ARIJIT KHAN

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RESEARCH INTERESTS

Data management for the emerging problems in large graphs, with a focus on user-friendly, efficient, and approximate querying and pattern mining in social and information networks, using scalable algorithms, machine learning techniques, and distributed systems.

keywords: big graphs, big data, graph systems, knowledge graphs, uncertain graphs, graph streams, databases, data mining, machine learning, algorithms, exploratory data analysis, crowdsourcing, blockchain network analysis.

ACADEMIC POSITIONS AND PRIOR EMPLOYMENT

- **Computer Science, Aalborg University** — Aalborg, Denmark
  Associate Professor — *May 2022 - now*

- **Computer Science, Nanyang Technological University** — Singapore
  Assistant Professor — *Dec. 2015 - Apr. 2022*

- **Systems Group, ETH Zurich** — Zurich, Switzerland
  Postdoctoral Researcher, Host: Donald Kossmann — *Sep. 2013 - Nov. 2015*

- **Computer Science, UC Santa Barbara** — Santa Barbara, CA, USA
  Graduate Research Assistant — *Sep. 2008 - Sep. 2013*

- **Yahoo! Research Lab** — Barcelona, Spain
  Research Intern, Mentor: Francesco Bonchi and Aristides Gionis — *June 2012 - Sep. 2012*

- **IBM T. J. Watson Research Center** — Hawthorne, NY, USA
  Research Intern, Mentor: Shu Tao, Manager: Nikos Anerousis — *June 2010 - Sep. 2010*

- **Electrical Engineering, Indian Institute of Science** — Bangalore, India
  Summer Research Fellow, Mentor: Lawrence Jenkins — *June 2007 -Sep. 2007*

EDUCATION

- **University of California, Santa Barbara** — Santa Barbara, CA, USA
  Ph.D., Computer Science — *Sep. 2008 - Sep. 2013*
  Thesis Towards Querying and Mining of Large-Scale Networks
  Ph.D. adviser Xifeng Yan, GPA: 3.95/4

- **Jadavpur University** Kolkata, India

B.E., Computer Science and Engineering *Sep. 2004 - June 2008*

GPA: 9.39/10, First Class (Honors), ranked 1st among 62 students

FUNDING

- **Novo Nordisk Foundation Recruit Grant** Denmark

PI, DKK 10,000,000 *June 2022 - May 2027*

Data Management, Fundamental Algorithms, and Machine Learning for Emerging Problems in Large Networks – with Interdisciplinary Applications in Life and Health Sciences

- **NRF-Delta-NTU Corporate Lab Grant** Singapore

PI, SG$ 605,000 *Feb. 2020 - Jun. 2021*

User-Friendly Question-Answering and Assistance with Knowledge Graphs: Towards Understanding User Experience in Smart Learning

- **AcRF MOE Tier 2 Grant** Singapore

PI, SG$ 642,480 *Apr. 2020 - Apr. 2022*

Machine Learning and Data Mining over Dynamic and Stream Networks

- **AcRF MOE Tier 1 Grant** Singapore

PI, SG$ 99,000 *Mar. 2020 - Feb. 2022*

Human-AI Collaboration for User-Guided Complex Networks Querying and Exploration

- **NRF-ST Engineering-NTU Corporate Lab Grant** Singapore

PI, SG$ 585,000 *Jan. 2018 - Dec. 2019*

Health Monitoring and Predictive Maintenance for UAV through Data Analytics

- **AcRF MOE Tier 1 Grant** Singapore

PI, SG$ 100,000 *Nov. 2016 - Jan. 2019*

Influence Maximization in Social Networks: From Reel to Real World

- **NTU Start-Up Grant** Singapore

PI, SG$ 500,000 and 4 PhD Students *Dec. 2015 - Dec. 2019*

Big-Graphs Analytics and Systems: Supporting User-friendly Querying

PUBLICATIONS

[h-index: 24, citations: 2350 per Google Scholar]

Peer-Reviewed Books

[1] Arijit Khan, Yuan Ye, and Lei Chen, *On Uncertain Graphs*, in Morgan & Claypool Publishers, Synthesis Lectures on Data Management, 2018.

Peer-Reviewed Book Chapters

[2] Yinghui Wu and Arijit Khan, *Graph Pattern Matching*, in Sherif Sakr and Albert Zomaya (eds.), Encyclopedia of Big Data Technologies, Springer, 2019.

[3] Arijit Khan and Sayan Ranu, *Big-Graphs: Querying, Mining, and Beyond*, in Sherif Sakr and Albert Zomaya (eds.), Handbook of Big Data Technologies, Springer, 2017.

Peer-Reviewed Journal and Conference Papers

Note that in many areas within computer science, including databases and data mining, *conferences* (not journals) are the primary venues for peer-reviewed publications.

[4] **PVLDB 2023:** Naheed Anjum Arafat, Arijit Khan, Arpit Kumar Rai, and Bishwamittra Ghosh, Neighborhood-based Hypergraph Core Decomposition, in Proc. of the VLDB Endowment, 2023, [Impact Factor=3.56].

