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Experience

- from 7/2019 Chair, Department of Information Science, College of Communication, Media, and Information, University of Colorado, Boulder.
- from 1/2019 Professor, Department of Information Science, College of Communication, Media, and Information, University of Colorado, Boulder. Department of Computer Science by courtesy.
- from 8/2020 Faculty Fellow, Institute for Cognitive Science.
- 7/2011-12/2018 Professor, School of Computing, College of Computing and Digital Media, DePaul University.
- 7/2007-6/2011 Associate Professor with Tenure, School of Computing, College of Computing and Digital Media, DePaul University. Joint appointment in School of Cinema and Interactive Media.
- 8/2008-7/2009 Fulbright Scholar, School of Computer Science and Informatics, University College Dublin.
- 7/2005-6/2007 Associate Professor with Tenure, School of Computer Science, Telecommunications, and Information Systems, DePaul University
- 7/2002-6/2005 Associate Professor, School of Computer Science, Telecommunications, and Information Systems, DePaul University.
- 1/2001-6/2002 Associate Professor, Department of Information Systems and Decision Sciences, California State University, Fullerton.
- 6/2000-1/2001 Adjunct Assistant Professor, Department of Information and Computer Science, University of California, Irvine.
- 4/1999-5/2000 Specialist, Department of Information and Computer Science, University of California, Irvine.
- 8/1998-4/1999 Director of Software Development, Verb, Inc. (was Recommender, Inc.)
- 9/1996-7/1998 Research Scientist, Department of Computer Science, University of Chicago.
- 9/1993-9/1996 Visiting Assistant Professor, Department of Computer Science, University of Chicago.

Research Interests

Artificial intelligence, especially recommender systems and personalization, user modeling, data mining, and machine learning, including fairness-aware and multistakeholder approaches.
Digital humanities, including bibliomining, social network analysis, and text mining.

Education

- 12/1993 PhD, Computer Science, Northwestern University
- 6/1990 MS, MPhil, Computer Science, Yale University
- 6/1986 BS with Distinction and Honors, Computer Science, Harvey Mudd College

SCHOLARSHIP

h-index (Google scholar): 60

Journal Articles

- Mansoury, M., Abdollahpouri, H., Pechenizkiy, M., Mobasher, B. & **Burke R.** A Graph-based Approach for Mitigating Multi-sided Exposure Bias in Recommender Systems. *ACM Transactions on Information Systems*. Volume 40, Issue 2, Article 32, 31 pages, 2021.
- Mansoury, M. & **Burke, R.** Flatter is Better: Percentile Transformations for Recommender Systems. *ACM Transactions on Intelligent Systems and Technology*. 12(2), Article 19, 16 pages, 2021.
- Shanahan, J., **Burke, R.** & Lucic, A. Reading Chicago Reading: Quantitative Analysis of a Repeating Literary Program. *Digital Humanities Quarterly*. 14(2), 37 pages, 2020.
- Abdollahpouri, H., Adomavicius, G., **Burke, R.**, Guy, I., Jannach, D., Kamishima, T., Krasnodebski, J. & Pizzato, L. Multistakeholder Recommendation: Survey and Research Directions. *User Modeling and User-Adapted Interaction*. 30(1), 127-158, 2020.
- Burke, V. & **Burke, R.** Powerlessness and Personalization. *International Journal of Applied Philosophy*. 33(2), 319-343, 2019.
- Malthouse, E., Hessary, Y., Ali Vakeel, K., **Burke, R.** & Morana Fudurić. An Algorithm for Allocating Sponsored Recommendations and Content: Unifying Programmatic Advertising and Recommender Systems. *Journal of Advertising*, 48(4), (14 pages), 2019. [Best paper of the year award.]
- Sun, Z., Guo, Q., Yang, J., Fang, H., Guo, G., Zhang, J. and **Burke, R.** Research commentary on recommendations with side information: a survey and research directions. *Electronic Commerce Research and Applications*, 37 (29 pages). 2019.
- Vahedian, F., **Burke, R.** & Mobasher, B. Multi-relational Recommendation in Heterogeneous Networks. *ACM Transactions on the Web*. 11(3): 15 (34 pages), 2017.
- Gemmell, J., Schimoler, T., Mobasher, B. & **Burke, R.** Resource recommendation in social annotation systems: A linear-weighted hybrid approach. *Journal of Computer and Systems Science*. (JCSS) 78(4):1160-1174 (2012).
- Mobasher, B., **Burke, R.**, Bhaumik, R. & Sandvig, JJ. Attacks and Remedies in Collaborative Recommendation. *IEEE Expert Systems*. 22(3) 56-63, 2007.
- Williams, C., Mobasher, B. & **Burke, R.** Defending Recommender Systems: Detection of Profile Injection Attacks. *Service Oriented Computing and Applications*. 1(3), 157-170. 2007.
- Mobasher, B., **Burke, R.**, Bhaumik, R. & Williams, C. Towards Trustworthy Recommender Systems: An Analysis of Attack Models and Algorithms. *ACM Transactions on Internet Technology*. 7(2), Article 23 (38 pages.) 2007.
- Burke, R.** Hybrid Recommender Systems: Survey and Experiments. *User Modeling and User Adapted Interaction*. 12(4), 331-370. 2002.
- Burke, R.** Interactive Critiquing for Catalog Navigation in E-Commerce. *Artificial Intelligence Review*, 18(3-4), 245-267. 2002.
- Burke, R.** Conceptual Indexing and Active Retrieval of Video for Interactive Learning Environments. *Knowledge-Based Systems*, 9(8), 491-499, 1996.
- Burke, R.** & Kass, A. Supporting Learning through Active Retrieval of Video Stories. *Expert Systems with Applications*, 9(3), 361-378. 1995.
- Kass, A., **Burke, R.**, Blevins, E. & Williamson, M. Constructing learning environments for complex social skills. *Journal of the Learning Sciences* 3(4), 387-427. 1994.
- Burke, R.** Intelligent retrieval of video stories in a social simulation. *Journal of Educational Multimedia and Hypermedia*, 2(4), pages 381-392. 1993. Paper originally appeared in *Educational Multimedia and Hypermedia Annual* 1993, 91-98. AACE, 1993.

Blevis, E., Glasgow, J., Duncan, N. & **Burke, R.** The Life Analysis & Depreciation Integrated Exemplar System (LADIES). *International Journal of Expert Systems Research and Applications*. 4(2), 141-155, 1991.

Journal-equivalent Conference Proceedings

2021

Sonboli, N., Mansoury, M., Guo, Z., Kadekodi, S., Liu, W., Liu, Z., Schwartz, A. & **Burke, R.** librec-auto: A Tool for Recommender Systems Experimentation. In *30th ACM International Conference on Information and Knowledge Management (CIKM '21)*. Held online, October 2021. 4584-4593.

Abdollahpouri, H., Mansoury, M., **Burke, R.**, Mobasher, B. & Malthouse, E. 2021. User-centered Evaluation of Popularity Bias in Recommender Systems. In *Proceedings of the 29th Conference on User Modeling and Personalization (UMAP '21)*. Held online, July 2021. 119-129.

Sonboli, N., Smith, J., Cabral Berenfus, F., **Burke, R.** & Fiesler, C. 2021. Fairness and Transparency in Recommendation: The Users' Perspective. In *Proceedings of the 29th Conference on User Modeling and Personalization (UMAP '21)*. Held online, July 2021. 274-279.

2020

Sonboli, N., **Burke, R.**, Liu, Z. & Masoud Mansoury. 2020. Fairness-aware Recommendation with librec-auto. In *Proceedings of the 14th ACM Conference on Recommender Systems (RecSys '20)*. ACM, New York, NY, USA, 594-596.

Abdollahpouri, H., Mansoury, M., **Burke, R.** & Mobasher, B. The Connection Between Popularity Bias, Calibration, and Fairness in Recommendation. In *Proceedings of the 14th ACM Conference on Recommender Systems (RecSys '20)*. ACM, New York, NY, USA, 726-731.

Lin, K., Sonboli, N., Mobasher, B. & **Burke, R.** Calibration in Collaborative Filtering Recommender Systems: a User-Centered Analysis. In *Proceedings of the 31st ACM Conference on Hypertext and Social Media*. ACM, New York, NY, USA, 197-206.

Mansoury, M., Abdollahpouri, H., Pechenizkiy, M., Mobasher, B. & **Burke, R.** FairMatch: A Graph-based Approach for Improving Aggregate Diversity in Recommender Systems. In *Proceedings of the 28th Conference on User Modeling and Personalization (UMAP '20)*. Genoa, Italy. July 2020.

