

# Fernando Diaz

diazf@acm.org  
http://84r.io

November 3, 2024

## Summary

I conduct and lead interdisciplinary research on the design and evaluation of search engines and recommender systems, including their relationship to fairness, accountability, transparency, and ethics (FATE).

## Education

PhD	<b>University of Massachusetts Amherst</b> Computer Science <i>“Regularizing Query-Based Retrieval Scores”</i> James Allan, W. Bruce Croft, Sridhar Mahadevan, John Staudenmayer	2008
MS	<b>University of Massachusetts Amherst</b> Computer Science <i>“Browsing-Based User Language Models”</i> James Allan	2004
BS	<b>University of Michigan Ann Arbor</b> Computer Science	1998

## Positions

<b>Carnegie Mellon University</b> Pittsburgh, PA	Associate Professor September 2023-present
---	---

I am an Associate Professor with tenure in the Language Technologies Institute (LTI) with current research covering three themes: quantitatively evaluating AI systems, retrieval-enhanced AI, and understanding the cultural impact of AI in domains like music and literature through interdisciplinary collaborations. Teaching includes development of a new course on quantitative evaluation of language technologies.

<b>Google Research</b> Montréal, QC Pittsburgh, PA	Staff Research Scientist September 2020-March 2023 April 2023-present
--	---

I conduct core research in the evaluation and design of search and recommendation systems, including fairness, accountability, transparency, and ethics of production systems. Outside of my core responsibilities, I continue to grow a multidisciplinary research program around the broader impacts of music creation, recommendation, consumption, and their longer terms effects.

<b>Microsoft Research</b> Montréal, QC	Senior Principal Research Manager, Assistant Research Director June 2018-July 2020
---	---

I assisted with the management of twenty five researchers focused on natural language processing, machine learning, and the societal impacts of artificial intelligence. I directly led a multidisciplinary research group focused on fairness, accountability, transparency, and ethics (FATE) of artificial intelligence systems. The group externally published basic research and actively collaborated with engineering teams in Microsoft. In addition, I maintained an active research agenda in core information retrieval and its application to production systems such as bing. Moreover, I started a research program around the broader impacts of music creation, recommendation, consumption, and their longer terms effects.

**Spotify**  
New York, NY

Director of Research  
March 2017-May 2018

I led the applied research organization of twenty researchers focused on search, recommendation, metrics, and evaluation. I helped define the company's research approach and culture, including how it interacted internally with product teams and externally with the academic community. In addition, I was an active member of the recommendations leadership team, involved in strategic planning for a two year product road map.

**Microsoft Research**  
New York, NY

Senior Researcher  
May 2012-March 2017

I led and participated in information retrieval research projects covering crisis informatics, attention modeling, fairness in machine learning, text summarization, and deep learning for search. These themes included extensive collaboration internally with product groups and externally with academic institutions.

**Yahoo! Research**  
New York, NY

Senior Research Scientist  
January 2008-March 2012

I led and participated in information retrieval research projects including federated search, time-sensitive web search, match-making systems, multi-document summarization, and modeling user mouse behavior. My role balanced developing production code, technology transfer from research to applied research and engineering groups, and presentation of research results to the wider research community.

**Institute for Pure and Applied Mathematics**  
Los Angeles, CA

Visiting Fellow  
September 2007-December 2007

I was a visiting fellow at UCLA for the program in "Mathematics of Knowledge and Search Engines".

**University of Massachusetts**  
Amherst, MA

Research Assistant  
September 2001-August 2007

I conducted dissertation research focused on machine learning approaches to information retrieval under the supervision of James Allan.

**Overture Research**  
Pasadena, CA

Intern  
June 2003-December 2003

I collaborated with Dr. Rosie Jones to develop tools for the analysis and classification of search queries into temporal categories.

**Sony Computer Science Laboratories**  
Tokyo, Japan

Intern  
June 2001-August 2001

As part of participation in the NSF Summer Institute in Japan, I worked with Dr. Hitoshi Iida and Dr. Koiti Hasida of Sony Computer Science Laboratories on the construction of a dialog-based information retrieval system.

**University of Massachusetts**  
Amherst, MA

Research Assistant  
September 2000-May 2001

I collaborated with Professors Victor Lesser and Beverly Woolf on a project which leveraged information retrieval techniques in a distributed educational system. We developed a system to infer symbolic and planning primitives from statistical text analysis.

**Bell & Howell Information and Learning**  
Ann Arbor, MI

Research Assistant  
May 1999-August 2000

I worked on the implementation of information retrieval research in a real world search system. Tasks included system design and engineering and statistical evaluation of system robustness.