[5] **PVLDB 2023:** Peng Fang, Arijit Khan, Siqiang Luo, Fang Wang, Dan Feng, Zhenli Li, Wei Yin, and Yuchao Cao, *Distributed Graph Embedding with Information-Oriented Random Walks*, in Proc. of the VLDB Endowment, 2023, [Impact Factor=3.56].

[6] **ICDE 2023:** Arkaprava Saha, Xiangyu Ke, Arijit Khan, and Cheng Long, *Most Probable Densest Subgraphs*, in Proc. of IEEE International Conference on Data Engineering 2023.

[7] **ICDE 2023:** Arkaprava Saha, Xiangyu Ke, Arijit Khan, and Laks V.S. Lakshmanan, *Voting-based Opinion Maximization*, in Proc. of IEEE International Conference on Data Engineering 2023.

[8] **SIGMOD Record 2023:** Arijit Khan, *Knowledge Graphs Querying*, in ACM SIGMOD Record 2023.

[9] **ICDE 2022:** Yuxiang Wang, Arijit Khan, Xiaoliang Xu, Jiahui Jin, Qifan Hong, and Tao Fu, *Aggregate Queries on Knowledge Graphs: Fast Approximation with Semantic-aware Sampling*, in Proc. of IEEE International Conference on Data Engineering 2022, [Acceptance Rate: 211/780 (27%)].

[10] **CIKM 2022:** Yuxiang Wang, Arijit Khan, Xiaoliang Xu, Shuzhan Ye, Shihuang Pan, and Yuhan Zhou, *Approximate and Interactive Processing of Aggregate Queries on Knowledge Graphs: A Demonstration*, (Demo), in Proc. of ACM International Conference on Information and Knowledge Management 2022.

[11] **WSDM 2022:** Voon Hou Su, Sourav Sen Gupta, and Arijit Khan, *Automating ETL and Mining of Ethereum Blockchain Network*, (Demo), in Proc. of the Web Search and Data Mining Conference 2022.

[12] **TKDE 2022:** Xiangyu Ke, Arijit Khan, Mohammad Al Hasan, and Rojin Rezvansangsari, *Reliability Maximization in Uncertain Graphs*, in IEEE Transactions on Knowledge and Data Engineering Journal 2022, 34(2): 894-913, [Impact Factor=4.56].

[13] **TKDD 2022:** Xiangyu Ke, Arijit Khan, and Francesco Bonchi, *Multi-relation Graph Summarization*, in ACM Transactions on Knowledge Discovery from Data Journal 2022,

[Impact Factor=2.71].

[14] **KBS 2022:** Tianxing Wu, Arijit Khan, Melvin Yong, Guilin Qi, and Meng Wang, *Efficiently Embedding Dynamic Knowledge Graphs*, in Knowledge-based Systems Journal 2022, [Impact Factor=8.038].

[15] **IEEE Blockchain 2022:** Arijit Khan, *Graph Analysis of the Ethereum Blockchain Data: A Survey of Datasets, Techniques, and Future Direction*, (Short Paper), in Proc. of IEEE International Conference on Blockchain 2022, [Acceptance Rate: 14/139 (10.07%)], [Featured in Research Pulse #72 (https://smartcontractresearch.org/t/research-pulse-72-07-05-22/1714) by the Smart Contract Research Forum (SCRF)].

[16] **COMPLEX NETWORKS 2022:** Lin Zhao, Arijit Khan, Robby Luo, and Chai Kiat Yeo, *Graph Mining and Machine Learning for Shader Codes Analysis to Accelerate GPU Tuning*, in Proc. of International Conference on Complex Networks and their Applications 2022.

[17] **PVLDB 2021:** Arkaprava Saha, Ruben Brokkelkamp, Yllka Velaj, Arijit Khan, and Francesco Bonchi, *Shortest Paths and Centrality in Uncertain Networks*, in Proc. of the VLDB Endowment, 14(7): 1188-1201, 2021, [Acceptance Rate: 24%], [Impact Factor=3.56].

[18] **WebConf 2021:** Lin Zhao, Sourav Sen Gupta, Arijit Khan, and Robby Luo, *Temporal Analysis of the Entire Ethereum Blockchain Network*, in Proc. of The Web Conference 2021, [Acceptance Rate: 357/1736 (20.6%)].

[19] **ICDE 2021:** Xiangyu Ke, Arijit Khan, Mohammad Al Hasan, and Rojin Rezvansangsari, *Reliability Maximization in Uncertain Graphs*, (Extended Abstract), in Proc. of IEEE International Conference on Data Engineering 2021.

[20] **COMPLEX NETWORKS 2021:** Luo Fei, Tianxing Wu, and Arijit Khan, *Online Updates of Knowledge Graph Embedding*, in Proc. of International Conference on Complex Networks and their Applications 2021.

