

# Marc Najork

67 Tulip Lane, Palo Alto, CA 94303, USA 🏠  
+1 650.387.2651 ☎  
marc@najork.org ✉  
marc.najork.org 🌐  
najork 📺  
marcnajork 📺

## 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

2022	AAIA Fellow
2021	ACM SIGIR Academy
2020	IEEE Fellow. " <i>For contributions to web crawling and web data processing</i> "
2019	ACM Fellow. " <i>For contributions to web search and web science</i> "
2012	IEEE Senior Member
2008	ACM Distinguished Member

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.
- C48 | Xuanhui Wang, Nadav Golbandi, Michael Bendersky, Donald Metzler, **Marc Najork**. *Position Bias Estimation for Unbiased Learning to Rank in Personal Search*. In Proceedings of the 11th ACM International Conference on Web Search and Data Mining, pages 610–618, February 2018.
- C47 | Sandeep Tata, Alexandrin Popescul, **Marc Najork**, Mike Colagrosso, Julian Gibbons, Alan Green, Alexandre Mah, Michael James Smith, Divanshu Garg, Cayden Meyer, Reuben Kan. *Quick Access: Building a Smart Experience for Google Drive*. In Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 1643–1651, August 2017.
- C46 | Aston Zhang, Lluís Garcia-Pueyo, James B. Wendt, **Marc Najork**, Andrei Broder. *Email Category Prediction*. In Companion Proceedings of the 26th International Conference on World Wide Web, pages 495–503, April 2017.
- C45 | Michael Bendersky, Xuanhui Wang, Don Metzler, **Marc Najork**. *Learning from User Interactions in Personal Search via Attribute Parameterization*. In Proceedings of the 10th ACM International Conference on Web Search and Data Mining, pages 791–799, February 2017.
- C44 | Xuanhui Wang, Michael Bendersky, Donald Metzler, **Marc Najork**. *Learning to Rank with Selection Bias in Personal Search*. In Proceedings of the 39th International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 115–124, July 2016.
- C43 | Omar Alonso, Catherine C. Marshall, **Marc Najork**. *Debugging a Crowdsourced Task with Low Inter-Rater Agreement*. In Proceedings of the 15th ACM/IEEE-CS Joint Conference on Digital Libraries, pages 101–110, June 2015.
- C42 | Omar Alonso, Catherine C. Marshall, **Marc Najork**. *A Human-Centered Framework for Ensuring Reliability on Crowdsourced Labeling Tasks*. In Works in Progress and Demonstration Abstracts, an Adjunct to the Proceedings of the 1st AAAI Conference on Human Computation and Crowdsourcing, November 2013.
- C41 | Omar Alonso, Catherine C. Marshall, **Marc Najork**. *Are Some Tweets More Interesting Than Others? #HardQuestion*. In Proceedings of the Symposium on Human-Computer Interaction and Information Retrieval, October 2013.
- C40 | Moises Goldszmidt, **Marc Najork**, Stelios Pappas. *Boot-Strapping Language Identifiers for Short Colloquial Postings*. In Proceedings of the 2013th European Conference on Machine Learning and Knowledge Discovery in Databases, Part II, pages 95–111, September 2013.
- C39 | Nick Craswell, Bodo Billerbeck, Dennis Fetterly, **Marc Najork**. *Robust query rewriting using anchor data*. In Proceedings of the 6th ACM International Conference on Web Search and Data Mining, pages 335–344, February 2013.
- C38 | **Marc Najork**. *Detecting quilted web pages at scale*. In Proceedings of the 35th International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 385–394, August 2012.