**Academic  
Affiliation**

**Carnegie Mellon University**  
Pittsburgh, PA

Associate Professor  
August 2023-present

**McGill University**  
Montréal, QC

Adjunct Professor  
January 2019-present

**NYU Courant Institute of Mathematical Sciences**  
New York, NY

Adjunct Professor  
January 2013-December 2016

**NYU Tandon School of Engineering**  
New York, NY

Adjunct Professor  
January 2011-May 2011

**Publications**

**Metrics**

	<i>ACM DL</i>	<i>Scopus</i>	<i>Google Scholar</i>	<i>Semantic Scholar</i>	<i>AMiner</i>
articles	94	111	155	142	282
citations	3468	5712	11320	8379	11068
citations/article	36.9	51.5	73.0	59.0	39.2
h-index	30	38	52	44	48

**Conference Papers**

**Fernando Diaz**. Pessimistic evaluation. In *Proceedings of the Annual International ACM SIGIR Conference on Research and Development in Information Retrieval in the Asia Pacific Region*, 2024

Negar Arabzadeh, **Fernando Diaz**, and Junfeng He. Offline evaluation of set-based text-to-image generation. In *Proceedings of the Annual International ACM SIGIR Conference on Research and Development in Information Retrieval in the Asia Pacific Region*, 2024

Haolun Wu, Ofer Meshi, Masrour Zoghi, **Fernando Diaz**, Xue Liu, Craig Boutilier, and Maryam Karimzadehgan. Density-based user representation using gaussian process regression for

multi-interest personalized retrieval. In *Advances in Neural Information Processing Systems*, 2024

Fernando Diaz and Michael Madaio. Scaling laws do not scale. In *Proceedings of the 2024 AAAI/ACM Conference on AI, Ethics, and Society*, 2024

Ali Vardasbi, Maarten de Rijke, Fernando Diaz, and Mostafa Dehghani. Group membership bias. In *Proceedings of the 47th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2024

Lauren Wilcox, Robin Brewer, and Fernando Diaz. Ai consent futures: A case study on voice data collection with clinicians. *Proc. ACM Hum.-Comput. Interact.*, 7(CSCW2), oct 2023.

#### **Honorable Mention**

Andres Ferraro, Gustavo Ferreira, Fernando Diaz, and Georgina Born. Measuring commonality in recommendation of cultural content: Recommender systems to enhance cultural citizenship. In *Proceedings of the 16th ACM Conference on Recommender Systems*, 2022

Fernando Diaz and Andres Ferraro. Offline retrieval evaluation without evaluation metrics. In *Proceedings of the 45th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2022

Hamed Zamani, Fernando Diaz, Mostafa Dehghani, Donald Metzler, and Michael Bendersky. Retrieval-enhanced machine learning. In *Proceedings of the 45th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2022

Haolun Wu, Bhaskar Mitra, Chen Ma, Fernando Diaz, and Xue Liu. Joint multisided exposure fairness for recommendation. In *Proceedings of the 45th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2022

Filip Radlinski, Krisztian Balog, Fernando Diaz, Lucas Dixon, and Ben Wedin. On natural language user profiles for transparent and scrutable recommendation. In *Proceedings of the 45th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2022

Divya Shanmugam, Fernando Diaz, Samira Shabani, Michele Finck, and Asia Biega. Learning to limit data collection via scaling laws: A computational interpretation for the legal principle of data minimization. In *2022 ACM Conference on Fairness, Accountability, and Transparency*, 2022

Ruohan Li, Jianxiang Li, Bhaskar Mitra, Fernando Diaz, and Asia J. Biega. Exposing query identification for search transparency. In *Proceedings of the 31st International Conference on World Wide Web*, 2022

Ramya Srinivasan, Emily Denton, Jordan Famularo, Negar Rostamzadeh, Fernando Diaz, and Beth Coleman. Artsheets for art datasets. In *Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks*, 2021

Omer Kirnap, Fernando Diaz, Asia Biega, Michael Ekstrand, Ben Carterette, and Emine Yilmaz. Estimation of fair ranking metrics with incomplete judgments. In *Proceedings of the 30th International Conference on World Wide Web*, 2021

Jaime Arguello, Adam Ferguson, Emery Fine, Bhaskar Mitra, Hamed Zamani, and Fernando Diaz. Tip of the tongue known-item retrieval: A case study in movie identification. In *Proceedings of the 2021 Conference on Human Information Interaction and Retrieval*, 2021

Ronald Robertson, Alexandra Olteanu, Fernando Diaz, Milad Shokouhi, Peter Bailey, and Shashank Jain. Characterizing problematic email reply suggestions. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, 2021

