## POSTER AND DEMO PAPERS

[P8]    "StanceComp:Aggregating Stances from Multiple Sources for Rumor Detection". Hao Xu and Hui Fang. In Proceedings of the 14th Asia Information Retrieval Symposium, 2018. (**AIRS'18**)

[P7]    "OPMES: A Similarity Search Engine for Mathematical Content". Wei Zhong and Hui Fang. In the Proceedings of *the 38th European Conference on Information Retrieval*, demo paper, 2014. (**ECIR'16**)

[P6]    "VIRLab: A Web-based Virtual Lab for Learning and Studying Information Retrieval Models". Hui Fang, Hao Wu, Peilin Yang and ChengXiang Zhai. To appear in *the 37th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, demo paper, 2014. (**SIGIR'14**)

[P5]    "EntEXPO: An Interactive Search System for Entity-Bearing Queries". Xitong Liu, Peilin Yang and Hui Fang. In Proceedings of *the 36th European Conference on Information Retrieval*, pages 784-788, demo paper, 2014. (**ECIR'14**)

[P4]    "An Early Warning System for Unrecognized Drug Side Effect Discovery". Hao Wu, Hui Fang and Steven J. Stanhope. In Proceedings of *the 21st International Conference Companion on World Wide Web*, pages 437-440, demo paper, 2012. (**WWW'12**)

[P3]    "Search Result Diversification for Enterprise Data". Wei Zheng, Hui Fang, Cong-Lei Yao and Min Wang. *In* Proceedings of *the 20th ACM International Conference on Information and Knowledge Management*, pages 1901-1904, poster paper, 2011. (**CIKM'11**)

[P2]    "An Exploration of Pattern-based Subtopic Modeling for Search Result Diversification". Wei Zheng, Xuanhui Wang, Hui Fang and Hong Cheng. In Proceedings of *the 11th annual international ACM/IEEE Joint Conference on Digital Libraries*, pages 387-388, poster paper, 2011. (**JCDL'11**)

[P1]    "Subspace Clustering for Microarray Data Analysis: Multiple Criteria and Significance Assessment". Hui Fang, ChengXiang Zhai, Lei Liu and Jiong Yang. In Proceedings o*f the 2004 IEEE Computational Systems Bioinformatics Conference*, pages 582-583, poster paper, 2004. (**CSB'04**)

## CONTRACTS AND GRANTS

[1]  Co-PI, Center for Plastics Innovation (Led by Lashanda Korley and Thomas H. Epps, III). Department of Energy. around $300K (total: $10M), 9/1/2020-8/31/2024

[2]  JPMC PhD Scholars. JPMorgan Chase, $80K (total: $981K).  9/1/2019-08/31/2022

[3]  **Co-PI** with PI Tammy Anderson and Co-PI Cathy Wu. "The HeNN App for Addressing Opioid Use Disorders: A Collaborative Project to Develop and Evaluate a Promising Healthcare Product". Delaware Bioscience CAT Award. $100K.  9/1/2018-8/31/2019.

[4]  **PI**. with Co-PI Patricia Young, Co-PI James Kendra and Co-PI Xiaoming Li. "*III: Small: Information Chain Support for Disaster Mitigation, Preparedness, Response and Recovery*". National Science Foundation. $250K (total: $507,248), 9/1/2014-8/31/2018.

[5]  **PI**. "An Integrative Analytical Tool for Social Media". University of Delaware Cybersecurity Initiative Research Grant. $30K. 2/1/2016-8/31/2018.

[6]  **PI**. "*Context-Aware Integrated Search for Mortgage Documents*". JPMorgan Chase. $216,223*, 5/1/2014-9/30/2015.

[7]  **Co-PI**. with PI Benjamine A. Carterette. "*Models and Measures for Novel and Diverse Search Results*". National Science Foundation. $247,984 (total grant: $495,968). 9/1/2010-8/31/2014.

[8]  **PI**. with Senior Collaborators Stephan Bohacek and Adele Hayes.  "*Smartphone-based Treatment Enhancement for Clinical Depression*". University of Delaware Research Foundation Strategic Initiative Award. $45,000. 12/1/2012-6/30/2014.

[9]  **PI**, "*Truth or Misinformation? An Integrative Analytical Tool for Social Media*". HP Labs Innovation Research Award. $25,000. 10/1/2012-9/30/2013.

[10] **Co-PI**. with PI Jiannan Wang and Co-PI Bintong Chen. "*Process Improvement and Optimization for Enterprise Storage Service Management*". JPMorgan Chase. $84,000 (total grant: $176,393), 2/1/2012-12/01/2012.

[11] **PI**. "*Improving Search Quality in Enterprise Search through Integrated Information and Collaborative Activities*". HP Labs Innovation Research Award. $116,000.  8/1/2010-7/31/2012.

[12] **PI**. with Senior Collaborator Steven J. Stanhope. "*An Early Warning System for Unrecognized Drug Side Effects Discovery*". University of Delaware Research Foundation Strategic Initiative Award. $45,000.  12/1/2010-6/30/2012.