- C37 | Rina Panigrahy, **Marc Najork**, Yinglian Xie. *How user behavior is related to social affinity*. In Proceedings of the 5th ACM International Conference on Web Search and Data Mining, pages 713–722, February 2012.
- C36 | **Marc Najork**, Dennis Fetterly, Alan Halverson, Krishnaram Kenthapadi, Sreenivas Gollapudi. *Of hammers and nails: an empirical comparison of three paradigms for processing large graphs*. In Proceedings of the 5th ACM International Conference on Web Search and Data Mining, pages 103–112, February 2012.
- C35 | Bodo Billerbeck, Nick Craswell, Dennis Fetterly, **Marc Najork**. *Microsoft Research at TREC 2011 Web Track*. In Proceedings of the 20th Text REtrieval Conference, November 2011.
- C34 | Nick Craswell, Dennis Fetterly, **Marc Najork**. *The Power of Peers*. In Proceedings of the 33rd European Conference on Advances in Information Retrieval, pages 497–502, April 2011.
- C33 | Nick Craswell, Dennis Fetterly, **Marc Najork**. *Microsoft Research at TREC 2010 Web Track*. In Proceedings of the 19th Text REtrieval Conference, November 2010.
- C32 | **Marc Najork**. *Querying the Web Graph (Invited Talk)*. In Proceedings of the 17th International Symposium on String Processing and Information Retrieval, pages 1–12, October 2010.
- C31 | Atish Das Sarma, Sreenivas Gollapudi, **Marc Najork**, Rina Panigrahy. *A Sketch-Based Distance Oracle for Web-Scale Graphs*. In Proceedings of the 3rd ACM International Conference on Web Search and Data Mining, pages 401–410, February 2010.
- C30 | Nick Craswell, Dennis Fetterly, **Marc Najork**, Stephen Robertson, Emine Yilmaz. *Microsoft Research at TREC 2009: Web and Relevance Feedback Track*. In Proceedings of the 18th Text REtrieval Conference, November 2009.
- C29 | **Marc Najork**. *The Scalable Hyperlink Store*. In Proceedings of the 20th ACM Conference on Hypertext and Hypermedia, pages 89–98, June 2009.
- C28 | **Marc Najork**, Sreenivas Gollapudi, Rina Panigrahy. *Less is More: Sampling the Neighborhood Graph Makes SALSA Better and Faster*. In Proceedings of the 2nd ACM International Conference on Web Search and Data Mining, pages 242–251, February 2009.
- C27 | **Marc Najork**, Nick Craswell. *Efficient and Effective Link Analysis with Precomputed SALSA Maps*. In Proceedings of the 17th ACM Conference on Information and Knowledge Management, pages 53–62, October 2008.
- C26 | Frank McSherry, **Marc Najork**. *Computing Information Retrieval Performance Measures Efficiently in the Presence of Tied Scores*. In Proceedings of the 30th European Conference on IR Research, pages 414–421, April 2008.
- C25 | Sreenivas Gollapudi, **Marc Najork**, Rina Panigrahy. *Using Bloom Filters to Speed Up HITS-Like Ranking Algorithms*. In Proceedings of the 5th International Workshop on Algorithms and Models for the Web-Graph, pages 195–201, December 2007.
- C24 | **Marc Najork**. *Comparing the Effectiveness of HITS and Salsa*. In Proceedings of the 16th ACM Conference on Information and Knowledge Management, pages 157–164, November 2007.
- C23 | **Marc Najork**, Hugo Zaragoza, Michael J. Taylor. *Hits on the web: how does it compare?*. In Proceedings of the 30th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 471–478, July 2007.
- C22 | Alexandros Ntoulas, **Marc Najork**, Mark Manasse, Dennis Fetterly. *Detecting spam web pages through content analysis*. In Proceedings of the 15th International Conference on World Wide Web, pages 83–92, May 2006.
- C21 | Dennis Fetterly, Mark Manasse, **Marc Najork**. *Detecting Phrase-Level Duplication on the World-Wide Web*. In Proceedings of the 28th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, pages 170–177, August 2005.
- C20 | John MacCormick, Nick Murphy, **Marc Najork**, Chandramohan A. Thekkath, Lidong Zhou. *Boxwood: Abstractions as the Foundation for Storage Infrastructure*. In Proceedings of the 6th Symposium on Operating Systems Design & Implementation, pages 105–120, December 2004.