- Fernando Diaz**, Bhaskar Mitra, Michael D. Ekstrand, Asia J. Biega, and Ben Carterette. Evaluating stochastic rankings with expected exposure. In *Proceedings of the 29th ACM International Conference on Information & Knowledge Management*, 2020. **Best Paper Nomination**
- Alexandra Olteanu, **Fernando Diaz**, and Gabriella Kazai. When are search completion suggestions problematic? *Proc. ACM Hum.-Comput. Interact.*, 4(CSCW2), October 2020. **Honorable Mention**
- Hamed Zamani, Bhaskar Mitra, Everest Chen, Gord Lueck, **Fernando Diaz**, Paul Bennett, Nick Craswell, and Susan Dumais. Analyzing and learning from user interactions for search clarification. In *Proceedings of the 43rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2020
- Asia J. Biega, Peter Potash, Hal Daumé III, **Fernando Diaz**, and Michèle Finck. Operationalizing the legal principle of data minimization for personalization. In *Proceedings of the 43rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2020
- Rishabh Mehrotra, James McInerney, Hugues Bouchard, Mounia Lalmas, and **Fernando Diaz**. Towards a fair marketplace: Counterfactual evaluation of the trade-off between relevance, fairness and satisfaction in recommendation systems. In *Proceedings of the 27th ACM conference on Information and knowledge management*, 2018
- Jean Garcia-Gathright, Brian St. Thomas, Christine Hosey, Zahra Nazari, and **Fernando Diaz**. Understanding and evaluating user satisfaction with music discovery. In *Proceedings of the 41st International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2018
- Rishabh Mehrotra, Amit Sharma, Ashton Anderson, **Fernando Diaz**, Hanna Wallach, and Emine Yilmaz. Auditing search engines for differential satisfaction across demographics. In *Proceedings of the 26th International Conference on World Wide Web*, 2017
- Omar Alonso, Serge-Eric Tremblay, and **Fernando Diaz**. Automatic generation of event timelines from social data. In *Proceedings of the 2017 ACM on Web Science Conference*, 2017
- Bhaskar Mitra, **Fernando Diaz**, and Nick Craswell. Learning to Match Using Local and Distributed Representations of Text for Web Search. In *Proceedings of the 26th International Conference on World Wide Web*, 2017
- Matthew Ekstrand-Abueg, Richard McCreddie, Virgil Pavlu, and **Fernando Diaz**. A study of realtime summarization metrics. In *Proceedings of the 25th ACM International on Conference on Information and Knowledge Management*, 2016
- Rahul Goel, Sandeep Soni, Naman Goyal, John Paparrizos, Hanna Wallach, **Fernando Diaz**, and Jacob Eisenstein. *The Social Dynamics of Language Change in Online Networks*. 2016
- Fernando Diaz**. Learning to rank with labeled features. In *Proceedings of the 2016 ACM International Conference on the Theory of Information Retrieval*, 2016
- Fernando Diaz**, Bhaskar Mitra, and Nick Craswell. Query expansion with locally-trained word embeddings. In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics*, 2016
- Fernando Diaz**, Qi Guo, and Ryen W. White. Search result prefetching using cursor movement. In *Proceedings of the 39th International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2016

- Christopher Kedzie, **Fernando Diaz**, and Kathleen McKeown. Real-time web scale event summarization using sequential decision making. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence*, 2016
- Fernando Diaz**. Pseudo-query reformulation. In *Proceedings of the 38th European Conference on IR Research*, 2016
- Jaime Arguello, Sandeep Avula, and **Fernando Diaz**. Using query performance predictors to improve spoken queries. In *Proceedings of the 38th European Conference on IR Research*, 2016
- Fernando Diaz**. Condensed list relevance models. In *Proceedings of the 2015 International Conference on The Theory of Information Retrieval*, May 2015
- Christopher Kedzie, Kathleen McKeown, and **Fernando Diaz**. Predicting salient updates for disaster summarization. In *Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing (Volume 1: Long Papers)*, July 2015
- Pavel Metrikov, **Fernando Diaz**, Sébastien Lahaie, and Justin Rao. Whole page optimization: How page elements interact with the position auction. In *EC '14: Proceedings of the fifteenth ACM conference on Electronic commerce*, 2014
- Alexandra Olteanu, Carlos Castillo, **Fernando Diaz**, and Sarah Vieweg. Crisislex: A lexicon for collecting and filtering microblogged communications in crises. In *Proceedings of The 8th International AAAI Conference on Weblogs and Social Media*, 2014
- Milad Shokouhi, Rosie Jones, Umut Ozertem, Karthik Raghunathan, and **Fernando Diaz**. Mobile query reformulations. In *Proceedings of the 37th Annual ACM SIGIR Conference*, 2014
- Peter B. Golbus, Imed Zitouni, Jin Young Kim, Ahmed Hassan, and **Fernando Diaz**. Contextual and dimensional relevance judgments for reusable serp-level evaluation. In *Proceedings of the 23rd International Conference on World Wide Web*, 2014
- Fernando Diaz**, Ryan W. White, Georg Buscher, and Dan Liebling. Robust models of mouse movement on dynamic web search results pages. In *Proceedings of the 22nd ACM conference on Information and knowledge management (CIKM 2013)*, 2013
- Muhammad Imran, Shady Elbassuoni, Carlos Castillo, **Fernando Diaz**, and Patrick Meier. Extracting information nuggets from disaster-related messages in social media. In *10th International Conference on Information Systems for Crisis Response and Management*, 2013. **Best Paper**
- Qi Guo, **Fernando Diaz**, and Elad Yom-Tov. Updating users about time critical events. In Pavel Serdyukov, Pavel Braslavski, Sergei O. Kuznetsov, Jaap Kamps, Stefan Rüger, Eugene Agichtein, Ilya Segalovich, and Emine Yilmaz, editors, *Advances in Information Retrieval*, volume 7814. 2013
- Jaime Arguello, **Fernando Diaz**, and Jamie Callan. Learning to aggregate vertical results into web search results. In *Proceedings of the 20th ACM international conference on Information and knowledge management*, 2011
- Elad Yom-Tov and **Fernando Diaz**. Out of sight, not out of mind: on the effect of social and physical detachment on information need. In *Proceedings of the 34th international ACM SIGIR conference on Research and development in Information Retrieval*, 2011. **Best Paper Nomination**
- Elad Yom-Tov and **Fernando Diaz**. Location and timeliness of information sources during news events. In *Proceedings of the 34th international ACM SIGIR conference on Research and development in Information Retrieval*, 2011