[21] **IEEE BigData 2021:** Jhalak Gupta and Arijit Khan, *Graph Classification with Minimum DFS Code: Improving Graph Neural Network Expressivity*, in Proc. of IEEE International Conference on Big Data 2021, [presented at Machine Learning on Big Data (MLBD 2021), special session of IEEE BigData 2021].

[22] **SIGMOD 2020:** Junghoon Kim, Tao Guo, Kaiyu Feng, Gao Cong, Arijit Khan, and Farhana Choudhury, *Densely Connected User Community and Location Cluster Search in Location-Based Social Networks*, in Proc. of ACM International Conference on Management of Data 2020, [Acceptance Rate: 27%].

[23] **PVLDB 2020:** Arneish Prateek, Arijit Khan, Akshit Goyal, and Sayan Ranu, *Mining Top-k Pairs of Correlated Subgraphs in a Large Network*, in Proc. of the VLDB Endowment, 13(9):1511-1524, 2020, [Acceptance Rate: 24.91%], [Impact Factor=3.56].

[24] **WebConf 2020:** Xi Tong Lee, Arijit Khan, Sourav Sen Gupta, Yu Hann Ong, and Xuan Liu, *Measurements, Analyses, and Insights on the Entire Ethereum Blockchain Network*, in Proc. of The Web Conference 2020, [Acceptance Rate: 217/1129 (19%)].

[25] **ICDE 2020:** Yuxiang Wang, Arijit Khan, Tianxing Wu, Jiahui Jin, and Haijiang Yan, *Semantic Guided and Response Times Bounded Top-k Similarity Search over Knowledge Graphs*, in Proc. of IEEE International Conference on Data Engineering 2020.

[26] **ICDE 2020:** Tenindra Abeywickrama, Muhammad Aamir Cheema, and Arijit Khan, *K-SPIN: Efficiently Processing Spatial Keyword Queries on Road Networks*, (Extended Abstract), in Proc. of IEEE International Conference on Data Engineering 2020.

[27] **TKDE 2020:** Tenindra Abeywickrama, Muhammad Aamir Cheema, and Arijit Khan, *K-SPIN: Efficiently Processing Spatial Keyword Queries on Road Networks*, in IEEE Transactions on Knowledge and Data Engineering Journal, 32(5): 983-997, 2020, [Impact Factor=4.56].

[28] **IEEE BigData 2020:** Kenneth Teo Tian Shun, Eko Edita Limanta, and Arijit Khan, *An Evaluation of Backpropagation Interpretability for Graph Classification with Deep Learning*, in Proc. of IEEE International Conference on Big Data 2020, [Acceptance Rate: 83/535 (15.5%)].

[29] **SIGMOD 2019:** Francesco Bonchi, Arijit Khan, and Lorenzo Severini, *Distance-generalized Core Decomposition*, in Proc. of ACM International Conference on Management of Data 2019, [Acceptance Rate: 88/430 (20%)].

[30] **PVLDB 2019:** Xiangyu Ke, Arijit Khan, and Leroy Lim Hong Quan, *An In-Depth Comparison of s-t Reliability Algorithms over Uncertain Graphs*, in Proc. of the VLDB Endowment, 12(8): 864-876, 2019, [Impact Factor=3.56].

[31] **IEEE BigData 2019:** Kaivalya Rawal and Arijit Khan, *Maximizing Contrasting Opinions in Signed Social Networks*, (Short Paper), in Proc. of IEEE International Conference on Big Data 2019, [Acceptance Rate: 105/550 (19%)].

[32] **SIGMOD 2018:** Xiangyu Ke, Arijit Khan, and Gao Cong, *Finding Seeds and Relevant Tags Jointly: For Targeted Influence Maximization in Social Networks*, in Proc. of ACM International Conference on Management of Data 2018, [Acceptance Rate: 90/461 (20%)].

[33] **PVLDB 2018:** Xiangyu Ke, Michelle Teo, Arijit Khan, and Vijaya Krishna Yalavarthi, *A Demonstration of PERC: Probabilistic Entity Resolution With Crowd Errors*, (Demo), in Proc. of the VLDB Endowment, 11(12):1922–1925, 2018, [Impact Factor=3.56].

[34] **USENIX ATC 2018:** Arijit Khan, Gustavo Segovia, and Donald Kossmann, *On Smart Query Routing: For Distributed Graph Querying with Decoupled Storage*, in Proc. of USENIX Annual Technical Conference 2018, [Acceptance Rate: 76/378 (20%)].

[35] **TKDE 2018:** Arijit Khan, Francesco Bonchi, Francesco Gullo, and Andreas Nufer,

Conditional Reliability in Uncertain Graphs, in IEEE Transactions on Knowledge and Data Engineering Journal, 30(11): 2078-2092, 2018, [Impact Factor=4.56].

[36] **ICDE 2018:** Shanshan Feng, Gao Cong, Arijit Khan, Xiucheng Li, Yong Liu, and Yeow Meng Chee, *Inf2vec: Latent Representation Model for Social Influence Embedding*, in Proc. of IEEE International Conference on Data Engineering 2018.