- C19 | Dennis Fetterly, Mark Manasse, **Marc Najork**. *Spam, Damn Spam, and Statistics: Using Statistical Analysis to Locate Spam Web Pages*. In Proceedings of the 7th International Workshop on the Web and Databases, pages 1–6, June 2004.
- C18 | Dennis Fetterly, Mark Manasse, **Marc Najork**. *On the Evolution of Clusters of Near-Duplicate Web Pages*. In Proceedings of the 1st Latin American Web Congress, pages 37–45, November 2003.
- C17 | Dennis Fetterly, Mark Manasse, **Marc Najork**, Janet Wiener. *A Large-Scale Study of the Evolution of Web Pages*. In Proceedings of the 12th International World Wide Web Conference, pages 669–678, May 2003.
- C16 | Andrei Z. Broder, **Marc Najork**, Janet L. Wiener. *Efficient URL caching for World Wide Web crawling*. In Proceedings of the 12th International World Wide Web Conference, pages 679–689, May 2003.
- C15 | **Marc Najork**. *Web-Based Algorithm Animation*. In Proceedings of the 38th Design Automation Conference, pages 506–511, June 2001.
- C14 | **Marc Najork**, Janet L. Wiener. *Breadth-First Search Crawling Yields High-Quality Pages*. In Proceedings of the 10th International World Wide Web Conference, pages 114–118, May 2001.
- C13 | Monika R. Henzinger, Allan Heydon, Michael Mitzenmacher, **Marc Najork**. *On Near-Uniform URL Sampling*. In Proceedings of the 9th International World Wide Web Conference, pages 295–308, May 2000.
- C12 | Allan Heydon, **Marc Najork**. *Performance Limitations of the Java Core Libraries*. In Proceedings of the ACM 1999 Conference on Java Grande, pages 35–41, June 1999.
- C11 | Monika R. Henzinger, Allan Heydon, Michael Mitzenmacher, **Marc Najork**. *Measuring Index Quality Using Random Walks on the Web*. In Proceedings of the 8th International World Wide Web Conference, pages 213–225, May 1999.
- C10 | Marc H. Brown, **Marc A. Najork**, Roope Raisamo. *A Java-Based Implementation of Collaborative Active Textbooks*. In Proceedings of the 1997 IEEE Symposium on Visual Languages, pages 372–379, September 1997.
- C9 | Marc H. Brown, **Marc A. Najork**. *Collaborative Active Textbooks: A Web-based Algorithm Animation System for an Electronic Classroom*. In Proceedings of the 1996 IEEE Symposium on Visual Languages, pages 266–275, September 1996.
- C8 | Marc H. Brown, **Marc A. Najork**. *Distributed Active Objects*. In Proceedings of the 5th International World Wide Web Conference, pages 1037–1052, May 1996.
- C7 | **Marc A. Najork**, Marc H. Brown. *A Library for Visualizing Combinatorial Structures*. In Proceedings of IEEE Visualization '94, pages 164–171, October 1994.
- C6 | Marc H. Brown, **Marc A. Najork**. *Algorithm Animation Using 3D Interactive Graphics*. In Proceedings of the 6th Annual ACM Symposium on User Interface Software and Technology, pages 93–100, November 1993.
- C5 | **Marc Najork**, Simon Kaplan. *Cube: Eine dreidimensionale visuelle Programmiersprache*. In Informatik, Wirtschaft, Gesellschaft, pages 340–345, October 1993.
- C4 | **Marc A. Najork**, Simon M. Kaplan. *Specifying Visual Languages with Conditional Set Rewrite Systems*. In Proceedings of the 1993 IEEE Symposium on Visual Languages, pages 12–18, August 1993.
- C3 | **Marc A. Najork**, Simon M. Kaplan. *A Prototype Implementation of the CUBE Language*. In Proceedings of the 1992 IEEE Workshop on Visual Languages, pages 270–272, September 1992.
- C2 | **Marc A. Najork**, Simon M. Kaplan. *The CUBE Language*. In Proceedings of the 1991 IEEE Workshop on Visual Languages, pages 218–224, October 1991.
- C1 | **Marc A. Najork**, Eric Golin. *Enhancing Show-and-Tell with a polymorphic type system and higher-order functions*. In Proceedings of the 1990 IEEE Workshop on Visual Languages, pages 215–220, October 1990.

