

# Marc Najork

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## EXPERIENCE

Mar 2014–now	<b>Google Inc., Mountain View, CA</b> <i>Distinguished Research Scientist</i> (April 2023–now) <i>Senior Director, Research Engineering</i> (Nov 2021–April 2023) <i>Director, Research Engineering</i> (Nov 2017–Oct 2021) <i>Senior Staff Research Scientist</i> (Mar 2014–Oct 2017) <ul style="list-style-type: none"><li>• Since May 2023, individual contributor in Google DeepMind. Exploring challenges in Generative Information Retrieval.</li><li>• From Jan. 2015 until April 2023, managed a group of (at peak) 69 FTE in Google Research. Virtually all of our research output is used in Google products. Cumulative revenue impact ~\$5B ARR.</li><li>• From Mar. 2014 until Dec. 2014, part of the Personal Search Infrastructure team. Worked on HappyHour, a processing and serving system for structured personal data.</li></ul>
Oct 2001–Mar 2014	<b>Microsoft Corporation, Microsoft Research Silicon Valley, Mountain View, CA</b> <i>Principal Researcher</i> (Mar 2006–Mar 2014) <i>Senior Researcher</i> (Oct 2005–Mar 2006) <i>Researcher</i> (Oct 2001–Sep 2005) <ul style="list-style-type: none"><li>• Collaborated with Bing on various facets of social search.</li><li>• Explored link-based ranking techniques for web search results.</li><li>• Developed the Scalable Hyperlink Store, a specialized database giving extremely fast access to nodes and edges of the web graph induced by the Bing corpus.</li><li>• Explored techniques for identifying spam web pages.</li><li>• Consulted on large-scale web crawling for Bing.</li><li>• Principal contributor to PageTurner, a large-scale study of the evolution of web pages.</li><li>• Contributed to Boxwood, a distributed, scalable, and reliable B-Tree system.</li><li>• Four Microsoft Gold Star awards; three Microsoft Research Tech Transfer Awards; Microsoft Corporate Bench Program class of 2005; promoted to Partner level in 2009.</li></ul>
Oct 1993–Sep 2001	<b>Digital Equipment Corporation (Compaq since 1998), Systems Research Center, Palo Alto, CA</b> <i>Manager, Programming Technology</i> (Jun 2001–Sep 2001) <i>Senior Member of Technical Staff</i> (Sep 1999–Jun 2001) <i>Software Principal Engineer</i> (Oct 1993–Sep 1999) <ul style="list-style-type: none"><li>• Managed a group of five Ph.D.-level researchers. Responsible for four projects.</li><li>• Principal contributor to Mercator, an extensible, high-performance web crawler. Mercator formed the web crawling component of AltaVista's Search Engine 3 product, which sold to over 1,200 enterprise customers, and it became the standard web crawler of the various AltaVista sites.</li><li>• Main contributor to JCAT, a Java-based algorithm animation system.</li><li>• Worked on tools and techniques for building distributed, collaborative, web-based applications.</li><li>• Designed and implemented Obliq-3D, a fast-turnaround, interactive 3D animation environment.</li></ul>

## EDUCATION

January 1994	<b>Ph.D. in Computer Science, University of Illinois at Urbana-Champaign</b> Dissertation " <i>Programming in Three Dimensions</i> " supervised by Prof. Simon Kaplan.
May 1989	<b>Diplom-Wirtschaftsinformatiker, Technical University of Darmstadt, Germany</b> Program covers Computer Science, Mathematics, Business Administration, Economics, and Law.

## HONORS

2023	Fellow of the American Association for the Advancement of Science (AAAS) " <i>For distinguished contributions to the field of information retrieval, specifically to web search and web content analysis</i> "
2022	Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA)
2021	Elected member of the ACM SIGIR Academy
2020	Fellow of the Institute of Electrical and Electronics Engineers (IEEE) " <i>For contributions to web crawling and web data processing</i> "
2019	Fellow of the Association for Computing Machinery (ACM) " <i>For contributions to web search and web science</i> "