- Jangwon Seo, **Fernando Diaz**, Evgeniy Gabrilovich, Vanja Josifovski, and Bo Pang. Generalized link suggestions via web site clustering. In *Proceedings of the 20th International Conference on World Wide Web*, 2011
- Jaime Arguello, **Fernando Diaz**, Jamie Callan, and Ben Carterette. A methodology for evaluating aggregated search results. In *Proceedings of the 33rd European conference on Advances in information retrieval*, 2011. **Best Student Paper**
- Jing Bai, **Fernando Diaz**, Yi Chang, Zhaohui Zheng, and Keke Chen. Cross-market model adaptation with pairwise preference data for web search ranking. In *Proceedings of the 23rd International Conference on Computational Linguistics: Posters*, 2010
- Fernando Diaz**, Donald Metzler, and Sihem Amer-Yahia. Relevance and ranking in online dating systems. In *SIGIR '10: Proceeding of the 33rd international ACM SIGIR conference on Research and development in information retrieval*, 2010. **ICML 2011 Invited Cross-Conference Presentation**
- Jaime Arguello, **Fernando Diaz**, and Jean-François Paiement. Vertical selection in the presence of unlabeled verticals. In *Proceedings of the 33rd international ACM SIGIR conference on Research and development in information retrieval*, 2010
- Anlei Dong, Ruiqiang Zhang, Pranam Kolari, Jing Bai, **Fernando Diaz**, Yi Chang, Zhaohui Zheng, and Hongyuan Zha. Time is of the essence: improving recency ranking using twitter data. In *WWW '10: Proceedings of the 19th international conference on World wide web*, 2010
- Anlei Dong, Yi Chang, Zhaohui Zheng, Gilad Mishne, Jing Bai, Ruiqiang Zhang, Karolina Buchner, Ciya Liao, and **Fernando Diaz**. Towards recency ranking in web search. In *WSDM '10: Proceedings of the third ACM international conference on Web search and data mining*, 2010
- Jaime Arguello, Jamie Callan, and **Fernando Diaz**. Classification-based resource selection. In *CIKM '09: Proceeding of the 18th ACM conference on Information and knowledge management*, 2009
- Ahmed Hassan, Rosie Jones, and **Fernando Diaz**. A case study of using geographic cues to predict query news intent. In *Proceedings of the 17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, 2009
- Jaime Arguello, **Fernando Diaz**, Jamie Callan, and Jean-François Crespo. Sources of evidence for vertical selection. In *Proceedings of the 32nd international ACM SIGIR conference on Research and development in information retrieval*, 2009. **Best Paper**
- Fernando Diaz** and Jaime Arguello. Adaptation of offline vertical selection predictions in the presence of user feedback. In *SIGIR 2009*, 2009
- Fernando Diaz**. Integration of news content into web results. In *Proceedings of the Second ACM International Conference on Web Search and Data Mining*, 2009. **Best Paper**
- Fernando Diaz**. Improving relevance feedback in language modeling with score regularization. In *SIGIR '08: Proceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval*, 2008
- Fernando Diaz**. A method for transferring retrieval scores between collections with non-overlapping vocabularies. In *SIGIR '08: Proceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval*, 2008
- Fernando Diaz**. Theoretical bounds on and empirical robustness of score regularization to different similarity measures. In *SIGIR '08: Proceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval*, 2008