## ABSTRACTS

- 
- A5 | **Marc Najork**. *Generative Information Retrieval*. In Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval, page 1, July 2023.
- A4 | **Marc Najork**. *Training On-Device Ranking Models from Cross-User Interactions in a Privacy-Preserving Fashion*. In Proceedings of the First Biennial Conference on Design of Experimental Search & Information Retrieval Systems, page 108, August 2018.
- A3 | **Marc Najork**. *Using Machine Learning to Improve the Email Experience*. In Proceedings of the 25th ACM International Conference on Information and Knowledge Management, page 891, October 2016.
- A2 | **Marc Najork**. *Social Search*. In Proceedings of the 14th International Conference on Web Engineering, pages 571–572, July 2014.
- A1 | Marc H. Brown, **Marc A. Najork**. *Distributed Applets*. In CHI '97 Extended Abstracts on Human Factors in Computing, pages 204–205, March 1997.

## BOOK CHAPTERS

- 
- B2 | **Marc Najork**, Allan Heydon. *High-Performance Web Crawling*. Chapter 2 in James Abello, Panos M. Pardalos, Mauricio G.C. Resende (editors), *Handbook of Massive Data Sets*, Kluwer Academic Publishers, 2002.
- B1 | Marc H. Brown, **Marc A. Najork**. *Algorithm Animation Using Interactive 3D Graphics*. Chapter 9 in John Stasko, John Domingue, Marc H. Brown, Blaine A. Price (editors), *Software Visualization – Programming as a Multimedia Experience*, MIT Press, 1998.

## JOURNAL PAPERS

- 
- J15 | Omar Alonso, Stefano Marchesin, **Marc Najork**, Gianmaria Silvello. *Report on the 2nd International Conference on Design of Experimental Search & Information RETrieval Systems (DESIRES 2021)*. ACM SIGIR Forum 55(2):14:1–13, December 2021.
- J14 | Michael Bendersky, Xuanhui Wang, **Marc Najork**, Donald Metzler. *Search and Discovery in Personal Email Collections*. Foundations and Trends in Information Retrieval 15(1):1–133, July 2021.
- J13 | Donald Metzler, Yi Tay, Dara Bahri, **Marc Najork**. *Rethinking search: making domain experts out of dilettantes*. ACM SIGIR Forum 55(1):13:1–27, June 2021.
- J12 | Sandeep Tata, Navneet Potti, James Wendt, Lauro Beltrão Costa, **Marc Najork**, Beliz Gunel. *Glean: Structured Extractions from Templatic Documents*. Proceedings of the VLDB Endowment 14(6):997–1005, February 2021.
- J11 | Michael Whittaker, Nick Edmonds, Sandeep Tata, James B. Wendt, **Marc Najork**. *Online Template Induction for Machine-Generated Emails*. Proceedings of the VLDB Endowment 12(11):1235–1248, August 2019.
- J10 | Christopher Olston, **Marc Najork**. *Web Crawling*. Foundations and Trends in Information Retrieval 4(3):175–246, 2010.
- J9 | Brian D. Davison, **Marc Najork**, Tim Converse. *Adversarial Information Retrieval on the Web*. ACM SIGIR Forum 40(2):27–30, December 2006.
- J8 | Dennis Fetterly, Mark Manasse, **Marc Najork**. *On the Evolution of Clusters of Near-duplicate Web Pages*. Journal of Web Engineering 2(4):228–246, October 2004.
- J7 | Dennis Fetterly, Mark Manasse, **Marc Najork**, Janet L. Wiener. *A Large-Scale Study of the Evolution of Web Pages*. Software: Practice & Experience 34(2):213–237, February 2004.
- J6 | Allan Heydon, **Marc Najork**. *Performance Limitations of the Java Core Libraries*. Concurrency: Practice & Experience 12(6):363–373, May 2000.
- J5 | Allan Heydon, **Marc Najork**. *Mercator: A Scalable, Extensible Web Crawler*. World Wide Web 2(4):219–229, December 1999.