Mansoury, M., Abdollahpouri, H., Pechenizkiy, M., Mobasher, B. & **Burke, R.** Feedback loop and bias amplification in recommender systems. In *Proceedings of the 29th ACM International Conference on Information and Knowledge Management (CIKM '20)*. ACM, New York, NY, USA, 2145-2148.

Sonboli, N., Eskandarian, F., **Burke, R.**, Liu, W. & Mobasher, B. Opportunistic multi-aspect fairness through personalized re-ranking. In *Proceedings of the 28th Conference on User Modeling and Personalization (UMAP '20)*. Genoa, Italy. July 2020.

Sánchez-Moreno, D., Moreno-García, M. N., Sonboli, N., Mobasher, B., and **Burke, R.** Using Social Tag Embedding in a Collaborative Filtering Approach for Recommender Systems. In *2020 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT'20)*.

2019

Liu, W., Guo, J., Sonboli, N., **Burke, R.** & Zhang, S. Personalized Fairness-aware Re-ranking for Microlending. In *Proceedings of the 13th ACM Conference on Recommender Systems*, 2019.

Lucic, A., **Burke, R.**, & Shanahan, J. Unsupervised Clustering with Smoothing for Detecting Paratext Boundaries in Scanned Documents. In *2019 ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 53-56. IEEE, 2019.

2018

Burke, R., Sonboli, N. & Ordonez-Gauger, A. Balanced Neighborhoods for Multi-sided Fairness in Recommendation. In *Conference on Fairness, Accountability, and Transparency (FAT*)*. New York, 2018. Appeared as *Proceedings of Machine Learning Research* 81:1-13, 2018.

Mansoury, M., **Burke, R.**, Ordonez-Gauger, A. & Sepulveda, X. Automating recommender systems experimentation with librec-auto. In *Proceedings of the 12th ACM Conference on Recommender Systems (RecSys '18)*. ACM, New York, NY, USA, 500-501. 2018.

Sánchez-Moreno, D., Moreno-García, M.N., Sonboli, N., Mobasher, B., **Burke, R.** Inferring User Expertise from Social Tagging in Music Recommender Systems for Streaming Services. In: de Cos Juez F. et al. (eds) *Hybrid Artificial Intelligent Systems. HAIS 2018*. Lecture Notes in Computer Science, vol 10870. Springer, Cham. 2018

Sürer, Ö., **Burke, R.** & Malthouse E. Multistakeholder Recommendation with Provider Constraints. In *Proceedings of the 12th ACM Conference on Recommender Systems (RecSys '18)*, ACM, New York, NY, USA, 54-62. 2018.

2017

Abdollahpouri, H., **Burke, R.** & Mobasher, B. Controlling Popularity Bias in Learning-to-Rank Recommendation. In *Proceedings of the 11th ACM Conference on Recommender Systems (RecSys '17)*, 5 pages. Como, Italy. August 2017.

Abdollahpouri, H., **Burke, R.** & Mobasher, B. Recommender Systems as Multistakeholder Environments. In *Proceedings of the 25th Conference on User Modeling and Personalization (UMAP '17)*. Bratislava, Slovakia. June 2017.

Burke, R., Lucic, A., & Shanahan, J. Circulation Modeling of Library Book Promotions. In *2017 ACM/IEEE Joint Conference on Digital Libraries (JCDL'17)*, pp. 1-2. IEEE.

Eskandanian, F., Mobasher, B. & **Burke, R.** A Clustering Approach for Personalizing Diversity in Collaborative Recommender Systems. In *Proceedings of the 25th Conference on User Modeling and Personalization (UMAP '17)*. Bratislava, Slovakia. June 2017.

Vahedian, F., **Burke, R.** & Mobasher, B. Weighted Random Walk Sampling for Multi-Relational Recommendation. In *Proceedings of the 25th Conference on User Modeling and Personalization (UMAP '17)*. Bratislava, Slovakia. June 2017.

2016

Eskandanian, F., Mobasher, B., & **Burke, R.** User Segmentation for Controlling Recommendation Diversity. In *Poster Proceedings of the 10th ACM Conference on Recommender Systems*. 2016. <http://ceur-ws.org/Vol-1688/paper-24.pdf>, 2 pages.

Vahedian, F., **Burke, R.**, & Mobasher, B. Weighted Random Walks for Meta-Path Expansion in Heterogeneous Networks. In *Poster Proceedings of the 10th ACM Conference on Recommender Systems*. 2016. <http://ceur-ws.org/Vol-1688/paper-11.pdf>, 2 pages.

Vahedian, F., **Burke, R.**, & Mobasher, B. Meta-Path Selection for Extended Multi-Relational Matrix Factorization. In *Proceedings of the 29th International Florida AI Research Symposium (FLAIRS '16)*, pp. 566-571.

Zheng, Y., Mobasher, B., & **Burke, R.** User-Oriented Context Suggestion. In *Proceedings of the 24th Conference on User Modeling and Personalization (UMAP '16)*, pp. 249-258

2015

Aghdam, M. H., Hariri, N., Mobasher, B., & **Burke, R.** Adapting Recommendations to Contextual Changes Using Hierarchical Hidden Markov Models. In *Proceedings of the 9th ACM Conference on Recommender Systems (RecSys '15)*, pp. 241-244.

Hariri, N., Mobasher, B., & **Burke, R.** Adapting to User Preference Changes in Interactive Recommendation. In *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI '15)*, pp. 4268-4274

Vahedian, F., **Burke, R.** & Mobasher, B. Network-Based Extension of Multi-Relational Factorization Models. In *Poster Proceedings of the 9th ACM Conference on Recommender Systems: ceur-ws.org/Vol-1441/*.

Zheng, Y., Mobasher, B., & **Burke, R.** Integrating Context Similarity with Sparse Linear Recommendation Model. In *Proceedings of the 23th Conference on User Modeling and Personalization (UMAP '15)*, pp. 370-376.

Zheng, Y., Mobasher, B., & **Burke, R.** Similarity-Based Context-Aware Recommendation. *Web Information Systems Engineering (WISE '15)*, pp. 431-447

Zheng, Y., Mobasher, B., & **Burke, R.** Similarity-based Contextual SLIM Recommendation. In *Proceedings of the 23rd Conference on User Modeling, Adaptation and Personalization (UMAP 2015)*.

2014

Zheng, Y., Mobasher, B., & **Burke, R.** Deviation-Based Contextual SLIM Recommenders. In *Proceedings of the 23rd ACM International Conference on Information and Knowledge Management (CIKM '14)*, pp. 271-280.

Gemmell, J., Mobasher, B. & **Burke, R.** Resource Recommendation in Social Annotation Systems Based on User Partitioning. In *Proceedings of the 15th International Conference on Electronic Commerce and Web Technologies, EC-Web 2014*. pp. 101-112

Hariri, N., Mobasher, B. & **Burke, R.** Context adaptation in interactive recommender systems. In *Proceedings of the 8th ACM Conference on Recommender Systems (RecSys '14)*. pp. 41-48. (Best Paper Honorable Mention)

Zheng, Y., Mobasher, B. & **Burke, R.** CSLIM: contextual SLIM recommendation algorithms. In *Proceedings of the 8th ACM Conference on Recommender Systems (RecSys '14)*. pp. 301-304

Zheng, Y., **Burke, R.** & Mobasher, B. Splitting approaches for context-aware recommendation: an empirical study. In *Proceedings of the Symposium on Applied Computing 2014*. pp. 274-279.

Burke, R., Vahedian, F. & Mobasher, B. Hybrid Recommendation in Heterogeneous Networks. In *Proceedings of the 22nd Conference on User Modeling, Adaptation and Personalization (UMAP '14)*. pp. 49-60.

Gemmell, J., Mobasher, B. & **Burke, R.** User Partitioning Hybrid for Tag Recommendation. In *Proceedings of the 22nd Conference on User Modeling, Adaptation and Personalization (UMAP '14)*. pp. 74-85.

2013

Hariri, N., Mobasher, B., & **Burke, R.** Query-Driven Context-Aware Recommendation. In *Proceedings of the 7th ACM Conference on Recommender Systems (RecSys '13)*, ACM.