- Fernando Diaz**. Performance prediction using spatial autocorrelation. In *SIGIR '07: Proceedings of the 30th annual international ACM SIGIR conference on Research and development in information retrieval*, 2007
- Fernando Diaz** and Donald Metzler. Pseudo-aligned multilingual corpora. In Manuela M. Veloso, editor, *IJCAI 2007, Proceedings of the 20th International Joint Conference on Artificial Intelligence*, 2007
- Fernando Diaz** and Donald Metzler. Improving the estimation of relevance models using large external corpora. In *SIGIR '06: Proceedings of the 29th annual international ACM SIGIR conference on Research and development in information retrieval*, 2006
- Fernando Diaz**. Regularizing ad hoc retrieval scores. In *CIKM '05: Proceedings of the 14th ACM international conference on Information and knowledge management*, 2005
- Fernando Diaz** and Rosie Jones. Using temporal profiles of queries for precision prediction. In *SIGIR '04: Proceedings of the 27th annual international ACM SIGIR conference on Research and development in information retrieval*, 2004
- Diane Kelly, **Fernando Diaz**, Nicholas J. Belkin, and James Allan. A user-centered approach to evaluating topic models. In *26th European Conference on Information Retrieval Research*, 2004
- Fernando Diaz**. Using wearable computers to construct semantic representations of physical spaces. In *Proceedings of the Sixth International Symposium on Wearable Computers*, 2002

## Journal Articles

- Andres Ferraro, Gustavo Ferreira, **Fernando Diaz**, and Georgina Born. Measuring commonality in recommendation of cultural content to strengthen cultural citizenship. *ACM Trans. Recomm. Syst.*, 2(1), mar 2024
- Michael D. Ekstrand, Ben Carterette, and **Fernando Diaz**. Distributionally-informed recommender system evaluation. *ACM Trans. Recomm. Syst.*, 2(1), mar 2024
- Haolun Wu, Chen Ma, Bhaskar Mitra, **Fernando Diaz**, and Xue Liu. A multi-objective optimization framework for multi-stakeholder fairness-aware recommendation. *ACM Trans. Inf. Syst.*, 41(2), dec 2022
- Nancy Baym, Rachel Bergmann, Raj Bhargava, **Fernando Diaz**, Tarleton Gillespie, David Hesmondhalgh, Elena Maris, and Christopher Persaud. Making sense of metrics in the music industries. *International Journal of Communication*, 15(0), 2021
- Georgina Born, Jeremy Morris, **Fernando Diaz**, and Ashton Anderson. Artificial intelligence, music recommendation, and the curation of culture. *Schwartz Reisman Institute for Technology and Society White Paper*, 2021
- J. Shane Culpepper, **Fernando Diaz**, and Mark D. Smucker. Research frontiers in information retrieval: Report from the third strategic workshop on information retrieval in lorne (swirl 2018). *SIGIR Forum*, 52(1), August 2018
- Alexandra Olteanu, Carlos Castillo, **Fernando Diaz**, and Emre Kıcıman. Social data: Biases, methodological pitfalls, and ethical boundaries. *Frontiers in Big Data*, 2, 2017
- Ryen W. White, **Fernando Diaz**, and Qi Guo. Search result prefetching on desktop and mobile. *ACM Trans. Inf. Syst.*, 35(3), May 2017



- Fernando Diaz.** Worst practices for designing production information access systems. *SIGIR Forum*, 50(1), June 2016
- Fernando Diaz**, Michael Gamon, Jake Hofman, Emre Kiciman, and David Rothschild. Online and social media data as an imperfect continuous panel survey. *PLoS ONE*, 11(1), 2016
- Muhammad Imran, Carlos Castillo, **Fernando Diaz**, and Sarah Vieweg. Processing social media messages in mass emergency: A survey. *ACM Comput. Surv.*, 47(4), July 2015
- Fernando Diaz.** Experimentation standards for crisis informatics. *SIGIR Forum*, 48(2), December 2014
- Daniel G. Goldstein, Siddharth Suri, R. Preston McAfee, Matthew Ekstrand-Abueg, and **Fernando Diaz**. The economic and cognitive costs of annoying display advertisements. *Journal of Marketing Research*, 51(6), December 2014. **Finalist: Paul E. Green Award**
- Hemant Purohit, Carlos Castillo, **Fernando Diaz**, Amit Sheth, and Patrick Meier. Emergency-relief coordination on social media: Automatically matching resource requests and offers. *First Monday*, 19(1), 2014
- Elad Yom-Tov and **Fernando Diaz**. The effect of social and physical detachment on information need. *ACM Trans. Inf. Syst.*, 31(1), January 2013
- Yi Chang, Anlei Dong, Pranam Kolari, Ruiqiang Zhang, Yoshiyuki Inagaki, **Fernando Diaz**, Hongyuan Zha, and Yan Liu. Improving recency ranking using twitter data. *ACM Trans. Intell. Syst. Technol.*, 4(1), February 2013
- Fernando Diaz.** Regularizing query-based retrieval scores. *Information Retrieval*, 10(6), December 2007
- Rosie Jones and **Fernando Diaz**. Temporal profiles of queries. *ACM Trans. Inf. Syst.*, 25(3), July 2007