- J4 | Marc H Brown, **Marc A. Najork**. *Collaborative Active Textbooks*. Journal of Visual Languages and Computing 8(4):453–486, August 1997.
- J3 | **Marc A. Najork**. *Programming in Three Dimensions*. Journal of Visual Languages and Computing 7(2):219–242, June 1996.
- J2 | **Marc A. Najork**, Marc H. Brown. *Obliq-3D: A High-Level, Fast-Turnaround 3D Animation System*. IEEE Transactions on Visualization and Computer Graphics 1(2):175–193, June 1995.
- J1 | Sharon Kuck, Roland John, Arnd Lewe, **Marc Najork**. *Roles and their role in posing recursive queries*. Information Systems 15(2):173–186, 1990.

## TECHNICAL REPORTS

---

- T13 | Omar Alonso, Catherine Marshall, **Marc Najork**. *Crowdsourcing a Subjective Labeling Task: A Human-Centered Framework to Ensure Reliable Results*. MSR-TR-2014-91, Microsoft Research, June 2014.
- T12 | **Marc Najork**, Allan Heydon. *High-Performance Web Crawling*. SRC Research Report 173, COMPAQ Systems Research Center, September 2001.
- T11 | **Marc A. Najork**, Marc H. Brown. *Three-Dimensional Web-Based Algorithm Animations*. SRC Research Report 170, COMPAQ Systems Research Center, July 2001.
- T10 | Marc H. Brown, Hannes Marais, **Marc A. Najork**, William E. Weihl. *Focus + Context Displays of Web Pages: Implementation Alternatives*. SRC Technical Note 1997-010, DIGITAL Systems Research Center, May 1997.
- T9 | Marc H. Brown, **Marc A. Najork**. *Collaborative Active Textbooks: A Web-based Algorithm Animation System for an Electronic Classroom*. SRC Research Report 142, DIGITAL Systems Research Center, May 1996.
- T8 | Marc H. Brown, **Marc A. Najork**. *Distributed Active Objects*. SRC Research Report 141 (paper & video), DIGITAL Systems Research Center, May 1996.
- T7 | **Marc A. Najork**. *Obliq-3D Tutorial and Reference Manual*. SRC Research Report 129, DIGITAL Systems Research Center, December 1994.
- T6 | **Marc A. Najork**, Marc H. Brown. *A Library for Visualizing Combinatorial Structures*. SRC Research Report 128 (paper & video), DIGITAL Systems Research Center, September 1994.
- T5 | **Marc-Alexander Najork**. *Programming in Three Dimensions*. Technical Report UIUCDCS-R-93-1838, Department of Computer Science, University of Illinois, October 1993.
- T4 | Marc H. Brown, **Marc A. Najork**. *Algorithm Animation Using 3D Interactive Graphics*. SRC Research Report 110 (paper & video), DIGITAL Systems Research Center, September 1993.
- T3 | **Marc Najork**. *Funktionale, logik-basierte und objektorientierte Sprachstile und Wege zur Vereinheitlichung*. Thesis, Fachbereich Informatik, Technische Hochschule Darmstadt (Germany), March 1989.
- T2 | **Marc Najork**. *Enhanced ER-Easy: A Database Scheme Designer*. Technical Report UIUCDCS-R-88-1464, Department of Computer Science, University of Illinois, May 1988.
- T1 | Roland John, Sharon Kuck, Arnd Lewe, **Marc Najork**. *Roles and their Role in Posing Recursive Queries over the Universal Relation*. Technical Report UIUCDCS-R-88-1463, Department of Computer Science, University of Illinois, May 1988.