Putnam, C., Cheng, J., Rusch, D., Berthiaume, A., & **Burke, R.** Supporting Therapists In Motion-Based Gaming For Brain Injury Rehabilitation. In *Proceedings of the 2013 annual conference extended abstracts on Human factors in computing systems (CHI EA '13)*, Paris, France. [Acceptance rate: 45%]

Zheng, Y., **Burke, R.** & Mobasher, B. Recommendation with Differential Context Weighting. In *Proceedings of the 21st Conference on User Modeling, Adaptation and Personalization (UMAP 2013)*. Rome, Italy.

2012

Hariri, N., Mobasher, B., & **Burke, R.** Context-aware music recommendation based on latent-topic sequential patterns. In *Proceedings of the sixth ACM conference on Recommender systems (RecSys '12)*. ACM, New York, NY, USA, 131-138.

Zheng, Y., **Burke, R.** & Mobasher, B. Differential Context Relaxation for Context-aware Travel Recommendation. *Proceedings of the 13th International Conference on Electronic Commerce and Web Technologies, EC-Web 2012*, Vienna, Austria, August 2012.

2011

Gemmell, J., Schimoler, T., Mobasher, B. & **Burke, R.** Recommendation by Example in Social Annotation Systems. *EC-Web 2011*: 209-220.

Guzzi, F., Ricci, F. & **Burke, R.** Interactive multi-party critiquing for group recommendation. In *Proceedings of the 5th ACM International Conference on Recommender Systems (RecSys '11)*: 265-268.

Gemmell, J., Schimoler, T., Mobasher, B. & **Burke, R.** Tag-Based Resource Recommendation in Social Annotation Applications. In *Proceedings of User Modeling, Adaption and Personalization 2011*, pp. 111-122. Girona, Spain.

2010

Gemmell, J., Mobasher, B., Schimoler, T., & **Burke, R.** Hybrid Tag Recommendation for Social Annotation Systems. In *Proceedings of the 19th ACM International Conference on Information and Knowledge Management (CIKM '10)*, pp. 829-838. Toronto, Canada. October 2010

Burke, R. Evaluating the Dynamic Properties of Recommendation Algorithms. In *Proceedings of the 4th ACM International Conference on Recommender Systems (Recsys '10)*, pp. 225-228. Barcelona, Spain. September 2010.

Prior to 2009

Ramezani, M., Sandvig, J. J., Schimoler, T., Gemmell, J., Mobasher, B. & **Burke, R.** Evaluating the Impact of Attacks in Collaborative Tagging Environments. *Proceedings of the 1st International Conference on Social Computing*, pp. 136 -143. Vancouver, Canada. August 2009.

Felfernig, A. & **Burke, R.** 2008. Constraint-based recommender systems: technologies and research issues. In *Proceedings of the 10th International Conference on Electronic Commerce*, pp. 1-10. Innsbruck, Austria. August 2008.

Shepitsen, A., Gemmell, J., Mobasher, B. & **Burke, R.** Personalized Recommendation in Collaborative Tagging Systems Using Hierarchical Clustering. In *Proceedings of the 2nd ACM International Conference on Recommender Systems (RecSys'08)*, pp. 259-266. Lausanne, Switzerland. October 2008.

Bhaumik, R., **Burke, R.**, Mobasher, B. Crawling Attacks Against Web-based Recommender Systems. *Proceedings of the 2007 International Conference on Data Mining, DMIN'07*, Las Vegas, June 2007.

Sandvig, J.J., Mobasher, B., & **Burke, R.** Impact of Relevance Measures on the Robustness and Accuracy of Collaborative Filtering. *Proceedings of the 8th International Conference on Electronic Commerce and Web Technologies, EC-Web 2007*, pp. 99-108. Regensburg, Germany, September 2007.

Sandvig, J.J., Mobasher, B. & **Burke, R.** Robustness of Collaborative Recommendation Based On Association Rule Mining. *Proceedings of the 2007 ACM Conference on Recommender Systems*, pp. 105-112. Minneapolis, October, 2007.

Settle, A., **Burke, R.**, & Dettori, L. Game Design as a Writing Course in the Liberal Arts. In *Proceedings of the 2007 International Conference on Frontiers in Education::Computer Science & Computer Engineering (FECS '07)*, pp. 176-180. CSREA Press. 2007.

Sieg, A., Mobasher, B., & **Burke, R.** Representing Context in Web Search with Ontological User Profiles. In *Proceedings of the Sixth International and Interdisciplinary Conference on Modeling and Using Context*, pp. 439-452. Roskilde University, Denmark, August 2007.

Sieg, A., Mobasher, B., & **Burke, R.** Web Search Personalization with Ontological User Profiles. *Proceedings of the 16th ACM Conference on Information and Knowledge Management (CIKM 2007)*, pp. 525-534. Lisboa, Portugal, November 2007.

Burke, R., Mobasher, B., Williams, C. & Bhaumik R. Classification Features for Attack Detection in Collaborative Recommender Systems. In *Proceedings of the ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'06)*, pp. 542-547. Philadelphia, August 2006.

Burke, R., Mobasher, B., Williams, C. & Bhaumik, R. Detecting Profile Injection Attacks in Collaborative Recommender Systems. In *Proceedings of the 8th IEEE Conference on E-Commerce Technology (CEC' 06)*, pp. 23-31. San Francisco, California, June 2006.

Mobasher, B., **Burke, R.**, Sandvig, J.J. Model-Based Collaborative Filtering as a Defense Against Profile Injection Attacks. In *Proceedings of the 21st National Conference on Artificial Intelligence (AAAI'06)*, pp. 1388-1393. Boston, Massachusetts, August 2006.

Burke, R., Mobasher, B., Bhaumik, R. & Williams, C. Segment-Based Injection Attacks against Collaborative Filtering Recommender Systems. In *Proceedings of the 2005 International Conference on Data Mining (ICDM'05)*, pp. 577-580. Houston, Texas, November 2005.

Sieg, A., Mobasher, B., **Burke, R.**, Prabu, G. & Lytinen, S. "Representing User Information Context with Ontologies". In *Proceedings of HCI International 2005 Conference*, Las Vegas, Nevada, July 2005.

- Burke, R.** Hybrid Recommender Systems with Case-Based Components. In *European Conference on Case-Based Reasoning 2004*. pages 91-105. New York: Springer Verlag, 2004.
- Sieg, A., Mobasher, B., & **Burke, R.** Inferring User's Information Context: Integrating User Profiles and Concept Hierarchies. In *Proceedings of the 2004 Meeting of the International Federation of Classification Societies*, Chicago, IL, July 2004.
- Sieg, A., Mobasher, B., Lytinen, S. & **Burke, R.** Using Concept Hierarchies to Enhance User Queries in Web-based Information Retrieval. In *Proceedings of the IASTED International Conference on Artificial Intelligence and Applications (AIA 2004)*. page 153-159. Innsbruck, Austria, 2004.
- Sieg, A., Mobasher, B., Lytinen, S. & **Burke, R.** Concept based query enhancement in the ARCH search agent. In *Proceedings of the International Conference on Internet Computing*. Las Vegas, NV. August 2003.
- Burke, R.** Ranking Algorithms for Costly Similarity Metrics. In D. Aha, I. Watson and Q. Yang (eds.), *Case-Based Reasoning Research and Development (4th International Conference on Case-Based Reasoning)*, pages 105-117. New York: Springer Verlag, 2001.
- Burke, R.** Salticus: Guided Crawling for Personal Digital Libraries. In *Proceedings of the First Joint Conference on Digital Libraries*, pages 88-89. Roanoke, VA: June, 2001.
- Burke, R.** A Case-Based Reasoning Approach to Collaborative Filtering. In E. Blanzieri and L. Portinale (eds.), *Advances in Case-Based Reasoning (5th European Workshop on Case-Based Reasoning)*, pages 370-379. New York: Springer Verlag, 2000.
- Burke, R.** The Wasabi Personal Shopper: A Case-Based Recommender System. In *Proceedings of the 11th National Conference on Innovative Applications of Artificial Intelligence*, pages 844-849, AAAI, 1999.
- Kulyukin, V., Hammond, K., & **Burke, R.** Answering Questions for an Organization Online. In *Proceedings of the 15th National Conference on Artificial Intelligence*, pages 532-537, AAAI, 1998.
- Burke, R.,** Hammond, K. & Cooper, E. Knowledge-based navigation of complex information spaces. In *Proceedings of the 13th National Conference on Artificial Intelligence*, pages 462-468, AAAI, 1996.
- Hammond, K., **Burke, R.,** Martin, C. & Lytinen, S. FAQ Finder: A Case-Based Approach to Knowledge Navigation. In *Proceedings of the 11th Conference on Artificial Intelligence for Applications*. Los Angeles, CA: IEEE Computer Society Press, 1995.
- Burke R. & Kass, A.** Tailoring Retrieval to Support Case-Based Teaching. *Proceedings of the 12th Annual Conference on Artificial Intelligence*, pages 493-498. AAAI, 1994.
- Burke, R. & Kass, A.** Integrating case presentation and simulation-based learning-by-doing. In *Proceedings of the 14th Conference of the Cognitive Science Society*, pages 629-634. Hillsdale, NJ: Lawrence Erlbaum Associates, 1992.