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# TEACHING EXPERIENCE

## COURSES TAUGHT

[1]  CPEG 323: Introduction to Computer System Engineering. University of Delaware. Fall 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020

DESCRIPTION: This course covers the basic principles and techniques used in the design and evaluation of computer organization and systems. It stresses the principal design concepts and emphasizes ideas that we believe will continue to apply into the future. The course has two primary goals: 1) to provide students with a mental model of

how high-level language programs get executed on computer hardware, and 2) to introduce students to the organization and performance analysis of modern computers.

[2] CPEG/ELEG 457/657: Search and Data Mining. University of Delaware. Spring 2009, 2011, 2012, 2013, 2014, 2017, 2018, 2019, 2020; Summer 2017-2020(Online).

DESCRIPTION: The course covers important techniques in the area of information retrieval and data mining. It is designed to give students a broad view of the areas and to give students hands-on experience to solve real world problems in the area of IR. The course project will give students opportunities and encourage them to conduct inter-disciplinary research by applying the techniques that have learned in this course to solve text information management problems in various domains.

[3] ELEG 662: Digital Systems Seminar.  University of Delaware. Fall 2009, 2010, 2012, Spring 2013, Fall 2019.

DESCRIPTION: It is a required seminar for CPEG junior graduate students. When organizing the seminars, my goals were to give some advices to these junior graduate students on how to conduct research and give presentations and to introduce different research topics of computer engineering area. Specifically, I gave a couple of lectures on how to give presentations and invited speakers from different areas to present their research work. At the end of the semester, all the registered students gave very nice presentations on their own research.

[4] CSE788 – Information Retrieval, The Ohio State University. Spring 2008. New course

DESCRIPTION: This course covers the underlying technologies of information retrieval systems and  allows students to get hands-on project experience. Topics include information retrieval models, information filtering, text classification, text clustering, HMM, etc.

 [5] CSE671 – Introduction to Database Systems II, The Ohio State University. Autumn 2007, Winter 2008.

DESCRIPTION: This course covers techniques related to the design and implementation of representative intelligent information systems such as relational databases and search engines. Topics include (1) how relational database management systems are implemented; (2) how web search engines work and get hands on experience with developing search engines ; and (3) basic concepts about data mining.

[6] CSE888 – Information Retrieval Seminar, The Ohio State University. Winter 2008, Spring 2008.

DESCRIPTION: The course is a focused seminar on cutting-edge information retrieval (IR) topics. It covers papers on selected topic areas in IR.

## PROFESSIONAL ACTIVITIES

- Conference Organizer:
  - **Short Paper Program Committee Co-Chair**: ACM SIGIR International Conference on Research and Development in Information Retrieval 2021 (SIGIR'21)
  - **Steering committee member**: ACM International conference on Theoretical Information Retrieval (ICTIR). 2017-2020.
  - **Workshop Co-Chair**: ACM SIGIR International Conference on Research and Development in Information Retrieval 2018 (SIGIR'18)
  - **Doctoral Consortium Co-Chair**:  ACM International Conference on Web Search and Data Mining 2018 (WSDM'18)
  - **Workshop Co-organizer**: Workshop on Axiomatic Thinking for Information

Retrieval and Related Tasks (ATIR'18)
- o **Program Committee Co-Chair**: International Conference on the Theory of Information Retrieval 2017 (ICTIR'17)
- o **Short Paper Program Committee Co-Chair**: ACM SIGIR International Conference on Research and Development in Information Retrieval 2017 (SIGIR'17)
- o **Conference Co-Chair:** International Conference on the Theory of Information Retrieval 2016.  (ICTIR'16)
- o  **Proceedings Chair**: ACM International Conference on Information and Knowledge Management 2014 (CIKM'14)
- o **IR track PC Vice Chair**: ACM International Conference on Information and Knowledge Management 2009 (CIKM'09)
- o **Coordinator:**  Million query tracks in Text REtrieval Conference 2009 (TREC'09)

- Editorial Board
  - o **Associate editor**, ACM Transaction of Information Systems (TOIS)  2016-present
  - o **Associate editor**, Information Retrieval (IRJ) 2018-present
  - o **Guest editor**, IRJ special issue on axiomatic thinking for Information Retrieval. 2020

- Area Chair/ Senior PC member :
  - o ACM CIKM'20
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval 2020 (SIGIR'20)
  - o World Wide Web Conference 2020 (WWW'20)
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval 2019 (SIGIR'19)
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval 2018 (SIGIR'18)
  - o World Wide Web Conference 2018 (WWW'18)
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval 2016 (SIGIR'16)
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval 2015 (SIGIR'15)
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval 2014 (SIGIR'14)

- Mentor:
  - o ACM SIGIR Conference on Research and Development in Information Retrieval 2019 (SIGIR'19) Doctoral Consortium
  - o ACM SIGIR Conference on Research and Development in Information Retrieval 2013 (SIGIR'13) Doctoral Consortium
  - o IEEE International Conference on Data Engineering 2013 (ICDE'13) Ph.D Symposium