## Chapters

- Jaime Arguello and **Fernando Diaz**. *Relevance Ranking of Vertical Search Engines*, chapter Vertical Selection and Aggregation. 2013

## Books

- Michael D. Ekstrand, Anubrata Das, Robin Burke, and **Fernando Diaz**. *Fairness and Discrimination in Information Access Systems*. 2022

## Thesis

- Fernando Diaz.** *Autocorrelation and Regularization of Query-Based Retrieval Scores*. PhD thesis, University of Massachusetts Amherst, February 2008

## Workshop Papers

- Fernando Diaz**. Best-case retrieval evaluation: Improving the sensitivity of reciprocal rank with lexicographic precision. In *Proceedings of the 10th International Workshop on Evaluating Information Access co-located with the 17th NTCIR Conference on the Evaluation of Information Access Technologies (NTCIR 2023)*, 2023
- Esther Rolf, Ben Packer, Alex Beutel, and **Fernando Diaz**. Striving for data-model efficiency: Identifying data externalities on group performance. In *Workshop on Trustworthy and Socially Responsible Machine Learning, NeurIPS 2022*, 2022
- Sarah Bird, Solon Barocas, Kate Crawford, **Fernando Diaz**, and Hanna Wallach. Exploring or Exploiting? Social and Ethical Implications of Autonomous Experimentation in AI. In *Workshop on Fairness, Accountability, and Transparency in Machine Learning*, 2016
- David Abel, Alekh Agarwal, **Fernando Diaz**, Akshay Krishnamurthy, and Robert E. Schapire. Exploratory gradient boosting for reinforcement learning in complex domains. In *ICML 2016 Workshop on Abstraction in Reinforcement Learning*, 2016
- Fernando Diaz**. Experimentation standards for crisis informatics. In *KDD 2014 Workshop on Data Science for Social Good*, 2014
- Muhammad Imran, Shady Elbassuoni, Carlos Castillo, **Fernando Diaz**, and Patrick Meier. Practical extraction of disaster-relevant information from social media. In *Proceedings of the 22nd international conference on World Wide Web companion*, 2013
- Annie Louis, Eric Crestan, Youssef Billawala, Rao Shen, **Fernando Diaz**, and Jean-François Crespo. Use of query similarity for improving presentation of news verticals. In *Proceedings of the First International Workshop on Searching and Integrating New Web Data Sources - Very Large Data Search, Seattle, WA, USA, September 2, 2011*, 2011
- Rosie Jones, Ahmed Hassan, and **Fernando Diaz**. Geographic features in web search retrieval. In *Proceedings of the 2Nd International Workshop on Geographic Information Retrieval*, 2008
- Donald Metzler, **Fernando Diaz**, Trevor Strohman, and W. B. Croft. Umass at robust 2005: Using mixtures of relevance models for query expansion. In *The Fourteenth Text REtrieval Conference (TREC 2005) Notebook*, 2005
- Fernando Diaz** and James Allan. When less is more: Relevance feedback falls short and term expansion succeeds at hard 2005 (notebook version). In *The Fourteenth Text REtrieval Conference (TREC 2005) Notebook*, 2005
- Nasreen Abdul-Jaleel, James Allan, W. Bruce Croft, **Fernando Diaz**, Leah Larkey, Xiaoyan Li, Donald Metzler, Mark D. Smucker, Trevor Strohman, Howard Turtle, and Courtney Wade. Umass at trec 2004: Novelty and hard. In *Online Proceedings of 2004 Text REtrieval Conference*, 2004

## Teaching

### Academic

#### Quantitative Evaluation of Language Technologies

Carnegie Mellon University (Language Technologies Institute)

2024

Graduate level course on measurement and experimentation of language technologies in of-line and online environments. Prepared all material, lectures, and homeworks.

#### Web Search Engines

New York University (Courant)

2013-2016

Co-instructed (with Cong Yu) a graduate level course on web search engines. Classes consisted of lectures with evaluation based on homeworks, exams, and a final project. I presented half of the lectures. Class sizes ranged from thirty to fifty.

### **Web Search**

Asian Summer School in Information Access Summer 2013

Graduate level lecture on web search engines. Class size was 63 students.

### **Experimental Design for Information Systems**

University of Trento Summer 2012

Co-instructed (with Cong Yu) a graduate level course on information retrieval and data mining. Classes included a combination of lectures and paper discussion. I presented half of the lectures. Class size was 20 students.

### **Web Search Engines**

New York University (Tandon) Spring 2011

Co-instructed (with Cong Yu) a graduate level seminar on advanced information retrieval. Classes included a combination of lectures and paper discussion. I presented half of the lectures. Class size was 10 students.

### **Information Retrieval**

University of Massachusetts Amherst Fall 2006

Prepared slides and provided lectures for a graduate-level information retrieval course. Instructor: Professor James Allan.