[37] **IEEE BigData 2018:** Siyuan Liu and Arijit Khan, *An Empirical Analysis on Expressibility of Vertex Centric Graph Processing Paradigm*, in Proc. of IEEE International Conference on Big Data 2018, [Acceptance Rate: 98/518 (19%)].

[38] **IEEE BigData 2018:** Vijaya Krishna Yalavarthi and Arijit Khan, *Steering Top-k Influencers in Dynamic Graphs via Local Updates*, (Short Paper), in Proc. of IEEE International Conference on Big Data 2018, [Acceptance Rate: 103/518 (20%)].

[39] **CIKM 2017:** Vijaya Krishna Yalavarthi, Xiangyu Ke, and Arijit Khan, *Select Your Questions Wisely: For Entity Resolution With Crowd Errors*, in Proc. of ACM International Conference on Information and Knowledge Management 2017, [Acceptance Rate: 171/820 (21%)].

[40] **EDBT 2017:** Arijit Khan, *Vertex-Centric Graph Processing: Good, Bad, and the Ugly*, (Short Paper), in Proc. of International Conference on Extending Database Technology 2017, [Acceptance Rate: 22/93 (24%)].

[41] **SNAM 2017:** Arijit Khan and Charu Aggarwal, *Toward Query-Friendly Compression of Rapid Graph Streams*, in Springer Social Network Analysis and Mining Journal, 7(1):23:1-23:19, 2017, (**invited** and peer-reviewed), [Impact Factor=1.61].

[42] **SIGMOD 2016:** Pratanu Roy, Arijit Khan, and Gustavo Alonso, *Augmented Sketch: Faster and More Accurate Stream Processing*, in Proc. of ACM International Conference on Management of Data 2016, [Acceptance Rate: 20%].

[43] **ICDE 2016:** Arijit Khan, Benjamin Zehnder, and Donald Kossmann, *Revenue Maximization by Viral Marketing: A Social Network Host's Perspective*, in Proc. of IEEE International Conference on Data Engineering 2016, [Acceptance Rate: 25%].

[44] **ICDE 2016:** Nandish Jayaram, Arijit Khan, Chengkai Li, Xifeng Yan, and Ramez Elmasri, *Querying Knowledge Graphs by Example Entity Tuples*, (Extended Abstract), in Proc. of IEEE International Conference on Data Engineering 2016.

[45] **CIKM 2016:** Arijit Khan, *Towards Time-Discounted Influence Maximization*, (Short Paper), in Proc. of ACM International Conference on Information and Knowledge Management 2016, [Acceptance Rate: 300/925 (32%)].

[46] **ASONAM 2016:** Arijit Khan and Charu Aggarwal, *Query-Friendly Compression of Graph Streams*, in Proc. of IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2016, [Acceptance Rate: 43/316 (14%)].

[47] **TKDE 2015:** Nandish Jayaram, Arijit Khan, Chengkai Li, Xifeng Yan, and Ramez Elmasri, *Querying Knowledge Graphs by Example Entity Tuples*, in IEEE Transactions on Knowledge and Data Engineering Journal, 27(10): 2797-2811, 2015, [Impact Factor=4.56].

[48] **CIKM 2015:** Arijit Khan, Francesco Gullo, Thomas Wohler, and Francesco Bonchi, *Top-k Reliable Edge Colors in Uncertain Graphs*, (Short Paper), in Proc. of ACM International Conference on Information and Knowledge Management 2015, [Acceptance Rate: 25%].

[49] **SSDBM 2015:** Arijit Khan and Vishwakarma Singh, *Top-k Representative Queries with Binary Constraints*, in Proc. of International Conference on Scientific and Statistical Database Management 2015, [Acceptance Rate: 26/71 (37%)].

[50] **SIGMOD 2014:** Arijit Khan, Pouya Yanki, Bojana Dimcheva, and Donald Kossmann, *Towards Indexing Functions: Answering Scalar Product Queries*, in Proc. of ACM International Conference on Management of Data 2014, [Acceptance Rate: 107/421 (25.41%)].

[51] **EDBT 2014:** Arijit Khan, Francesco Bonchi, Aristides Gionis, and Francesco Gullo, *Fast Reliability Search in Uncertain Graphs*, in Proc. of International Conference on Extending Database Technology 2014, [Acceptance Rate: 20%].

[52] **ICDE 2014:** Nandish Jayaram, Mahesh Gupta, Arijit Khan, Chengkai Li, Xifeng Yan, and Ramez Elmasri, *GQBE: Querying Knowledge Graphs by Example Entity Tuples*, (Demo), in Proc. of IEEE International Conference on Data Engineering 2014, [Acceptance Rate: 28/65 (43.1%)].