Other Refereed Conference and Workshop Proceedings

2021

- Burke, I., **Burke, R.** & Kuljanin, G. Fair candidate ranking with spatial partitioning: Lessons from the SIOP ML competition. *Workshop on Recommender Systems in Human Resources*. September 2021.
- Burke, R.,** Volda, A., Mattei, N. & Sonboli, N. Algorithmic Fairness, Institutional Logics, and Social Choice. *IJCAI Workshop on AI for Social Good*, February 2021.

2020

- Burke, R.,** Volda, A., Mattei, N. & Sonboli, N. Algorithmic Fairness, Institutional Logics, and Social Choice. *Harvard CRCS Workshop on AI for Social Good*, July 2020.
- Smith, J., Sonboli, N., Fiesler, C. & **Burke, R.** Exploring User Opinions of Fairness in Recommender Systems. *Human-Centered Approach to Fair & Responsible AI*. Workshop held at CHI 2020.
- Sonboli, N., **Burke, R.,** Mattei, N., Eskandarian, F. & Gao, T. "And the Winner Is...": Dynamic Lotteries for Multi-group Fairness-Aware Recommendation. In *FAccTRec Workshop on Responsible Recommendation*, Workshop held at RecSys 2020. arXiv preprint arXiv:2009.02590.

2019

Abdollahpouri, H., **Burke, R.** & Mobasher, B. Managing Popularity Bias in Recommender Systems with Personalized Re-Ranking. *FLAIRS Conference*, pages 413-418, 2019.

Abdollahpouri, H., Mansoury, M., **Burke, R.** & Mobasher, B. The Unfairness of Popularity Bias in Recommendation. *Workshop on Recommendation in Multistakeholder Environments (RMSE)*, 2019.

Lin, K., Sonboli, N., Mobasher, B. & **Burke, R.** Crank up the volume: preference bias amplification in collaborative recommendation. *Workshop on Recommendation in Multistakeholder Environments (RMSE)*, 2019.

Malthouse, E., Vakeel, K.A., Kamyab, Y.H., **Burke, R.** & Fuduric, M. A Multistakeholder Recommender Systems Algorithm for Allocating Sponsored Recommendations. *Workshop on Recommendation in Multistakeholder Environments (RMSE)*, 2019.

Mansoury, M., & **Burke, R.** Algorithm Selection with Librec-auto. *AMIR@ ECIR*. 2019.

Mansoury, M., Mobasher, B., **Burke, R.** & Pechenizkiy, M. Bias Disparity in Collaborative Recommendation: Algorithmic Evaluation and Comparison. *Workshop on Recommendation in Multistakeholder Environments (RMSE)*, 2019.

Sonboli, N. & **Burke, R.** Localized Fairness in Recommender Systems. *Workshop on Fairness in User Modeling, Adaptation and Personalization (FairUMAP)*, 2019

2018

Burke, R., Kontny, J. & Sonboli, N. Synthetic Attribute Data for Evaluating Consumer-Side Fairness. In *Proceedings of the 2nd FATRec Workshop on Responsible Recommendation*, held at RecSys 2018. Available as arXiv preprint arXiv:1809.04199.

Liu, W. & **Burke, R.** Personalizing Fairness-aware Re-ranking. In *Proceedings of the 2nd FATRec Workshop on Responsible Recommendation*, held at RecSys 2018. Available as arXiv preprint arXiv:1809.02921

2017

Burke, R. Multi-sided Fairness for Recommendation. In *Proceedings of the Workshop on Fairness, Accountability and Transparency in Machine Learning (FATML)*, held at KDD 2017. arXiv:1707.00093.

Burke, R. & Abdollahpouri, H. Patterns of Multistakeholder Recommendation. In *Proceedings of the 1st International Workshop on Value-Aware and Multistakeholder Recommendation (VAMS)*, held at RecSys 2017. arXiv:1707.09258.

Burke, R., Sonboli, N., Mansoury, M. & Ordonez-Gauger, A. Balanced Neighborhoods for Fairness-Aware Collaborative Recommendation. In *Proceedings of the FATRec Workshop on Responsible Recommendation*, held at RecSys 2017.

2016

Burke, R. & Eskandarian, F. Collaborative Recommendation of Informal Learning Experiences. In *Proceedings of the 3rd International Workshop on Educational Recommender Systems*, held at WI 2016.

Burke, R. & Abdollahpouri, H. Educational Recommendation with Multiple Stakeholders. In *Proceedings of the 3rd International Workshop on Educational Recommender Systems*, held at WI 2016.

Burke, R., Abdollahpouri, H., Mobasher, B., Gupta, T. Towards Multi-Stakeholder Utility Evaluation of Recommender Systems. In *UMAP Workshop on Surprise, Opposition and Obstruction in Personalized Systems*, 2016

2015

Zheng, Y., Mobasher, B., & **Burke, R.** CARSKit: A Java-Based Context-Aware Recommendation Engine. *ICDM Workshops*, pp. 1668-1671

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Zheng, Y., Mobasher, B. & **Burke, R.** The Role of Emotions in Context-aware Recommendation. In *Proceedings of the Workshop on Human Decision-Making in Recommender Systems (Decisions '13)*, pages 21-28. Hong Kong, China. October 2013.

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Sieg, A., Mobasher, B., & **Burke, R.** Improving the Effectiveness of Collaborative Recommendation with Ontology-Based User Profiles. In *Proceedings of the International Workshop on Information Heterogeneity and Fusion in Recommender Systems*. Held at RecSys '10. September 2010.

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- Burke, R.**, Hammond, K., Kulyukin, V., Lytinen, S., Tomuro, N. & Schoenberg, S. Natural Language Processing in the FAQ Finder System: Results and Prospects. In *AAAI Spring Symposium on Natural Language Processing for the World Wide Web*. AAAI, 1997.
- Burke, R.**, Hammond, K. & Cooper, E. Knowledge-based Information Retrieval from Semi-structured Text. In *AAAI Workshop on Internet-based Information Systems*, pp. 9-15. AAAI, 1996.
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- Kulyukin, V., Hammond, K. & **Burke, R.** Automated analysis of structured on-line documents. In *AAAI Workshop on Internet-based Information Systems*, pp. 78-86. AAAI, 1996.
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- Burke, R.** & Kass, A. Refining the Universal Indexing Frame to Support Retrieval of Tutorial Stories. In *AAAI Workshop on Indexing and Reuse in Multimedia Systems*, pp. 1-11. AAAI, 1994.
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- Hammond, K., **Burke, R.** & Schmitt, K. A Case-Based Approach to Knowledge Navigation. In *AAAI Workshop on Indexing and Reuse in Multimedia Systems*, pp. 46-57. AAAI, 1994. Also in *AAAI Workshop on Knowledge Discovery in Databases*, pages 383-393. AAAI, 1994.
- Burke, R.** Retrieval strategies for tutorial stories. In D. Leake (ed.) *Case-based Reasoning: Papers from the 1993 Workshop*, Technical Report WS-93-01, pp. 118-124. AAAI, 1993.
- Burke, R.** Strategic retrieval of tutorial stories. In P. Anick and E. Simoudis (eds.) *Case-Based Reasoning and Information Retrieval: Exploring the Opportunities for Technology Sharing, Papers from the 1993 Spring Symposium*, Technical Report SS-93-07, pp. 18-27. AAAI, 1993.
- Burke, R.** Knowledge acquisition and education: a case for stories. In *Working Notes of the AAAI Symposium on Cognitive Aspects of Knowledge Acquisition*, pp. 39-46. AAAI, 1992.
- Burke, R.** & Ohmaye, E. Case-based environments for teaching. In *Working Notes of the AAAI Symposium on Knowledge-Based Environments for Learning and Teaching*, pages 63-67. AAAI, 1990.
- Schank, R., Osgood, R., Brand, M., **Burke, R.**, Domeshek, E., Edelson, D., Ferguson, W., Freed, M., Jona, K., Krulwich, B., Ohmaye, E. & Pryor, L. Towards a general content theory of indexing. In *Working Notes of the AAAI Symposium on Case-Based Reasoning*. AAAI, 1990.
- Burke, R.** Understanding and responding in conversation: Case retrieval with natural language. In *Proceedings of the Case-Based Reasoning Workshop I*, pp. 230-234. Morgan-Kaufmann, 1989.
- Burke, R.** Knowledge-based analysis of medical descriptions. In *Proceedings of the AAAI Symposium on Artificial Intelligence in Medicine*, pp. 11-12. AAAI, 1988.