P36	US Patent 11,830,269. <i>System for information extraction from form-like documents</i> . Inventors: Sandeep Tata, Bodhisattwa Majumder, Qi Zhao, James Bradley Wendt, <b>Marc Najork</b> , Navneet Potti. Assignee: Google LLC. Filed 2022-07-18, issued 2023-11-28.
P35	US Patent 11,694,034. <i>Systems and methods for machine-learned prediction of semantic similarity between documents</i> . Inventors: Liu Yang, <b>Marc Najork</b> , Michael Bendersky, Mingyang Zhang, Cheng Li. Assignee: Google LLC. Filed 2020-10-23, issued 2023-07-04.
P34	US Patent 11,551,150. <i>Training and/or utilizing a model for predicting measures reflecting both quality and popularity of content</i> . Inventors: Spurthi Amba Hombaiah, Vladimir Ofitserov, Mike Bendersky, <b>Marc Alexander Najork</b> . Assignee: Google LLC. Filed 2020-07-06, issued 2023-01-10.
P33	US Patent 11,526,752. <i>Systems and methods for active learning</i> . Inventors: Qi Zhao, Abbas Kazerouni, Sandeep Tata, Jing Xie, <b>Marc Najork</b> . Assignee: Google LLC. Filed 2020-01-23, issued 2022-12-13.
P32	US Patent 11,393,233. <i>System for information extraction from form-like documents</i> . Inventors: Sandeep Tata, Bodhisattwa Majumder, Qi Zhao, James Bradley Wendt, <b>Marc Najork</b> , Navneet Potti. Assignee: Google LLC. Filed 2020-06-02, issued 2022-07-19.
P31	US Patent 11,238,058. <i>Search and retrieval of structured information cards</i> . Inventors: <b>Marc Alexander Najork</b> , Sujith Ravi, Michael Bendersky, Peter Shao-sen Young, Timothy Youngjin Sohn, Mingyang Zhang, Thomas Nelson, Xuanhui Wang. Assignee: Google LLC. Filed 2020-11-02, issued 2022-02-01.
P30	US Patent 10,970,293. <i>Ranking search result documents</i> . Inventors: Mike Bendersky, <b>Marc Alexander Najork</b> , Donald Metzler, Xuanhui Wang. Assignee: Google LLC. Filed 2019-08-26, issued 2021-04-06.
P29	US Patent 10,824,630. <i>Search and retrieval of structured information cards</i> . Inventors: <b>Marc Alexander Najork</b> , Sujith Ravi, Michael Bendersky, Peter Shao-sen Young, Timothy Youngjin Sohn, Mingyang Zhang, Thomas Nelson, Xuanhui Wang. Assignee: Google LLC. Filed 2016-10-26, issued 2020-11-03.
P28	US Patent 10,540,610. <i>Generating and applying a trained structured machine learning model for determining a semantic label for content of a transient segment of a communication</i> . Inventors: Jie Yang, Amr Ahmed, Luis Garcia Pueyo, Mike Bendersky, Amitabh Saikia, Marc-Allen Cartright, <b>Marc Alexander Najork</b> , MyLinh Yang, Hui Tan, Weinan Zhang, Vanja Josifovski, Alexander J. Smola. Assignee: Google LLC. Filed 2016-04-27, issued 2020-01-21.
P27	US Patent 10,394,832. <i>Ranking search result documents</i> . Inventors: Mike Bendersky, <b>Marc Alexander Najork</b> , Donald Metzler, Xuanhui Wang. Assignee: Google LLC. Filed 2016-10-24, issued 2019-08-27.
P26	US Patent 9,953,185. <i>Identifying query patterns and associated aggregate statistics among search queries</i> . Inventors: Mike Bendersky, Donald Metzler, <b>Marc Alexander Najork</b> , Dor Naveh, Vlad Panait, Xuanhui Wang. Assignee: Google LLC. Filed 2015-11-24, issued 2017-05-25.
P25	US Patent 8,949,232. <i>Social network recommended content and recommending members for personalized search results</i> . Inventors: Timothy Harrington, Rajesh Shenoy, <b>Marc Najork</b> , Rina Panigrahy. Assignee: Microsoft Corporation. Filed 2011-10-04, issued 2015-02-03.
P24	US Patent 8,856,112. <i>Considering document endorsements when processing queries</i> . Inventors: <b>Marc A. Najork</b> , Rina Panigrahy, Rajesh K. Shenoy. Assignee: Microsoft Corporation. Filed 2011-08-26, issued 2014-10-01.
P23	US Patent 8,666,920. <i>Estimating shortest distances in graphs</i> . Inventors: <b>Marc A. Najork</b> , Sreenivas Gollapudi, Rina Panigrahy, Atish Das Sarma. Assignee: Microsoft Corporation. Filed 2011-08-18, issued 2014-03-04.
P22	US Patent 8,392,366. <i>Changing number of machines running distributed hyperlink database</i> . Inventors: <b>Marc A. Najork</b> . Assignee: Microsoft Corporation. Filed 2006-08-29, issued 2013-03-05.
P21	US Patent 8,209,305. <i>Incremental update scheme for hyperlink database</i> . Inventors: <b>Marc A. Najork</b> . Assignee: Microsoft Corporation. Filed 2007-10-25, issued 2012-06-26.
P20	US Patent 7,962,510. <i>Using content analysis to detect spam web pages</i> . Inventors: <b>Marc Alexander Najork</b> , Dennis Craig Fetterly, Mark Steven Manasse, Alexandros Ntoulas. Assignee: Microsoft Corporation. Filed 2005-02-11, issued 2011-06-14.