[53] **PVLDB 2013:** Arijit Khan, Yinghui Wu, Charu Aggarwal, and Xifeng Yan, *NeMa: Fast Graph Search with Label Similarity*, in Proc. of the VLDB Endowment, 6(3): 181-192, 2013, [Acceptance Rate: 22.7%], [Impact Factor=3.56].

[54] **SIGMOD 2012:** Shengqi Yang, Xifeng Yan, Bo Zong, and Arijit Khan, *Towards Effective Partition Management for Large Graphs*, in Proc. of ACM International Conference on Management of Data 2012, [Acceptance Rate: 16.6%].

[55] **CIKM 2012:** Nan Li, Xifeng Yan, Zhen Wen, and Arijit Khan, *Density Index and Proximity Search in Large Graphs*, in Proc. of ACM International Conference on Information and Knowledge Management 2012, [Acceptance Rate: 146/1088 (13.4%)].

[56] **SIGMOD 2011:** Arijit Khan, Nan Li, Xifeng Yan, Ziyu Guan, Supriyo Chakraborty, and Shu Tao, *Neighborhood Based Fast Graph Search in Large Networks*, in Proc. of ACM International Conference on Management of Data 2011, [Acceptance Rate: 23%].

[57] **SDM 2011:** Charu Aggarwal, Arijit Khan, and Xifeng Yan, *On Flow Authority Discovery in Social Networks*, in Proc. of SIAM International Conference of Data Mining 2011, [Acceptance Rate: 25.1%].

[58] **SIGMOD 2010:** Arijit Khan, Xifeng Yan, and Kun-Lung Wu, *Towards Proximity*

Pattern Mining in Large Graphs, in Proc. of ACM International Conference on Management of Data 2010, [Acceptance Rate: 20.8%].

Peer-Reviewed Tutorials

[59] **DSAA 2023:** Arijit Khan and Ehsan B. Mobaraki, *Interpretability Methods for Graph Neural Networks*, in Proc. of EEE International Conference on Data Science and Advanced Analytics, 2023.

[60] **CIKM 2022:** Arijit Khan and Cuneyt Gurcan Akcora, *Graph-based Management and Mining of Blockchain Data*, in Proc. of ACM International Conference on Information and Knowledge Management, 2022, [Acceptance Rate: 7/21 (33%)].

[61] **PVLDB 2017:** Arijit Khan, Sourav S. Bhowmick, and Francesco Bonchi, *Summarizing Static and Dynamic Big Graphs*, in Proc. of the VLDB Endowment, 10(12): 1981-1984, 2017, [Acceptance Rate: 8/16 (50%)], [Impact Factor=3.56].

[62] **PVLDB 2015:** Arijit Khan and Lei Chen, *On Uncertain Graphs Modeling and Queries*, in Proc. of the VLDB Endowment, 8(12): 2042-2043, 2015, [Acceptance Rate: 6/20 (30%)], [Impact Factor=3.56].

[63] **PVLDB 2014:** Arijit Khan and Sameh Elnikety, *Systems for Big-Graphs*, in Proc. of the VLDB Endowment, 7(13): 1709-1710, 2014, [Impact Factor=3.56].

[64] **ICDE 2012:** Arijit Khan, Yinghui Wu, and Xifeng Yan, *Emerging Graph Queries In Linked Data*, in Proc. of IEEE International Conference on Data Engineering 2012.

Invited Articles

[65] Arijit Khan and Yinghui Yu, *Graph Pattern Matching Queries – Approximation and User-friendliness*, in the ACM SIGMOD Blog 2017.

Peer-Reviewed Workshop Presentations

[66] **GRADES-NDA 2023:** Ehsan B. Mobaraki and Arijit Khan, *Interpretability Methods for Graph Neural Networks*, (Demo), in Joint Workshop on Graph Data Management Experiences & Systems (GRADES) and Network Data Analytics (NDA) (GRADES & NDA'23), co-located with International Conference on Mangement of Data 2023 (SIGMOD 2023).

[67] **GRADES-NDA 2022:** Lin Zhao, Arijit Khan, and Robby Luo, *ShaderNet: Graph-based Shader Code Analysis to Accelerate GPU's Performance Improvement*, (Demo), in Joint Workshop on Graph Data Management Experiences & Systems (GRADES) and Network Data Analytics (NDA) (GRADES & NDA'22), co-located with International Conference on Mangement of Data 2022 (SIGMOD 2022).

[68] **SIAM NS 2018:** Arijit Khan, *Conditional Reliability and Influence Maximization over Social Networks*, in SIAM Workshop on Network Science 2018.

[69] **GRADES 2014:** Nandish Jayaram, Arijit Khan, Chengkai Li, Xifeng Yan, and Ramez Elmasri, *Towards a Query-by-Example System for Knowledge Graphs*, in Proc. of Graph Data-management, Experiences, and Systems 2014, co-located with International Conference on Management of Data 2014 (SIGMOD 2014).

[70] **GDM 2012:** Arijit Khan, Vishwakarma Singh, and Jian Wu, *Find Skyline Nodes in Large Networks*, in Proc. of International Workshop on Graph Data Management: Techniques and Applications 2012, co-located with IEEE International Conference in Data Engineering 2012 (ICDE 2012).