Books, Invited Articles

- Abdollahpouri, H. & **Burke, R.** Multistakeholder Recommender Systems. Chapter 18 in *Recommender Systems Handbook* (3rd ed.). In press.
- Ekstrand, M., Das, A., **Burke, R.** & Diaz, F. Fairness in Recommendation. Chapter 19 in *Recommender Systems Handbook* (3rd ed.). In press.

- Burke, R.** Technical Perspective: Personalized Recommendation of PoIs to People with Autism. *Communications of the ACM*. 65(2), 100. February 2022.
- Burke, R.** Personalization, Fairness and Post-Userism. Invited chapter in Ghezzi, C., Lee, E., Prem, E., Werthner, H. (eds.) *Perspectives on Digital Humanism*. Springer, 2022.
- Burke, R.,** Ekstrand, M., Tintarev, N. & Vasilieva, J. Preface to the Special Issue on Fairness, Accountability and Transparency in Recommender Systems. *User Modeling and User Adapted Interaction*. 31(3) 371-375. Springer, 2021.
- Kuflik, T., Torre, I., **Burke, R.** & Gena, C. (eds.) *Proceedings of the 28th ACM Conference on User Modeling, Adaptation and Personalization (UMAP 2020)*, Genoa, Italy, July 12-18, 2020. ACM, 2020.
- Vahedian, F. & **Burke, R.** Recommender Systems based on Social Networks. *Encyclopedia of Social Network Analysis and Mining*, (R. Alhajj & J. Rokne, eds.). Springer, 2017.
- Zheng, Y., Mobasher, B., & **Burke, R.** Emotions in Context-aware Recommender Systems. Chapter 15 in *Emotions and Personality in Personalized Services*, pages 311-326. Springer, 2016.
- Burke, R.,** Felfernig, A. & Göker, M. Recommender Systems: An Overview. *AI Magazine* 32(3) 13-18. 2011
- Burke, R.,** Gemmell, J., Hotho, A. & Jäschke, R. Recommendation in the Social Web. *AI Magazine* 32(3) 46-56. 2011.
- Burke, R.** Review of "Recommender Systems: An Introduction". *International Journal of Human-Computer Interaction*, 28(1) 72-73. 2011
- Burke, R.** & Ramezani, M. Matching Recommendation Technologies and Domains. In Kantor, P., Ricci, F., Rokach, L. & Shapira, B. eds. *Handbook of Recommender Systems*. Springer, 2010.
- Burke, R.,** Hurley, N. & O'Mahoney, M. Robust Collaborative Recommendation. In Kantor, P., Ricci, F., Rokach, L. & Shapira, B. eds. *Handbook of Recommender Systems*. Springer, 2010. Revised version published in 2nd edition, 2015.
- Burke, R.,** Felfernig, A. & Schmidt-Thieme, L. (eds.) *Proceedings of the 3rd ACM International Conference on Recommender Systems*. ACM, 2009.
- Burke, R.** Hybrid Web Recommender Systems. In Brusilovsky, P., Kobsa, A., Nejdl, W. (eds.). *The Adaptive Web: Methods and Strategies of Web Personalization.*, Lecture Notes in Computer Science, Vol. 4321, pp. 377-408, Springer, Berlin-Heidelberg, 2007.
- Kulyukin, V. & **Burke, R.** Mining Free Text for Structure. In J. Wang (ed.), *Data Mining: Opportunities and Challenges*, pp. 278-300. Harrisburg, PA: Idea Group Publishers, 2003.
- Burke, R.** Recommenders: Where CBR Meets E-Commerce. *IEEE Intelligent Systems*, 17(3): 6-8. 2002.
- Burke, R.** Knowledge-based Recommender Systems. In A. Kent (ed.), *Encyclopedia of Library and Information Systems*. Vol. 69, Supplement 32. New York: Marcel Dekker, 2000.
- Burke, R.** Representation, Storage and Retrieval of Tutorial Stories in a Social Simulation. Chapter 4 in R. Schank, (ed.) *Multi-Media Case Based Instruction*, pp. 175-283. Mahwah, NJ: Lawrence Erlbaum Associates, 1998.
- Burke, R.,** Hammond, K., Kulyukin, V., Lytinen, S., Tomuro, N. & Schoenberg, S. Question Answering from Frequently-Asked Question Files: Experiences with the FAQ Finder System. *AI Magazine*, 18(2): 57-66, 1997.
- Burke, R.,** Hammond, K. & Young, B. The FindMe Approach to Assisted Browsing. *IEEE Expert*, 12(4), pp. 32-40, 1997.
- Burke, R.** & Kass, A. Retrieving Stories for Case-Based Teaching. In D. Leake, (ed.) *Case-Based Reasoning: Experiences, Lessons, & Future Directions*, pp. 93-106. Menlo Park, CA: AAAI Press, 1996.
- Hammond, K., **Burke, R.** & Schmitt, K. A Case-Based Approach to Knowledge Navigation. In D. Leake, (ed.) *Case-Based Reasoning: Experiences, Lessons, & Future Directions*, pp. 125-136. Menlo Park, CA: AAAI Press, 1996.
- Kass, A., **Burke, R.** & Fitzgerald W. How to Support Learning from Interaction with Simulated Characters. Chapter 10 in B. Gorskaya & J. Mey, (eds.) *Cognitive Technology: In Search of a Humane*

Interface, New York: Elsevier/North-Holland, 1996. Also issued as Technical Report #64, Institute for the Learning Sciences, 1995.

Refereed Conference Presentations

Burke, R. and Shanahan, J. "Reading Chicago Reading." Presentation at the Library Circulation Histories Workshop. Held online. April-May 2021.

Burke, R. "Reading Chicago Reading: A Data-intensive Study of Civic Reading." Presentation the 2nd Digital Scholarship in the Front Range, Boulder, CO, October 2019.

Burke, V. & **Burke, R.** "Powerlessness and Personalization." Presented by V. Burke at Media Ethics: Human Ecology in a Connected World, 20th annual convention of the Media Ecology Association, Toronto, June 2019.

Burke, V. & **Burke, R.** "Powerlessness and Personalization." Presented by both authors at 8th Annual Symposium on Digital Ethics. Loyola University, November 2018.

Burke, R. & Yang, H. "Circulation Modeling of Library Book Promotions." Presented at Chicago Colloquium on Digital Humanities and Computer Science, 2018.

Bernal, M., Burke, R. & Shanahan, J. "Visualizing and Modeling Chicago's 'One Book' Program." Presented at Library Information Technology Association Forum, Ft. Worth, November 19, 2016.

Bernal, M. **Burke, R.** & Shanahan, J. "Reading Chicago Reading: Capture and Analysis of City-Scale Literary Events." Presented at 2016 Chicago Colloquium on Digital Humanities and Computer Science, November 12, 2016.

Bernal, M., Bishop-Royse, J., **Burke, R.**, Ceraso, A., & Shanahan, J. "Data Sources for Modeling Library Texts and Readership." Paper presented at the 2016 International Conference on Computational Social Science, June 25, 2016.

Christiansen, L., **Burke, R.**, & Mobasher, B. "Automated timeline extraction from legal records." Paper presented at the 2014 Chicago Colloquium on Digital Humanities and Computer Science. October 24, 2014.

Burke, R. "Games Across the Curriculum." Poster presented at the Game Developers' Conference Education Summit, February 18, 2008.

Burke, R. "Introduction to Game Design." Presentation at Game Developers' Conference Education Summit, March 5, 2007.

Munoz-Franco, L., Rebull, L. M., **Burke, R. D.**, Fenstermacher, K. D., Lenz, D. D., Marks, M. D., Richardson, D. A. & York, D. G. The Chicago Public Schools-University of Chicago Internet Project. *Bulletin of the American Astronomical Society*, 189(4.11), 1996.