- P19 | US Patent 7,818,334. *Query dependent link-based ranking using authority scores*. Inventors: **Marc A. Najork**. Assignee: Microsoft Corporation. Filed 2007-10-22, issued 2010-10-19.
- P18 | US Patent 7,792,854. *Query dependent link-based ranking*. Inventors: **Marc A. Najork**. Assignee: Microsoft Corporation. Filed 2007-10-22, issued 2010-09-07.
- P17 | US Patent 7,783,671. *Deletion and compaction using versioned nodes*. Inventors: **Marc A. Najork**, Chandramohan A. Thekkath. Filed 2006-03-16, issued 2010-08-24.
- P16 | US Patent 7,739,281. *Systems and methods for ranking documents based upon structurally interrelated information*. Inventors: **Marc A. Najork**. Assignee: Microsoft Corporation. Filed 2003-09-16, issued 2010-06-15.
- P15 | US Patent 7,680,785. *Systems and methods for inferring uniform resource locator (URL) normalization rules*. Inventors: **Marc Alexander Najork**. Assignee: Microsoft Corporation. Filed 2005-03-25, issued 2010-03-16.
- P14 | US Patent 7,627,777. *Fault tolerance scheme for distributed hyperlink database*. Inventors: **Marc Alexander Najork**. Assignee: Microsoft Corporation. Filed 2006-03-17, issued 2009-12-01.
- P13 | US Patent 7,340,467. *System and method for maintaining a distributed database of hyperlinks*. Inventors: **Marc A. Najork**. Assignee: Microsoft Corporation. Filed 2003-04-15, issued 2008-03-04.
- P12 | US Patent 7,139,747. *System and method for distributed web crawling*. Inventors: **Marc Alexander Najork**. Assignee: Hewlett-Packard Development Company. Filed 2000-11-03, issued 2006-11-21.
- P11 | US Patent 7,082,438. *Algorithm for tree traversals using left links*. Inventors: **Marc A. Najork**, Chandramohan A. Thekkath. Assignee: Microsoft Corporation. Filed 2005-09-01, issued 2006-07-25.
- P10 | US Patent 7,072,904. *Deletion and compaction using versioned nodes*. Inventors: **Marc A. Najork**, Chandramohan A. Thekkath. Assignee: Microsoft Corporation. Filed 2002-12-02, issued 2006-07-04.
- P9 | US Patent 7,007,027. *Algorithm for tree traversals using left links*. Inventors: **Marc A. Najork**, Chandramohan A. Thekkath. Assignee: Microsoft Corporation. Filed 2002-12-02, issued 2006-02-28.
- P8 | US Patent 6,952,730. *System and method for efficient filtering of data set addresses in a web crawler*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon. Assignee: Hewlett-Packard Development Company. Filed 2000-06-30, issued 2005-10-04.
- P7 | US Patent 6,910,077. *System and method for identifying cloaked web servers*. Inventors: **Marc A. Najork**. Assignee: Hewlett-Packard Development Company. Filed 2002-01-04, issued 2005-06-21.
- P6 | US Patent 6,594,694. *System and method for near-uniform sampling of web page addresses*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon, Michael Mitzenmacher, Monika H. Henzinger. Assignee: Hewlett-Packard Development Company. Filed 2000-05-15, issued 2003-07-15.
- P5 | US Patent 6,377,984. *Web crawler system using parallel queues for queuing data sets having common address and concurrently downloading data associated with data set in each queue*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon. Assignee: Alta Vista Company. Filed 1999-11-02, issued 2002-04-23.
- P4 | US Patent 6,351,755. *System and method for associating an extensible set of data with documents downloaded by a web crawler*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon. Assignee: Alta Vista Company. Filed 1999-11-02, issued 2002-02-26.
- P3 | US Patent 6,321,265. *System and method for enforcing politeness while scheduling downloads in a web crawler*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon. Assignee: Alta Vista Company. Filed 1999-11-02, issued 2001-11-20.
- P2 | US Patent 6,301,614. *System and method for efficient representation of data set addresses in a web crawler*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon. Assignee: Alta Vista Company. Filed 1999-11-02, issued 2001-10-09.
- P1 | US Patent 6,263,364. *Web crawler system using plurality of parallel priority level queues having distinct associated download priority levels for prioritizing document downloading and maintaining document freshness*. Inventors: **Marc Alexander Najork**, Clark Allan Heydon, Janet Lynn Wiener. Assignee: Alta Vista Company. Filed 1999-11-02, issued 2001-07-17.