[71] **CloudMan 2012:** Arijit Khan, Xifeng Yan, Shu Tao, and Nikos Anerousis, *Workload Characterization and Prediction in the Cloud: A Multiple Time Series Approach*, in Proc. of Cloud Management 2012, co-located with IEEE/IFIP Network Operations and Management Symposium 2012 (NOMS 2012).

[72] **WISARD 2008:** Arijit Khan and Lawrence Jenkins, *Undersea Wireless Sensor Network for Ocean Pollution Prevention*, in Proc. of WIreless Systems: Advanced Research and Development 2008, co-located with IEEE Communication Systems Software and Middleware 2008 (COMSWARE 2008).

Editorials and Front Matters

[73] Angela Bonifati, Yongluan Zhou, Marcos Antonio Vaz Salles, Alexander Böhm, Dan Olteanu, George H. L. Fletcher, Arijit Khan, and Bin Yang, *Proceedings of the 23nd International Conference on Extending Database Technology, [front matter]*, EDBT 2020, OpenProceedings.org 2020.

[74] Fusheng Wang, Gang Luo, Chunhua Weng, Arijit Khan, Prasenjit Mitra, and Cong Yu (eds.), *Biomedical Data Management and Graph Online Querying, [front matter]*, VLDB 2015 Workshops, Big-O(Q) and DMAH, in Lecture Notes in Computer Science, Springer.

Technology Disclosures

[75] Arijit Khan and Luo Fei, *Online Updates of Knowledge Graph Embedding*, NTUitive 2021-291.

[76] Arijit Khan and Aiqin Zhao, *The Combination of Data Analysis Methods and Machine Learning System for Fault Detection and Prediction*, NTUitive 2020-099.

[77] Arijit Khan and Xiangyu Ke, *Reliability Maximization in Uncertain Graphs*, NTUitive 2019-205.

[78] Arijit Khan and Xiangyu Ke, *Finding Seeds and Relevant Tags Jointly: For Targeted Influence Maximization in Social Networks*, NTUitive 2019-206.

HONORS & AWARDS

- **Appointed** as an ACM Distinguished Speaker (2023-2025).

- **Elevated** to the grade of IEEE Senior member (2022).

- **Received**, PVLDB 2022 Distinguished Reviewers Award.

- **Featured**, our IEEE Blockchain 2022 paper "Graph Analysis of the Ethereum Blockchain Data: A Survey of Datasets, Methods, and Future Work" in Research Pulse #72 by the Smart Contract Research Forum (SCRF)

- **Invited** as a Panel Expert for graph data management in ICDE 2022.

- **Recognized** by Aminer among the Most Influential Scholar Award Honorable Mention for my outstanding and vibrant contributions to the field of Database between 2010 and 2020.

- **Received**, Honourable Mention for the NTU SCSE Outstanding PhD Thesis Award, by My PhD student Xiangyu Ke, graduated in 2020.

- **Invited** to lead a panel discussion among industry leaders on synergies between data analytics and machine learning at the 3rd Edition of GFMI Conference Optimizing Data Governance, Quality and Consistency in Financial Services, 2019, Singapore.

- **Invited** for National Institute of Informatics (NII) Shonan Meeting on "Graph Database Systems: Bridging Theory, Practice, and Engineering", July 2018, Japan.

- **Invited** to contribute a chapter in the "Springer Encyclopedia of Big Data Technologies".

- **Invited** to present a tutorial at the Asia Pacific Web and Web-Age Information Management Joint Conference on Web and Big Data (APWeb-WAIM 2017).

- **Invited** to contribute an article in the ACM SIGMOD Blog, 2017.

- **Invited** to present a tutorial at 21st International Conference on Management of Data (COMAD 2016).

- **Invited** to submit our IEEE/ACM ASONAM 2016 paper on graph-streams in Springer Journal of Social Network Analysis and Mining (SNAM).

- **Invited** to submit an extended version of our VLDB 2015 tutorial as a book in Morgan & Claypool's Data Management series.

- **Invited** to contribute a chapter in the Springer handbook on Big Data Technologies.

- **Received**, VLDB 2014 Tutorial Honorarium, (US$ 350).

- Part of our VLDB 2014 Tutorial on Big-Graphs Systems included in the Large Scale Data Management (CS 848) Course 2015, University of Waterloo.

- **Invited** for Dagstuhl Seminar on "Systems and Algorithms for Large Scale Graph Analysis", November 2014, Schloss Dagstuhl - Leibniz Center for Informatics, Germany.

- **Received**, IBM Ph.D. Fellowship 2012-13, (US\$ 30,000).

- **Received**, NSF ICDE 2012 Scholarship, (US\$ 725).

- **Received**, NSF SDM 2011 Student Travel Award, (US\$ 1,000).

- **Received**, P1 fellowship 2009-10, Computer Science, UC Santa Barbara, (US\$ 4,500).