### **Applied Information Theory**

University of Massachusetts Amherst Fall 2006

Provided grading support for a graduate-level information theory course. Instructor: Professor Erik Learned-Miller.

### **Databases**

University of Massachusetts Amherst Spring 2006

Provided teaching assistance for a graduate-level database course. This included grading homeworks, holding office hours, and maintaining a course web page. Instructors: Professors Yanlei Diao and Gerome Miklau.

### **Tutorials**

Charles L. A. Clarke, [Fernando Diaz](#), and Negar Arabzadeh. Preference-based offline evaluation. In *Proceedings of the Sixteenth ACM International Conference on Web Search and Data Mining*, 2023

Brian St. Thomas, Praveen Chandar, Christine Hosey, and [Fernando Diaz](#). Mixed method development of evaluation metrics. In *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining*, 2021

- Praveen Chandar, **Fernando Diaz**, and Brian St. Thomas. Beyond accuracy: Grounding evaluation metrics for human-machine learning systems. In *Advances in Neural Information Processing Systems*, 2020
- Michael D Ekstrand, Robin Burke, and **Fernando Diaz**. Fairness and discrimination in recommendation and retrieval. In *Proceedings of the 13th ACM Conference on Recommender Systems*, 2019
- Michael D. Ekstrand, Robin Burke, and **Fernando Diaz**. Fairness and discrimination in retrieval and recommendation. In *Proceedings of the 42Nd International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2019
- Jean Garcia-Gathright, Christine Hosey, Brian St. Thomas, Ben Carterette, and **Fernando Diaz**. Mixed methods for evaluating user satisfaction. In *Proceedings of the 12th ACM Conference on Recommender Systems*, 2018
- Carlos Castillo, **Fernando Diaz**, and Hemant Purohit. Leveraging social media and web of data to assist crisis response coordination. In *SDM '14: Proceedings of the 14th SIAM International Conference on Data Mining*, 2014
- Kira Radinsky, **Fernando Diaz**, Susan Dumais, Milad Shokouhi, Anlei Dong, and Yi Chang. Temporal web dynamics and its application to information retrieval. In *Proceedings of the sixth ACM international conference on Web search and data mining*, 2013
- Fernando Diaz**, Jaime Arguello, and Milad Shokouhi. Integrating and ranking aggregated content on the web. In *WWW '12: Proceedings of the 21th international conference on World wide web*, 2012
- Fernando Diaz**, Mounia Lalmas, and Milad Shokouhi. From federated to aggregated search. In *SIGIR '10: Proceedings of the 33rd annual international ACM SIGIR conference on Research and development in information retrieval*, 2010

## Supervision

### Current Students

Alfredo Gomez, with Mona Diab  
 Athiya Deviyani  
 Danny To Eun Kim  
 Jessica Huynh, with Jeffrey Bigham  
 Shaily Bhatt

### Former Interns

Negar Arabzadeh (2022), PhD Student, University of Waterloo  
 Esther Rolf (2021), Postdoctoral Scholar, Harvard University  
 Maria Antoniak (2020), Young Investigator, Allen Institute for AI  
 Daniel Cohen (2019), Research Scientist, Dataminr  
 Ashudeep Singh (2019), Research Scientist, Pinterest  
 Jesse Anderton (2017), Research Scientist, Spotify  
 Rishabh Mehrotra (2016), Director of Machine Learning, ShareChat  
 Cristina Garbacea (2016), PhD Student, University of Michigan  
 Chris Kedzie (2015), Senior Researcher, Microsoft Semantic Machines  
 David Abel (2015), Research Scientist, DeepMind  
 Ioannis Paparrizos (2014), Assistant Professor, Ohio State University  
 Matthew Ekstrand-Abeug (2013), Software Engineer, Google  
 Pavel Metrikov (2013), Data Scientist, Microsoft  
 Teresa Bracamonte (2013), Developer, Fintual  
 Qi Guo (2011), Software Engineer, Meta  
 Jangwon Seo (2010), Staff Software Engineer, Google

Jaime Arguello (2009, 2010), Associate Professor, University of North Carolina Chapel Hill  
Ahmed Hassan (2009), Senior Principal Research Manager, Microsoft Research

#### **PhD Examiner**

Jesse Anderton, Northeastern University, 2019  
Rodrigo Nogueira, New York University, 2019  
Matthew Ekstrand-Abeug, Northeastern University, 2017  
Maria-Hendrike Peetz, University of Amsterdam, 2015  
Jaime Arguello, Carnegie Mellon University, 2011

## **Patents**

### **Granted**

**Fernando Diaz**, Donald Metzler, and Sihem Amer-Yahia. System for determining and optimizing for relevance in match-making systems, 2016. US Patent 9,449,282