## CONFERENCE AND WORKSHOP PAPERS

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- C99 | Spurthi Amba Hombaiah, Tao Chen, Mingyang Zhang, Michael Bendersky, **Marc Najork**, Matt Colen, Sergey Levi, Vladimir Ofitserov, Tanvir Amin. *Creator Context for Tweet Recommendation*. In Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing: Industry Track, pages 353–363, December 2023.
- C98 | Sanket Vaibhav Mehta, Jai Gupta, Yi Tay, Mostafa Dehghani, Vinh Q. Tran, Jinfeng Rao, **Marc Najork**, Emma Strubell, Donald Metzler. *DSI++: Updating Transformer Memory with New Documents*. In Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing, pages 8198–8213, December 2023.
- C97 | Aijun Bai, Rolf Jagerman, Zhen Qin, Le Yan, Pratyush Kar, Bing-Rong Lin, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Regression Compatible Listwise Objectives for Calibrated Ranking*. In Proceedings of the 32nd ACM International Conference on Information and Knowledge Management, pages 4502–4508, October 2023.
- C96 | Yunan Zhang, Le Yan, Zhen Qin, Honglei Zhuang, Jiaming Shen, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Towards Disentangling Relevance and Bias in Unbiased Learning to Rank*. In Proceedings of the 2023 ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 5618–5627, August 2023.
- C95 | Karan Samel, Cheng Li, Weize Kong, Tao Chen, Mingyang Zhang, Shaleen Gupta, Swaraj Khadanga, Wensong Xu, Xingyu Wang, Kashyap Kolipaka, Michael Bendersky, **Marc Najork**. *End-to-End Query Term Weighting*. In Proceedings of the 2023 ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 4778–4786, August 2023.
- C94 | Aditi Chaudhary, Karthik Raman, Krishna Srinivisan, Kazuma Hashimoto, Mike Bendersky, **Marc Najork**. *Exploring the Viability of Synthetic Query Generation for Relevance Prediction*. In Proceedings of the SIGIR 2023 Workshop on eCommece, July 2023.
- C93 | Jiaming Shen, Jialu Liu, Dan Finnie, Negar Rahmati, Michael Bendersky, **Marc Najork**. *“Why is this misleading?” Detecting News Headline Hallucinations with Explanations*. In Proceedings of the ACM Web Conference 2023, pages 1662–1672, April 2023.
- C92 | Cheng Li, Yaping Qi, Hayk Zakaryan, Mingyang Zhang, Michael Bendersky, Yonghua Wu, **Marc Najork**. *Job Type Extraction for Service Businesses*. In Companion Proceedings of the ACM Web Conference 2023, pages 401–405, April 2023.
- C91 | Beliz Gunel, Sandeep Tata, **Marc Najork**. *STRUM: Extractive Aspect-Based Contrastive Summarization*. In Companion Proceedings of the ACM Web Conference 2023, pages 28–31, April 2023.
- C90 | Rolf Jagerman, Xuanhui Wang, Honglei Zhuang, Zhen Qin, Michael Bendersky, **Marc Najork**. *Rax: Composable Learning-to-Rank using JAX*. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 3051–3060, August 2022.
- C89 | Le Yan, Zhen Qin, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Scale Calibration of Deep Ranking Models*. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 4300–4309, August 2022.
- C88 | Rolf Jagerman, Zhen Qin, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *On Optimizing Top-K Metrics for Neural Ranking Models*. In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 2303–2307, July 2022.
- C87 | Le Yan, Zhen Qin, Honglei Zhuang, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Revisiting Two-tower Models for Unbiased Learning to Rank*. In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 2410–2414, July 2022.
- C86 | Tao Chen, Mingyang Zhang, Jing Lu, Michael Bendersky, **Marc Najork**. *Out-of-Domain Semantics to the Rescue! Zero-Shot Hybrid Retrieval Models*. In Proceedings of the 44th European Conference on Information Retrieval, pages 95–110, April 2022.
- C85 | Chen Qu, Weize Kong, Liu Yang, Mingyang Zhang, Michael Bendersky, **Marc Najork**. *Natural Language Understanding with Privacy-Preserving BERT*. In Proceedings of the 30th ACM International Conference on Information and Knowledge Management, pages 1488–1497, November 2021.