- **Received**, CITRIX GO-TO fellowship 2008-09, Computer Science, UC Santa Barbara, (US\$ 8,000).

- **Winner**, Gold Medal from the Department of Computer Science and Engineering, Jadavpur University in 2008.

- **Winner**, Gold Medal by Tata Consultancy Services Ltd. for being the best student of the Department of Computer Science and Engineering, Jadavpur University in 2008.

INVITED TALKS

- *Synergies Between Data Analytics and Machine Learning*

    - 3rd Edition of **GFMI Conference** Optimizing Data Governance, Quality and Consistency in Financial Services, **Singapore** (March 2019).

- *Data Management for Emerging Problems in Large Networks*

    - **University of California San Diego, USA** (April 2023).
    - **Max-Planck-Institut für Informatik, Germany** (November 2022).
    - **The AI-ML Seminar, Aalborg University, Denmark** (September 2022).
    - **The Dutch Seminar on Data Systems Design, Netherlands** (June 2022).
    - **AI Singapore, Singapore** (Aug 2021).
    - **University of Utah, Utah, USA** (April 2021).
    - **BITS Pilani, Hyderabad, India** (Jan 2021).
    - **Singtel NCS Hub, Singapore** (July 2019).
    - **Singapore Management University, Singapore** (July 2018).
    - **Northeastern University, Boston, Massachusetts, USA** (July 2018).
    - **Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts, USA** (July 2018).
    - **National Institute of Informatics (NII) Shonan Meeting, Japan** (July 2018).

- *Querying Big-graphs: Streaming and Beyond*

- **National University of Singapore, Singapore** (September 2017).
- **Peking University, Beijing, China** (July 2017).
- **ISI Foundation, Torino, Italy** (February 2017).
- **A*STAR/I2R (Institute for Infocomm Research), Singapore** (January 2017).
- **Monash University, Melbourne, Australia** (October 2015).
- **RMIT University, Melbourne, Australia** (October 2015).
- **University of California, Los Angeles, USA** (September 2015).

- *On Uncertain Graphs Modeling and Queries*

  - **ISI Foundation, Torino, Italy** (June 2019).
  - **Invited Tutorial** in the Asia Pacific Web and Web-Age Information Management Joint Conference on Web and Big Data (**APWeb-WAIM 2017**).
  - **IBM Research, Delhi, India** (September 2016).
  - **Invited Tutorial** at 21st International Conference on Management of Data 2016 (**COMAD 2016**).

- *Towards Querying and Mining of Big-Data*

  - **HP Innovation Center, Singapore** (June 2017).
  - **IIT Kharagpur, India** (July 2015).
  - **Microsoft Research, Bangalore, India** (June 2015).
  - **NEC Labs, Cupertino, USA** (May 2015).
  - **University of California, Riverside, USA** (March 2015).
  - **Oregon State University, USA** (February 2015).
  - **Nanyang Technological University, Singapore** (February 2015).
  - **Indian Institute of Science, Bangalore, India** (January 2015).
  - **IIT Kanpur, India** (December 2014).
  - **Dagstuhl Seminar**, Schloss Dagstuhl - Leibniz Center for Informatics, Germany (November 2014).
  - **Microsoft Research, Redmond, USA** (June 2014).
  - **IBM Research, Almaden, USA** (June 2014).
  - **Yahoo! Research, Barcelona, Spain** (June 2014).
  - **IBM Research, Bangalore, India** (January 2014).
  - **Systems Group, ETH Zurich, Switzerland** (October 2013).
  - **IIT Bombay, India** (August 2013).
  - **Alcatel-Lucent Lab, NJ, USA** (May 2013).
  - **Bosch Research, Palo Alto, USA** (February 2013).
  - **IIT Guwahati, India** (December 2011).

TEACHING

- **Instructor**, Mobile Data and Location-based Services, AAU Aalborg
- **Instructor**, Database Systems, AAU Aalborg
- **Instructor**, Intro. Databases, NTU Singapore
- **Instructor**, Network Science, NTU Singapore
- **Instructor**, Algorithms for Databases Seminar, ETH Zurich
- **Instructor**, Big-Graph Systems Seminar, ETH Zurich
- **Teaching Assistant**, Data Mining, UCSB
- **Teaching Assistant**, NP-Completeness, UCSB
- **Teaching Assistant**, Theory of Computation, UCSB
- **Teaching Assistant**, Introduction to Programming, UCSB