## ARXIV PAPERS

---

- X26 | Spurthi Amba Hombaiah, Tao Chen, Mingyang Zhang, Michael Bendersky, **Marc Najork**, Matt Colen, Sergey Levi, Vladimir Ofitserov, Tanvir Amin. *Creator Context for Tweet Recommendation*. arXiv:2311.17650 [cs.IR], submitted on 2023-11-29.
- X25 | Aditi Chaudhary, Karthik Raman, Krishna Srinivasan, Kazuma Hashimoto, Mike Bendersky, **Marc Najork**. *Exploring the Viability of Synthetic Query Generation for Relevance Prediction*. arXiv:2305.11944 [cs.CL], submitted on 2023-05-19.

- X24 | Rongzhi Zhang, Jiaming Shen, Tianqi Liu, Jialu Liu, Michael Bendersky, **Marc Najork**, Chao Zhang. *Do Not Blindly Imitate the Teacher: Using Perturbed Loss for Knowledge Distillation*. arXiv:2305.05010 [cs.LG], submitted on 2023-05-08.
- X23 | Jiaming Shen, Jialu Liu, Dan Finnie, Negar Rahmati, Michael Bendersky, **Marc Najork**. “Why is this misleading?”: *Detecting News Headline Hallucinations with Explanations*. arXiv:2302.05852 [cs.IR], submitted on 2023-02-12.
- X22 | 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*. arXiv:2212.13937 [cs.IR], submitted on 2022-12-28.
- X21 | 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*. arXiv:2212.09744 [cs.CL], submitted on 2022-12-19.
- X20 | Aijun Bai, Rolf Jagerman, Zhen Qin, Pratyush Kar, Bing-Rong Lin, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Regression Compatible Listwise Objectives for Calibrated Ranking*. arXiv:2211.01494 [cs.IR], submitted on 2022-11-02.
- X19 | Tao Chen, Mingyang Zhang, Jing Lu, Michael Bendersky, **Marc Najork**. *Out-of-Domain Semantics to the Rescue! Zero-Shot Hybrid Retrieval Models*. arXiv:2201.10582 [cs.IR], submitted on 2022-01-25.
- X18 | Beliz Gunel, Navneet Potti, Sandeep Tata, James B. Wendt, **Marc Najork**, Jing Xie. *Data-Efficient Information Extraction from Form-Like Documents*. arXiv:2201.02647 [cs.LG], submitted on 2022-01-07.
- X17 | Nan Wang, Zhen Qin, Le Yan, Honglei Zhuang, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Rank4Class: A Ranking Formulation for Multiclass Classification*. arXiv:2112.09727 [cs.LG], submitted on 2021-12-17.
- X16 | Zhen Qin, Le Yan, Yi Tay, Honglei Zhuang, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Born Again Neural Rankers*. arXiv:2109.15285 [cs.IR], submitted on 2021-09-30.
- X15 | Spurthi Amba Hombaiah, Tao Chen, Mingyang Zhang, Michael Bendersky, **Marc Najork**. *Dynamic Language Models for Continuously Evolving Content*. arXiv:2106.06297 [cs.CL], submitted on 2021-06-11.
- X14 | Donald Metzler, Yi Tay, Dara Bahri, **Marc Najork**. *Rethinking Search: Making Experts out of Dilettantes*. arXiv:2105.02274 [cs.IR], submitted on 2021-05-05.
- X13 | Chen Qu, Weize Kong, Liu Yang, Mingyang Zhang, Michael Bendersky, **Marc Najork**. *Privacy-Adaptive BERT for Natural Language Understanding*. arXiv:2104.07504 [cs.CL], submitted on 2021-04-15.
- X12 | Krishna Srinivasan, Karthik Raman, Jiecao Chen, Michael Bendersky, **Marc Najork**. *WIT: Wikipedia-based Image Text Dataset for Multimodal Multilingual Machine Learning*. arXiv:2103.01913 [cs.CV], submitted on 2021-03-02.
- X11 | Nicholas Monath, Avinava Dubey, Guru Guruganesh, Manzil Zaheer, Amr Ahmed, Andrew McCallum, Gokhan Mergen, **Marc Najork**, Mert Terzihan, Bryon Tjanaka, Yuan Wang, Yuchen Wu. *Scalable Bottom-Up Hierarchical Clustering*. arXiv:2010.11821 [cs.LG], submitted on 2020-10-22.
- X10 | 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*. arXiv:2010.03099 [cs.CL], submitted on 2020-10-07.
- X9 | Saar Kuzi, Mingyang Zhang, Cheng Li, Michael Bendersky, **Marc Najork**. *Leveraging Semantic and Lexical Matching to Improve the Recall of Document Retrieval Systems: A Hybrid Approach*. arXiv:2010.01195 [cs.IR], submitted on 2020-10-02.
- X8 | Abbas Kazerooni, Qi Zhao, Jing Xie, Sandeep Tata, **Marc Najork**. *Active Learning for Skewed Data Sets*. arXiv:2005.11442 [cs.LG], submitted on 2020-05-23.
- X7 | Liu Yang, Mingyang Zhang, Cheng Li, Michael Bendersky, **Marc Najork**. *Beyond 512 Tokens: Siamese Multi-depth Transformer-based Hierarchical Encoder for Document Matching*. arXiv:2004.12297 [cs.IR], submitted on 2020-04-26.
- X6 | Shuguang Han, Xuanhui Wang, Mike Bendersky, **Marc Najork**. *Learning-to-Rank with BERT in TF-Ranking*. arXiv:2004.08476 [cs.IR], submitted on 2020-04-17.