- C84 | Spurthi Amba Hombaiah, Tao Chen, Mingyang Zhang, Michael Bendersky, **Marc Najork**. *Dynamic Language Models for Continuously Evolving Content*. In Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 2514–2524, August 2021.
- C83 | Zhen Qin, Honglei Zhuang, Rolf Jagerman, Xinyu Qian, Po Hu, Dan Chary Chen, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Bootstrapping Recommendations at Chrome Web Store*. In Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 3483–3491, August 2021.
- C82 | Nicholas Monath, Kumar Avinava Dubey, Guru Guruganesh, Manzil Zaheer, Amr Ahmed, Andrew McCallum, Gokhan Mergen, **Marc Najork**, Mert Terzihan, Bryon Tjanaka, Yuan Wang, Yuchen Wu. *Scalable Agglomerative Clustering*. In Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 1245–1255, August 2021.
- C81 | Beliz Gunel, Navneet Potti, Sandeep Tata, James Wendt, **Marc Najork**, Jing Xie. *Data-Efficient Information Extraction from Form-Like Documents*. In Proceedings of the 2nd Document Intelligence Workshop at KDD 2021, August 2021.
- C80 | Krishna Srinivasan, Karthik Raman, Jiecao Chen, Michael Bendersky, **Marc Najork**. *WIT: Wikipedia-based Image Text Dataset for Multimodal Multilingual Machine Learning*. In Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 2443–2449, July 2021.
- C79 | Honglei Zhuang, Zhen Qin, Shuguang Han, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Ensemble Distillation for BERT-Based Ranking Models*. In Proceedings of the 7th ACM SIGIR International Conference on the Theory of Information Retrieval, pages 131–136, July 2021.
- C78 | Zhen Qin, Le Yan, Honglei Zhuang, Yi Tay, Rama Kumar Pasumarthi, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Are Neural Ranters Still Outperformed by Gradient Boosted Decision Trees?*. In Proceedings of the 9th International Conference on Learning Representations, May 2021.
- C77 | Rolf Jagerman, Weize Kong, Rama Kumar Pasumarthi, Zhen Qin, Michael Bendersky, **Marc Najork**. *Improving Cloud Storage Search with User Activity*. In Proceedings of the 14th ACM International Conference on Web Search and Data Mining, pages 508–516, March 2021.
- C76 | Jiecao Chen, Liu Yang, Karthik Raman, Michael Bendersky, Jung-Jung Yeh, Yun Zhou, **Marc Najork**, Danyang Cai, Ehsan Emadzadeh. *DiPair: Fast and Accurate Distillation for Trillion-Scale Text Matching and Pair Modeling*. In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing: Findings, pages 2925–2937, November 2020.
- C75 | Liu Yang, Mingyang Zhang, Cheng Li, Michael Bendersky, **Marc Najork**. *Beyond 512 Tokens: Siamese Multi-depth Transformer-based Hierarchical Encoder for Long-Form Document Matching*. In Proceedings of the 29th ACM International Conference on Information and Knowledge Management, pages 1725–1734, October 2020.
- C74 | Rama Kumar Pasumarthi, Honglei Zhuang, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Permutation Equivariant Document Interaction Network for Neural Learning to Rank*. In Proceedings of the 6th ACM SIGIR International Conference on the Theory of Information Retrieval, pages 145–148, September 2020.
- C73 | Weize Kong, Michael Bendersky, **Marc Najork**, Brandon Vargo, Mike Colagrosso. *Learning to Cluster Documents into Workspaces Using Large Scale Activity Logs*. In Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 2416–2424, August 2020.
- C72 | Honglei Zhuang, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Feature Transformation for Neural Ranking Models*. In Proceedings of the 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 1649–1652, July 2020.
- C71 | Bodhisattwa Prasad Majumder, Navneet Potti, Sandeep Tata, James B. Wendt, Qi Zhao, **Marc Najork**. *Representation Learning for Information Extraction from Form-like Documents*. In Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics, pages 6495–6504, July 2020.
- C70 | Shuguang Han, Michael Bendersky, Przemek Gajda, Sergey Novikov, **Marc Najork**, Bernhard Brodowsky, Alexandrin Popescul. *Adversarial Bandits Policy for Crawling Commercial Web Content*. In Proceedings of the 2020 World Wide Web Conference, pages 407–417, April 2020.