**Fernando Diaz**. Predicting audience response for scripting, 2015. US Patent 9,159,031

Yi Chang, Zhaohui Zheng, **Fernando Diaz**, and Jing Bai. Cross-market model adaptation with pairwise preference data, 2013. US Patent 8,489,590

Rosie Jones, **Fernando Diaz**, and Ahmed Hassan Awadallah. System and method of geo-based prediction in search result selection, 2013. US Patent 8,352,466

**Fernando Diaz**. System for integrating content from external corpora into primary search engine results, 2012. US Patent 8,150,874

Rosie Jones and **Fernando Diaz**. System and method for providing temporal search results in response to a search query, 2009. US Patent 7,577,651

### **Applied**

Vanja Josifovski, Evgeniy Gabrilovich, Bo Pang, **Fernando Diaz**, and Jangwon Seo. Method or system for identifying website link suggestions, 2013. US Patent Application 13/339,142

Elad Yom-Tov and **Fernando Diaz**. Using user's social connection and information in web searching, 2012. US Patent Application 13/111,656

## **Recognition**

### **Awards**

SIGIR Academy, 2024  
CSCW Honorable Mention, 2023  
CIKM Best Paper Nomination, 2020  
CSCW Honorable Mention, 2020  
British Computer Society Karen Spärck Jones Award, 2017  
Finalist for Paul E. Green Award, Journal of Marketing Research, 2015  
ISCRAM Best Paper Award, 2013  
SIGIR Best Paper Nomination, 2011  
ECIR Best Student Paper Award, 2011  
SIGIR Best Paper Award, 2009  
WSDM Best Paper Award, 2009

### **Fellowships and Chairs**

Canada CIFAR AI Chair, 2019  
UCLA Institute for Pure and Mathematics Postdoctoral Fellow, 2006  
National Science Foundation Summer Institute in Japan, 2001  
University of Massachusetts Opportunity Fellowship, 2000

### **Service**

#### **Organizational Leadership**

Dagstuhl Seminar: Towards a Multidisciplinary Vision for Culturally Inclusive Generative AI, Co-Organizer, 2025  
SIGIR, General Co-Chair, 2021  
SIGIR Workshop on Retrieval-Enhanced Machine Learning, Co-Organizer, 2023  
TREC Tip of the Tongue Track, Co-Organizer, 2023-2024  
TREC Fair Ranking Track, Co-Organizer, 2019-2020  
CIFAR Workshop on AI and the Curation of Culture, Co-Organizer, 2019  
Strategic Workshop on Information Retrieval in Lorne, Co-Organizer, 2018, 2024  
NeurIPS Workshop on Cultures of AI and AI for Culture, Co-Organizer, 2022  
CVPR Workshop on Ethical Considerations in Creative applications of Computer Vision, Co-Organizer, 2022  
NeurIPS Workshop on Algorithmic Fairness through the Lens of Causality and Interpretability, Co-Organizer, 2020  
Workshop on Social Web for Disaster Management, Co-Organizer, 2015-2016  
WSDM, General Co-Chair, 2014  
TREC Web Track, Co-Organizer, 2013-2014  
TREC Temporal Summarization Track, Co-Organizer, 2013-2014  
NTCIR Recipe Search Track, Co-Organizer, 2014  
SIGIR Workshop on Time-aware Information Access, Co-Organizer, 2012-2014  
SIGIR Workshop on Social Web Search and Mining: Analysis of User Generated Content Under Crisis, Co-Organizer, 2011

#### **Organizational Support**

ACM FAccT Steering Committee, Member, 2018-present  
ACM Ethics & Plagiarism Committee, Member, 2022-present  
ACM SIGIR, Awards Chair, 2014-2016

#### **Technical Expertise**

FAT\*, Program Co-Chair, 2019  
SIGIR, Perspectives Track Chair, 2021  
SIGIR Forum, Editor, 2012-2014  
WWW, Track Chair, 2017  
CIKM, Vice Chair, 2009  
SIGIR, Senior Program Committee Member, 2011-2020  
WSDM, Senior Program Committee Member, 2012-2018, 2023  
CIKM, Senior Program Committee Member, 2012  
NeurIPS, Ethics Reviewer, 2021-2022  
NeurIPS, Datasets and Benchmarks Reviewer, 2022  
SIGIR, Perspectives Program Committee Member, 2022  
SIGIR, Program Committee Member, 2008-2010  
CIKM, Program Committee Member, 2010-2011, 2014  
WSDM, Program Committee Member, 2010-2011  
WWW, Program Committee Member, 2011-2014

### **Skills**

Extensive programming C/C++ experience on Unix platforms. Moderate experience with audio programming on iOS. Extensive experience with production machine learning environments,

including feature generation, model training, and evaluation. Experience with pytorch, GNU Scientific Library, Matlab/Octave, R, Python, Perl, Java, and scientific computing in a clustered environment. English and Spanish fluency. Some French.

## **References**

*Available on request.*