Burke, R. Conceptual Indexing and Active Retrieval of Video for Interactive Learning Environments. Presentation at *Second International Symposium on Knowledge Acquisition, Representation and Processing*, Auburn, Alabama, September 1995.

Kass, A. & **Burke, R.** Augmenting social simulation with storytelling. In *Abstracts of the East-West Conference on Emerging Computer Technologies in Education*. International Centre for Scientific and Technical Information, Moscow, 1992.

Burke, R. Similarity and Utility in Case Retrieval. Poster presented at the DARPA Case-Based Reasoning Workshop II, Washington, D.C., May 1991.

Invited Presentations and Colloquia

Invited Presentation: "Fair Ranking of Job Candidates with CARMA". Society for Industrial and Organizational Psychology, Machine Learning Competition, April 30, 2021.

Invited Presentation: "User Aspects of Fairness-Aware Recommendation". Institute for Cognitive Science, University of Colorado, Boulder. February 5, 2021. Also presented to the NSF National AI Institute for Student-AI Teaming, April 30, 2021.

Invited presentation: "Fairness-Aware Recommender Systems". Dagstuhl Seminar 21231: Transparency by Design. Held online. May 8, 2021.

Invited Presentation: "Machine Learning Fairness through Social Choice: (Something like) a Research Agenda". Department of Information Science, University of Colorado, Boulder. October 2020. Also presented at Texas A&M University. April 12, 2021, and at Accenture Research Labs, San Francisco, May 27, 2021, and at the Vector Institute, Toronto, Canada, December 3, 2021.

Invited Speaker: "Multistakeholder Recommender". Senior scholar presentation. 2020 ACM Conference on Recommender Systems.

Keynote Speaker: "Fairness is not a number: Methodological implications of the politics of fairness-aware systems". International Symposium on Methodologies for Intelligent Systems. September 2020.

Tutorial: (with Alex Beutel, Ed H. Chi, and Fernando Diaz) "Responsible Recommendation and Search Systems", Presented at the 2020 World Wide Web conference. Online presentation, April 2020.

Tutorial: (with Masoud Mansoury and Nasim Sonboli) "Experimentation with fairness-aware recommendation using librec-auto", Presented at the 2020 ACM Conference on Fairness, Accountability and Transparency. Barcelona, Spain. January 2020.

Tutorial: (with Michael Ekstrand and Fernando Diaz) "Fairness and Discrimination in Recommendation and Retrieval", Presented at the 13th ACM Conference on Recommender Systems. Copenhagen, Denmark. September 2019.

Invited Speaker: "Multistakeholder Recommendation". 2nd Recommender Systems Summer School. Gothenburg, Sweden. September 2019.

Invited Speaker: "Provider Fairness in Philanthropic Recommendation", Google Next Generation Recommender Systems Workshop. July 2019.

Keynote Speaker: "What's Hard about Fairness in Recommendation", Workshop on Fairness in User Modeling, Adaptation and Personalization. July 2018. Also presented at Department of Information Science, University of Colorado, Boulder. March 2019.

Invited Presentation: "Adventures in Multistakeholder Recommendation", Department of Information Science, University of Colorado, Boulder. April 2018.

Workshop: "Social Network Analysis with Gephi". Studio CHI workshop series, DePaul University, April 2018.

Tutorial: (with Ana Lučić and John Shanahan) "Mining Diverse Texts for Location and Sentiment". Workshop held at the Chicago Colloquium on Digital Humanities and Computer Science. Illinois Institute of Technology, November 2017.

Invited Presentation: "Reading Chicago Reading: Update", Social Science Research Center Research Show and Tell. DePaul University, June 1, 2017.

Workshop with John Shanahan and Ana Lučić, "Text Analysis Tools for Early Modern Literature: The Case of Margaret Cavendish", Research Methods Workshop for Early-Career Graduate Students, Center for Renaissance Studies, Newberry Library, March 2017.

Colloquium: "Reading Chicago Reading: Modeling Texts and Readers in a Public Library System", Social Science Research Center Colloquium, October 2016.

Colloquium: "Recommendation for Multiple Stakeholders", School of Computing Research Colloquium, DePaul University, September 2016.

Invited Lecturer, "Computational Advertising". Technical University of Graz, December 2015.

Keynote Speaker. "Recommendation in Heterogeneous Networks". IJCAI Workshop on Heterogeneous Information Network Analysis (HINA '15). July 2015.

Invited Lecturer. "Hybrid Recommender Systems." 11th Estonian Summer School on Computer and Systems Science, August 2012.

Invited Presentation: "Data Mining and Machine Learning in Open Adversarial Environments." First Annual Chicago Data Mining Symposium, October 2010.

Colloquium: "Data Mining and Machine Learning in Adversarial Environments." School of Computing Research Colloquium, DePaul University, October 2010.

Invited Lecturer: "Directions in Social Computing" Free University of Bolzano/Bozen, June 2010.

Invited Lecturer: "Recommender Systems" Technical University of Graz, May 2009 and June 2010.

Invited Seminar, "Robust Recommender Systems." Presented at Technical University of Graz, Telefonica Research and Development, University of Warwick, University of Southampton, University College Cork, University College Dublin, Robert Gordon University, Free University of Bolzano/Bozen. Spring 2009.

Tutorial, "Robust Recommendation." Presented at the 2nd ACM International Conference on Recommender Systems (RecSys'08), Lausanne, Switzerland, October 2008.

Colloquium: "Learning in Public: The Challenge of Autonomy for Machine Learning". University College Dublin. November 2008.

Keynote Speaker, "Teaching Computer Game Development: The DePaul Experience." Symposium on Emerging Technologies 2007. Metropolitan State University, St. Paul, Minnesota, October 2007.

Keynote Speaker, "Future Directions in Recommender Systems Research." Workshop on Recommender Systems. Held at the 17th European Conference on Artificial Intelligence. Riva del Garda, Italy, August 2006.

Keynote Speaker, "Recommender Systems and User Modeling," Workshop on Advances in Recommender Systems. Held at the 8th Biennial Israeli Symposium on the Foundations of AI. Haifa, Israel, June 2005.

Invited Panelist. "Commercial Applications of Adaptive Hypermedia." Third International Conference on Adaptive Hypermedia. August 2004.

Invited speaker. "Mixed-Initiative Case-Based Reasoning." Workshop held at the 6th European Conference on Case-Based Reasoning. Aberdeen, Scotland. September 2002.

Invited Panelist. "Case-Based Reasoning in E-Commerce." Workshop held at the 4th International Conference on Case-Based Reasoning. Vancouver, Canada. July / August 2001.

Non-reviewed Publications

Burke, R. *Hybrid Recommender Systems: A Comparative Study*. CTI Technical Report 06-012. 2006.

Burke, R. D., Hammond, K. J., Kulyukin, V. A., Lytinen, S. L., Tomuro, N. & Schoenberg, S. *Question Answering from Frequently-Asked Question Files: Experiences with the FAQ Finder System*. University of Chicago Department of Computer Science. Technical. Report TR-97-05. Chicago, IL, 1997.

Burke, R. & Kass, A. *Interest-Focused Tutoring: A Tractable Approach to Modeling in Intelligent Tutoring Systems*. University of Chicago Department of Computer Science. Technical Report TR-96-08. Chicago, IL, 1996.

Burke, R. (editor) *AI Applications in Knowledge Navigation and Retrieval*. AAAI Technical Report FS-95-03. Menlo Park, CA: AAAI, 1995.

Burke, R. *Representation, Storage and Retrieval of Tutorial Stories in a Social Simulation*. PhD Thesis, Northwestern University, 1993. Issued as Technical Report #50, Institute for the Learning Sciences, 1993.

Schank, R., Fano, A., Jona, M., Bell, B., Allender, L., Birnbaum, L., **Burke, R.,** Cleave, J., Ferguson, R., Foster, D., Goldstein, E., Guralnick, D., Kass, A. and Leone, M. *The Design of Goal-Based Scenarios*. Technical Report #39. Evanston, IL: Institute for the Learning Sciences, 1993.

Kass, A., **Burke, R.,** Blevins, E. & Williamson, M. *The GuSS Project: Integrating Instruction and Practice through Guided Social Simulation*. Technical Report #34. Evanston, IL: Institute for the Learning Sciences, 1992.