- C69 | Sebastian Bruch, Shuguang Han, Michael Bendersky, **Marc Najork**. *A Stochastic Treatment of Learning to Rank Scoring Functions*. In Proceedings of the 13th ACM International Conference on Web Search and Data Mining, pages 61–69, February 2020.
- C68 | Ying Sheng, Nguyen Vo, James B. Wendt, Sandeep Tata, **Marc Najork**. *Migrating a Privacy-Safe Information Extraction System to a Software 2.0 Design*. In Proceedings of the 10th Conference on Innovative Data Systems Research, January 2020.
- C67 | Qingyao Ai, Xuanhui Wang, Sebastian Bruch, Nadav Golbandi, Mike Bendersky, **Marc Najork**. *Learning Groupwise Multivariate Scoring Functions Using Deep Neural Networks*. In Proceedings of the 5th ACM SIGIR International Conference on the Theory of Information Retrieval, pages 85–92, October 2019.
- C66 | Sebastian Bruch, Xuanhui Wang, Mike Bendersky, **Marc Najork**. *An Analysis of the Softmax Cross Entropy Loss for Learning-to-Rank with Binary Relevance*. In Proceedings of the 5th ACM SIGIR International Conference on the Theory of Information Retrieval, pages 75–78, October 2019.
- C65 | Rama Kumar Pasumarthi, Sebastian Bruch, Xuanhui Wang, Cheng Li, Mike Bendersky, **Marc Najork**, Jan Pfeifer, Nadav Golbandi, Rohan Anil, Stephan Wolf. *TF-Ranking: Scalable TensorFlow Library for Learning-to-Rank*. In Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 2970–2978, August 2019.
- C64 | Cheng Li, Mingyang Zhang, Mike Bendersky, Hongbo Deng, Don Metzler, **Marc Najork**. *Multi-view Embedding-based Synonyms for Personal Search*. In Proceedings of the 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 575–584, July 2019.
- C63 | Sebastian Bruch, Masrour Zoghi, Mike Bendersky, **Marc Najork**. *Revisiting Approximate Metric Optimization in the Age of Deep Neural Networks*. In Proceedings of the 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 1241–1244, July 2019.
- C62 | Aman Agarwal, Xuanhui Wang, Cheng Li, Mike Bendersky, **Marc Najork**. *Addressing Trust Bias for Unbiased Learning-to-Rank*. In Proceedings of the 2019 World Wide Web Conference, pages 4–14, May 2019.
- C61 | Shuguang Han, Bernhard Brodowsky, Przemek Gajda, Sergey Novikov, Mike Bendersky, **Marc Najork**, Robin Dua, Alexandrin Popescul. *Predictive Crawling for Commercial Web Content*. In Proceedings of the 2019 World Wide Web Conference, pages 627–637, May 2019.
- C60 | Furkan Kocayusufoglu, Ying Sheng, Nguyen Ha Vo, James B. Wendt, Qi Zhao, Sandeep Tata, **Marc Najork**. *RiSER: Learning Better Representations for Richly Structured Emails*. In Proceedings of the 2019 World Wide Web Conference, pages 886–895, May 2019.
- C59 | Jyun-Yu Jiang, Mingyang Zhang, Cheng Li, Mike Bendersky, Nadav Golbandi, **Marc Najork**. *Semantic Text Matching for Long-Form Documents*. In Proceedings of the 2019 World Wide Web Conference, pages 795–806, May 2019.
- C58 | Qingyao Ai, Xuanhui Wang, Nadav Golbandi, Michael Bendersky, **Marc Najork**. *Learning Groupwise Scoring Functions using Deep Neural Networks*. In WSDM 2019 Workshop on Deep Matching in Practical Applications, February 2019.
- C57 | Aman Agarwal, Ivan Zaitsev, Xuanhui Wang, Cheng Li, **Marc Najork**, Thorsten Joachims. *Estimating Position Bias without Intrusive Interventions*. In Proceedings of the 12 ACM International Conference on Web Search and Data Mining, pages 474–482, February 2019.
- C56 | Manzil Zaheer, Amr Ahmed, Yuan Wang, Daniel Silva, **Marc Najork**, Yuchen Wu, Shibani Sanan, Surojit Chatterjee. *Uncovering Hidden Structure in Sequence Data via Threading Recurrent Models*. In Proceedings of the 12 ACM International Conference on Web Search and Data Mining, pages 186–194, February 2019.
- C55 | Yu Sun, Luis Garcia Pueyo, James B. Wendt, **Marc Najork**, Andrei Broder. *Learning Effective Embeddings for Machine Generated Emails with Applications to Email Category Prediction*. In Proceedings of the 2018 IEEE International Conference on Big Data, pages 1846–1855, December 2018.
- C54 | Aman Agarwal, Xuanhui Wang, Cheng Li, Michael Bendersky, **Marc Najork**. *Offline Comparison of Ranking Functions using Randomized Data*. In RecSys 2018 Workshop on Offline Evaluation for Recommender Systems, October 2018.