- X5 | Rama Kumar Pasumarthi, Xuanhui Wang, Michael Bendersky, **Marc Najork**. *Self-Attentive Document Interaction Networks for Permutation Equivariant Ranking*. arXiv:1910.09676 [cs.IR], submitted on 2019-10-21.
- X4 | Aman Agarwal, Ivan Zaitsev, Xuanhui Wang, Cheng Li, **Marc Najork**, Thorsten Joachims. *Estimating Position Bias without Intrusive Interventions*. arXiv:1812.05161 [cs.IR], submitted on 2018-12-12.
- X3 | Rama Kumar Pasumarthi, Xuanhui Wang, Cheng Li, Sebastian Bruch, Michael Bendersky, **Marc Najork**, Jan Pfeifer, Nadav Golbandi, Rohan Anil, Stephan Wolf. *TF-Ranking: Scalable TensorFlow Library for Learning-to-Rank*. arXiv:1812.00073 [cs.IR], submitted on 2018-11-30.
- X2 | Qingyao Ai, Xuanhui Wang, Nadav Golbandi, Michael Bendersky, **Marc Najork**. *Learning Groupwise Scoring Functions Using Deep Neural Networks*. arXiv:1811.04415 [cs.IR], submitted on 2018-11-11.
- X1 | Aman Agarwal, Xuanhui Wang, Cheng Li, Michael Bendersky, **Marc Najork**. *Offline Comparison of Ranking Functions using Randomized Data*. arXiv:1810.05252 [cs.IR], submitted on 2018-10-11.

## POPULAR MAGAZINES

---

- M2 | Marc H. Brown, **Marc A. Najork**. *Distributed Active Objects*. Dr. Dobbs' Journal, pages 34–41, March 1997.
- M1 | **Marc Najork**. *Visual Programming in 3-D*. Dr. Dobbs' Journal, pages 18–31, December 1995.

## ENCYCLOPEDIA ENTRIES

---

- E3 | **Marc Najork**. *Web Crawler Architecture*. In Ling Liu, M. Tamer Özsu (editors), *Encyclopedia of Database Systems*, Springer, 2009.
- E2 | Hugo Zaragoza and **Marc Najork**. *Web Search Relevance Ranking*. In Ling Liu, M. Tamer Özsu (editors), *Encyclopedia of Database Systems*, Springer, 2009.
- E1 | **Marc Najork**. *Web Spam Detection*. In Ling Liu, M. Tamer Özsu (editors), *Encyclopedia of Database Systems*, Springer, 2009.

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