Schank, R., Osgood, R., Brand, M., **Burke, R.,** Domeshek, E., Edelson, D., Ferguson, W., Freed, M., Jona, K., Krulwich, B., Ohmaye, E. & Pryor, L. *A Content Theory of Memory Indexing*. Technical Report #2. Evanston, IL: Institute for the Learning Sciences, 1990.

Publications in Progress

Abdollahpouri, H., Mansoury, M., **Burke, R.** & Mobasher, B. Addressing Multistakeholder Impact of Popularity Bias in Recommender Systems. *Decision Support Systems*. Under review.

M. Ekstrand, A. Das, R. Burke and F. Diaz. Fairness and Discrimination in Information Access. *Foundations and Trends in Information Retrieval*. Under revision.

Sonboli, N., **Burke, R.**, Ekstrand, M. & Mehrotra, R. Multisided Fairness in Recommender Systems. Invited article for special issue of *AI Magazine*. In press.

Grants and other Recognition

External

- 10/2021 Principal Investigator with Amy Volda and Nicholas Mattei (Tulane University). National Science Foundation, Information and Intelligent Systems Program, "Fair recommendation through social choice". #2107577. \$938,381.
- 4/2021 Co-principal Investigator with Casey Fiesler and Eric Wustrow. National Science Foundation, Secure and Trustworthy Cyberspace, "Integrating Cybersecurity into Artificial Intelligence Education" #2115028. 5/1/2021 – 4/30/2023. \$297,712.
- 8/2020 Principal Investigator. National Science Foundation, Information and Intelligent Systems Program, REU Supplement for Award #1911025. 9/2020-9/2022. \$8,000.
- 3/2020 Best paper of 2019 award for Malthouse, et al. An Algorithm for Allocating Sponsored Recommendations and Content: Unifying Programmatic Advertising and Recommender Systems. *Journal of Advertising*.
- 10/2019 Principal Investigator. National Science Foundation, Information and Intelligent Systems Program, "Realizing Fairness in Recommender Systems: Intersectionality, Tools, Explanation" #1911025, 10/2019-9/2022. \$497,900.
- 8/2018 Principal Investigator with John Shanahan and Ana Lucic. Lyrasis Foundation. "Data-Intensive Tools for Modeling and Visualizing Mass Reading" 8/2018-7/2019. \$24,352.
- 8/2017 Principal Investigator with John Shanahan and Ana Lucic. HathiTrust Research Center, Advanced Collaborative Support Grant. "Computational Support for Reading Chicago Reading". August 2017 – December 2017. In-kind.
- 6/2016 Co-principal Investigator with John Shanahan, Megan Bernal, and Antonio Ceraso. National Endowment for the Humanities, Digital Humanities Start-up Grant. "Reading Chicago Reading". June 2016–December 2017. \$75,000.
- 9/2014 Principal Investigator with Bamshad Mobasher, National Science Foundation, Information Integration and Informatics Program "Multi-Dimensional Recommendation in Complex Heterogeneous Networks." #1423368, September 2014–September 2017. \$499,884.
- 8/2008 Fulbright Scholar, Ireland. "Autonomic Open Adaptive Systems." US-Irish Fulbright Commission and University College Dublin. August 2008–July 2009.
- 6/2006 Best paper award for Burke, et al. Detecting Profile Injection Attacks in Collaborative Recommender Systems. IEEE Conference on E-Commerce Technology (CEC'06). San Francisco, California.
- 9/2004 Principal Investigator with Bamshad Mobasher, National Science Foundation CyberTrust Program "Secure Personalization: Building Trustworthy Recommender Systems". #0430303. September 2004–September 2007. \$300,000. No-cost extension approved through 8/30/2008.
- 2/2000 Principal Investigator, University of California Digital Media Innovation Program with FileNet Corporation, "Task-based Analogical Retrieval in DONNA" #D99-14. February 2000 – February 2001. Co-principal investigator Michael Pazzani. \$122,542

- 10/1997 National Science Foundation, Major Research Instrumentation grant, "Acquisition of Computational Resources for the Development of an Intelligent Information Laboratory" #CDA-9724286. Co-principal investigator with Kristian J. Hammond, Michael Swain, and Theresa Gaasterland, October 1997 – September 2000. \$549,452
- 3/1997 Principal Investigator for Wasabi, Inc. National Science Foundation "SBIR Phase II" #DMI-9531395. March 1997 – September 1999. \$297,800

Internal

- 8/2020 Discovery Learning Apprenticeship Program, "Social choice for multi-dimensional fairness in recommendation", College of Engineering and Applied Science, CU Boulder.
- 6/2020 Undergraduate Research Opportunities Program, "Multi-dimensional fairness in recommender systems", Special Undergraduate Enrichment Programs, CU Boulder
- 8/2019 Discovery Learning Apprenticeship Program, "Computational tools for reproducible recommender systems experiments", College of Engineering and Applied Science, CU Boulder.
- 6/2019 Undergraduate Research Opportunities Program, "Algorithmic Fairness in Recommender Systems: Tools and Metrics", Special Undergraduate Enrichment Programs, CU Boulder
- 6/2019 Summer Program for Undergraduate Research, "Fairness-aware recommendations for microlending", College of Engineering and Applied Science, CU Boulder.

Internal (DePaul University)

- 3/2017 Provost's Academic Initiative Grant, "Graduate assistant for Reading Chicago Reading". University Research Council, DePaul University.
- 6/2016 Competitive Instructional Grant, "Hardware Support for Collaborative Instruction". Quality of Instruction Council, DePaul University.
- 6/2015 Competitive Collaborative Research Grant, "Reading Chicago Reading". Quality of Research Council, DePaul University.
- 11/2013 Competitive Instructional Grant, "Software Support for Advanced Game Programming Courses." Quality of Instruction Council, DePaul University.
- 6/2011 Spirit of Inquiry Award. DePaul University.
- 7/2008 Paid Leave Award. "Contextual Recommender Systems." University Research Council, DePaul University. July 2008-July 2009.
- 5/2007 Competitive Instructional Grant, "Materials for 'History of Games.'" Quality of Instruction Council, DePaul University.

Consulting

- from 12/2019 Consultant, "Recommendation in an Intranet Talent Portal". Axiom Consulting Partners.
- 11/2014 – 11/2015 Consultant, "Machine Learning of Diagnostic Features for Hardware Fault Attribution". Uptake, Inc.
- 7/2013 – 8/2014 Expert Witness, "Optimize Technology Solutions, LLC v. Staples, Inc. et al." Case No. 2:11-CV-419-JRG (E.D. Texas). Kasowitz, Benson, Torres & Friedman, LLP for Recreational Equipment Inc.
- 10/2012 – 12/2014 Expert Witness, "In the Matter of Certain Products Containing Interactive Program Guide and Parental Control Technology, Investigation No. 337-TA-845, United States International Trade Commission, Kecker & Van Nest LLP for Netflix, Inc.
- 10/2012 – 8/2013 Consultant, "Collaborative Opportunity Recommendation". CareerBuilder.com.
- 1/2011-6/2011 Consultant, "Experience Discovery". Chicago Learning Network.

TEACHING & ADVISING

Curriculum development

Masters in Data Science, planning group member, approved 6/2020, projected start 8/2021.

Minor in Data Science, approved 11/2019, active as of 8/2020.

Course development

INFO 4613: "Network Science", first offered Fall 2021.

INFO 4871/CSCI 4830: "Fairness and Bias in Artificial Intelligence", first offered Spring 2021.

INFO 4612/5612 (was INFO 4871/5871) "Recommender Systems", first offered Spring 2019.

INFO 5871 "Introduction to Data Science for Information Science", first offered Fall 2019.

Student supervision

PhD graduates

Nasim Sonboli (9/2016 - 12/2021), title "Controlling the Fairness / Accuracy Tradeoff in Recommender Systems." Placement: CRA Computing Innovation Post-doctoral fellow, Tufts University.

Xiaolei Huang (1/2020 - 11/2020; assumed role after departure of Michael Paul), title "Metadata Matters: Adaptation Methods for Robust Document Classification." Placement: Assistant Professor, Department of Computer Science, University of Memphis.

Himan Abdollahpouri (1/2014 - 8/2020), title "Popularity Bias in Recommendation: A Multi-stakeholder Perspective." Placement: Post-doctoral fellow, Northwestern University

Fatemeh Vahedian (9/2012 - 12/2017), title: "Multi-relational recommendation in heterogeneous networks." Placement: Post-doctoral fellow, University of Michigan

PhD advisor

Dianna Radpour: 4th year (co-advisor with Martha Palmer)

Jess Smith: 3rd year (co-advisor with Casey Fiesler)

Vladislav Grozin: 2nd year

Comprehensive exam committee

Morgan Scheuermann, from 2019

James Dykes, from 2019

Thesis committee member

Masoud Mansoury, Technical University of Eindhoven, graduated 10/2021.