- Program Committee:
  - o ACM SIGIR International Conference on Research and Development in Information Retrieval (SIGIR), 2008-2013
  - o ACM International Conference on Information and Knowledge Management (CIKM), 2008-2013, 2018.
  - o European Conference on Information Retrieval (ECIR), 2008, 2014, 2015, 2016, 2017, 2018, 2019, 2020
  - o ACM International Conference on Web Search and Data Mining (WSDM), 2010-2012, 2016, 2018, 2020
  - o ACM International Conference on Knowledge Discovery and Data Mining (KDD),

2010, 2013, 2014
- o International World Wide Web Conference (WWW/WebConf), 2008-2019.
- o International Conference on the Theory of Information Retrieval (ICTIR), 2009, 2011, 2013, 2015
- o Annual Meeting of the Association for Computational Linguistics (ACL), 2010, 2013, 2014, 2015, 2018.
- o Human Language Technologies: Conference of the North American Chapter of the Association of Computational Linguistics (HLT-NAACL), 2009, 2012, 2019.
- o Conference on Empirical Methods in Natural Language Processing (EMNLP), 2008, 2010, 2014, 2018.
- o International Conference on Computational Linguistics (COLING), 2014
- o International Conference on Weblogs and Social Media (ICWSM), 2014-2018.
- o Conference on Artificial Intelligence (AAAI), 2011
- o International Conference on Machine Learning (ICML), 2008
- o IEEE International Symposium on Bioinformatics and Bioengineering (BIBE), 2010
- o Asia Information Retrieval Symposium (AIRS), 2008, 2016, 2018.
- o International Joint Conference on Natural Language Processing (IJCNLP), 2008
- o International Workshop on Data Mining for Online Advertising and Internet Economy (ADKDD), 2009
- o SWIFT Cybersecurity Conference, 2015.

- • Reviewer:
  - o ACM Transaction of Information Systems (TOIS)
  - o Information Retrieval (IRJ)
  - o Knowledge and Information Systems (KAIS)
  - o Information Processing and Management (IP&M)
  - o IEEE Transactions of Knowledge and Data Engineering (TKDE)
  - o IEEE Transactions on Dependable and Secure Computing (TDSC)
  - o IEEE Transaction of Parallel and Distributed Systems (TPDS)
  - o IEEE/ACM Transactios on Computational Biology and Bioinformatics (TCBB)
  - o World Wide Web: Internet and Web Information Systems Journal (WWWJ)
  - o IEEE Transactions on Systems, Man, and Cybernetics (TSMC)
  - o Information Processing Letters (IPL)
  - o ETRI Journal
  - o Journal of Computer Science and Technology (JCST)

- • Panelist/Grant Reviewer:
  - o The first annual conference for the Institute for Financial Service Analytics
  - o NSF IIS Division
  - o Israel Science Foundation

# UNIVERSITY, COLLEGE, AND DEPARTMENT SERVICE

- • Faculty Advisor for Women in ECE, University of Delaware, 2021-present
- • Chair of the Diversity and Inclusion Committee, Department of Electrical and Computer Engineering, University of Delaware, 2020-present
- • Member of the Graduate Committee, Department of Electrical and Computer Engineering, University of Delaware, 2011-2018, 2019-present.
- • Member of the Strategic Planning Committee, Department of Electrical and Computer Engineering, University of Delaware, 2020-present

- Faculty advisor for Women in Engineering, University of Delaware, 2020

- Member of the Chair Search Committee, Department of Electrical and Computer Engineering, University of Delaware, 2019.

- Member of the NSF Career Academy committee. 2018.

- Member of the UD NSF ADVANCE IAB.  2018-present

- Member of the College Faculty Diversity Working Group, 2017-2018

- Organizer of Research Day, Department of Electrical and Computer Engineering, University of Delaware, 2017-2019.

- Member of the JPMC Faculty Fellow Search Committee, University of Delaware, 2015.

- Member of the Teaching Faculty Search Committee, Department of Electrical and Computer Engineering, University of Delaware, 2015.

- Member of the Faculty Search Committee, Department of Electrical and Computer Engineering, University of Delaware, 2009-2010, 2013, 2017, 2018.

- Member of the Faculty Search Committee, Department of Computer and Information Sciences, University of Delaware, 2010, 2014.

- Member of the EECIS Lab Deputy Search Committee, Department of Electrical and Computer Engineering, University of Delaware, 2014.

- Member of the EECIS Lab Manager Search Committee, Department of Electrical and Computer Engineering, University of Delaware, 2013.

- Member of the Chair Search Committee, Department of Electrical and Computer Engineering, University of Delaware, 2009.

- Faculty advisor, ACM-W, The Ohio State University, 2007-2008.

- Member of the Diversity Excellence Council, College of Engineering, The Ohio State University, 2007-2008.