- C53 | Xuanhui Wang, Cheng Li, Nadav Golbandi, Mike Bendersky, **Marc Najork**. *The LambdaLoss Framework for Ranking Metric Optimization*. In Proceedings of the 27th ACM International Conference on Information and Knowledge Management, pages 1313–1322, October 2018.
- C52 | Ying Sheng, Sandeep Tata, James B. Wendt, Jing Xie, Qi Zhao, **Marc Najork**. *Anatomy of a Privacy-Safe Large-Scale Information Extraction System Over Email*. In Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, pages 734–743, August 2018.
- C51 | Mike Bendersky, Xuanhui Wang, **Marc Najork**, Don Metzler. *Learning with Sparse and Biased Feedback for Personal Search*. In Proceedings of the 27th International Joint Conference on Artificial Intelligence, pages 5219–5223, July 2018.
- C50 | John Foley, Mingyang Zhang, Mike Bendersky, **Marc Najork**. *Semantic Location in Email Query Suggestion*. In Proceedings of the 41st International ACM SIGIR Conference on Research & Development in Information Retrieval, pages 977–980, July 2018.
- C49 | Navneet Potti, James B. Wendt, Qi Zhao, Sandeep Tata, **Marc Najork**. *Hidden in Plain Sight: Classifying Emails Using Embedded Image Contents*. In Proceedings of the 2018 World Wide Web Conference, pages 1865–1874, April 2018.
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