External examiner

Avital Tal, University of Haifa, 2020.

Jacek Wasilewski, University College, Dublin, 2018.

Brendan O'Huiginn, University College Dublin, 2011.

Gil Chamiel, School of Computer Science and Engineering, University of New South Wales, 2010.

Antonis Loizou, University of Southampton, 2009.

Peter Briggs, University College Dublin, 2009.

Graduate research projects and independent studies

Veena Prasad, Survey of fairness properties for recommendation algorithms, Spring/Fall 2020.

Shruthi Sridharan, Exploration of hybrid recommendation methods for microlending data, Spring/Fall 2020.

Undergraduate research projects and independent studies

Shreyas Kadekodi, Social choice for multi-dimensional fairness in recommendation, 9/2020-6/2021

Andrew Schwartz and Ziyue Guo, Multi-dimensional fairness in recommender systems, 9/2020-6/2021

Florencia Berenfus Cabral, Fairness-aware recommendations for microlending, 6/2019-8/2019

Bum Kim & Olwyn Doyle, Algorithmic Fairness in Recommender Systems: Tools and Metrics, 6/2019-8/2019.

Zijun Liu, Computational tools for reproducible recommender systems experiments, 9/2019-5/2020

Undergraduate honors supervision

Shreyas Kadekodi, Multi-criteria optimization in a multi-stage fairness-aware recommendation pipeline. From 9/2021.

Undergraduate honors committee

Olwyn Doyle, The role of decision support systems in the criminal justice system. Spring 2020.

SERVICE**University of Colorado, Boulder**

Member ex-officio, Computing Advisory Board, from 7/2019

Steering committee, Masters of Data Science degree, from 9/2020

Task force on Colorado Academy for Computer, Data and Information Science, from 1/2019.

Task force on online Masters of Data Science degree, 5/2019 – 11/2019

Task force on consolidated Masters of Data Science degree, 11/2019 – 6/2020

Review board, Undergraduate Research Opportunities Program, Spring 2020

College of Media, Communication and Information

College Personnel Committee, 9/2019-6/2020.

Chairs' Caucus, from 11/2019.

College Scholarship Committee, Spring 2019

Department of Information Science

Chair, department academic program review committee, from 9/2021.

Task force on graduate curriculum, 1/2019-6/2019

National and International

from 9/2021 Member of the Advisory Board, Know-Center, Technical University of Graz.

from 9/2020 Member of Working Group on Recommender System Alignment, Partnership on AI.

from 10/2019 Member of Working Group on Recommender Systems Performance Evaluation, MLPerf.org.

- 6/2019-12/2021 Member of Governance and Research in Artificial Intelligence Leadership Network, Center for Democracy and Technology.
- Program Co-Chair, 28th Conference on User Modeling, Adaptation and Personalization. Held online. July 12-18, 2020.
- Chair, Workshop on Recommendation in Multistakeholder Environments. Held in conjunction with ACM Conference on Recommender Systems, 2019.
- Co-Chair, 2nd International Workshop in Fairness in User Modeling, Adaptation and Personalization. Held in conjunction with the ACM Conference on User Modeling, Adaptation and Personalization, 2019.
- Co-Chair, 1st International Workshop in Fairness in User Modeling, Adaptation and Personalization. Held in conjunction with the ACM Conference on User Modeling, Adaptation and Personalization, 2018.
- Chair, 1st International Workshop on Value-Aware and Multi-Stakeholder Recommendation. In conjunction with ACM Conference on Recommender Systems, 2017.
- Steering Committee, Chicago Colloquium on Digital Humanities and Computer Science. Founding member from 10/2017 – 12/2018.
- Co-organizer: Recommender Systems Summer School, Bozen-Bolzano, 2017.
- Co-chair: Doctoral Consortium, ACM Conference on Recommender Systems, 2017.
- Steering Committee, ACM Conference on Recommender Systems. Founding member from 9/2008, Vice chair 9/2015 – 8/2017. Chair from 8/2017.
- General Co-Chair of 5th ACM Conference on Recommender Systems, Chicago, 2010 – 2011.
- Program Co-Chair of the 3rd ACM Conference on Recommender Systems, New York University, 2009
- Conference Chair of the 10th International Conference on Case-Based Reasoning, DePaul University, 2005.
- Faculty external review: External habilitation review for faculty member at Technical University of Graz, August 2020. Full professor review for faculty member at
- Grant review: Regular reviewer for the National Science Foundation, Austrian Science Foundation, Research Council of Hong Kong, Science Foundation Ireland.
- Editorial: Associate Editor, *ACM Transactions on Recommender Systems*, from 8/2021. Editorial board, *Electronic Commerce Research with Applications*, 6/2018 – 9/2019. *User Modeling and User-Adapted Interaction*, from 7/2019.
- Program committees: Regular service on numerous conference program committees including ACM Conference on Recommender Systems, ACM Conference on User Modeling and Personalization, FLAIRS Conference, International Joint Conference on Artificial Intelligence, International Conference on Electronic Commerce and Web Technologies (EC-WEB). Numerous workshops including AI for Social Good, Responsible Recommendation, Recommender Systems for the Social Web, Intelligence Techniques in Web Personalization.
- Reviewer: Regular journal article reviews for numerous publications including Information Processing and Management, ACM Transactions on Internet Technology, Social Network Analysis and Mining, IEEE Transactions on Knowledge and Data Engineering, ACM Transactions on the Web, IEEE Transactions on Systems, Man and Cybernetics-Part B, ACM Transactions on Intelligent Systems and Technology.
- Guest editor: *User Modeling and User-Adapted Interaction* “Fairness and Transparency in Personalized Systems” with Michael Ekstrand, Nava Tintarev, and Julita Vasileva. To be published 2021.
- Electronic Commerce Research with Applications* “Recommender Systems with Side Information” with Hui Fang, Guibing Guo, and Jie Zhang, 2018.
- User Modeling and User Adapted Interaction* “User Interfaces for Recommender Systems.” with Alexander Felfernig and Pearl Pu, 2011.

AI Magazine "The Future of Recommender Systems: Research and Applications." with Alexander Felfernig and Mehmet Göker, 2011.

Artificial Intelligence Review, "AI Approaches to User Requirements Elicitation for E-Commerce." with Pádraig Cunningham, 2002.

2021 Invited textbook review for *Intelligent Recommendation Technology*, Taylor and Francis Press.

2020 Invited textbook reviewer for *Personalized Machine Learning*, Cambridge University Press.

2009 Invited Textbook Reviewer for *Recommender Systems*, Cambridge University Press.

2009 Chapter Reviewer for *Recommender Systems Handbook*.

2008 Reviewer and editor for International Game Developers' Association Curriculum Framework.

1998-2001 Founder and Chair: Working Group on Computers in Education, Computer Professionals for Social Responsibility.

External

10/2020 Student project reviewer, Northglenn High School.

1/2013-6/2014 Advisor to PandaPrepared.org, a community service project supporting personal emergency preparedness through mobile applications.

2012-2014 Volunteer coach for First Lego League robotics competition, Girl Scout Troop #24, Evanston, IL.

2009-2014 Volunteer mathematics tutor at Haven Middle School, Evanston, IL.

9/2004 TechWatch volunteer for the Verified Voting Foundation. Helping to ensure responsible use of voting technology in the November 2004 election.

10/2003 Developed and installed community-support database for Great Oaks School, Evanston, Illinois.

2001 Invited presentation: "Hot PANs, Fat Pipes, Cool Chips, Smart Paint and Other Curiosities from the 21st Century Web." At the 3rd Annual Web Institute for Teachers, University of Chicago, July 6, 2001.

1999 Invited presentation: "The Future of the Internet in Education." At the 1st Annual Web Institute for Teachers, University of Chicago. July 8, 1999.

1997-1998 Co-director (with Craig Cunningham) of "The WWW for Teachers", educational outreach courses for inner-city schoolteachers. University of Chicago, Graham School of General Studies.

1996-1998 Chicago Public Schools / University of Chicago Internet Project. Outreach project assisting inner-city schools near the University of Chicago to access and use the Internet.