CURRENT AND FORMER STUDENTS SUPERVISED

- **PhD Students**
- Ehsan B. Mobaraki (AAU) (paper in GRADES & NDA 2023, DSAA 2023)
- Sarah Hasan (AAU)
- Dazhuo Qiu (AAU)
- Conglei Xu (AAU)
- Xiangyu Ke (NTU) (SIGMOD 2018 Travel Award)
(Honourable Mention for the NTU SCSE Outstanding PhD Thesis Award 2020)
(paper in CIKM 2017, SIGMOD 2018, VLDB 2018, 2019, ICDE 2021, TKDD 2021, TKDE 2022, 2 papers in ICDE 2023)
(next position: Assistant Professor, Zhejiang University)
- Arkaprava Saha (NTU) (VLDB 2021 Virtual Attendance Support Award)
(paper in VLDB 2021, 2 papers in ICDE 2023)
(next position: Postdoc, CNRS@CREATE, Singapore)
- Lin Zhao (NTU) (paper in WebConf 2021, GRADES & NDA 2022, COMPLEX NETWORKS 2022)
- Tenindra Abeywickrama (Visiting PhD student from Monash University)
(paper in TKDE 2020, ICDE 2020)
- Peng Fang (Visiting PhD student from Huazhong University of Science and Technology)
(paper in VLDB 2023)

- **Research Staffs and Visitors**
- Tianxing Wu (NTU, Postdoctoral Researcher) (paper in ICDE 2020, COMPLEX NETWORKS 2021, KBS 2022)
(next position: Assistant Professor, Southeast University)
- Yuxiang Wang (NTU, Visiting Lecturer from Hangzhou Dianzi University)
(paper in ICDE 2020, ICDE 2022, CIKM 2022)
- Aiqin Zhao (NTU, Postdoctoral Researcher)
(Technology Disclosure: NTUitive 2020-099)
- Luo Fei (NTU, Research Associate)
(Technology Disclosure: NTUitive 2021-291; paper in COMPLEX NETWORKS 2021)
- Xuan Liu (NTU, Research Associate, paper in WebConf 2020)
- Vijaya Krishna Yalavarthi (NTU, Research Associate)
(paper in CIKM 2017, VLDB 2018, IEEE BigData 2018)

- **Master Thesis Supervisor**
○ Andreas Nufer (ETH, paper in TKDE 2018)
○ Gustavo Segovia (ETH, paper in USENIX ATC 2018)
○ Benjamin Zehnder (ETH, paper in ICDE 2016)
○ Bojana Dimcheva (ETH, paper in SIGMOD 2014)

- **Undergraduate Thesis Supervisor**
○ Jhalak Gupta (NTU, Intern from IIT Indore) (paper in IEEE BigData 2021)
○ Kenneth Teo Tian Shun (NTU, paper in IEEE BigData 2020)
○ Eko Edita Limanta (NTU, paper in IEEE BigData 2020)
○ Xi Tong Lee (NTU, paper in WebConf 2020)
○ Yu Hann Ong (NTU, paper in WebConf 2020)
○ Michelle Teo Wan Teng (NTU, paper in VLDB 2018)
○ Siyuan Liu (NTU, paper in IEEE BigData 2018)
○ Leroy Lim Hong Quan (NTU, paper in VLDB 2019)
○ Kaivalya Rawal (NTU, Intern from BITS-Pilani) (Paper in IEEE BigData 2019)
○ Rojin Rezvan (NTU, Intern from Sharif University) (Paper in TKDE 2020, ICDE 2021)
○ Thomas Wohler (ETH, paper in CIKM 2015)

SERVICE

- <u>Associate Editor</u> for IEEE Transactions on Knowledge and Data Engineering (TKDE), 2019 - present [Impact Factor=4.56].

- <u>Co-Chair</u> for ICDE 2023 TKDE Poster Track.

- <u>Proceedings Chair</u> for EDBT 2020.

- <u>Co-Chair</u> for Big-O(Q) 2015 Workshop (Co-located with VLDB 2015).

- <u>Senior Program Committee Member</u> for TheWebConf (2018).

- <u>Program Committee Member</u> for SIGMOD (2024, 2023 Demo Track, 2022, 2020, 2018 Demo Track, 2016 Demo Track, 2014 Best Demo Selection Committee), VLDB (2024, 2023, 2022, 2021, 2020, 2019, 2016 PhD Workshop Track), ICDE (2022, 2021, 2018 Demo Track, 2017 Demo Track), AAAI (2021), KDD (2016, 2015), SDM (2021), TheWebConf (2019), WWW (2017, 2016), ICDM (2018, 2016, 2015), CIKM (2019, 2018, 2017, 2016, 2015), EDBT (2018, 2017, 2015), DSAA (2019), DASFAA (2017), Australasian Database Conference (2017, 2016).

- <u>Journal Reviewer</u> for ACM Transactions on Database Systems (TODS), IEEE Transactions on Knowledge and Data Engineering (TKDE), VLDB Journal, ACM Transactions on Knowledge Discovery from Data (TKDD), Communications of the ACM (CACM), Distributed and Parallel Databases (DAPD), Nature Scientific Reports, ACM Transactions on the Web (TWEB), ACM Transaction on Information Systems (TOIS), ACM Computing Surveys, Elsevier Journal of Parallel and Distributed Computing (JPDC), Knowledge and Inforation Systems (KAIS), Elsevier Journal of Knowledge Based Systems (KBS), IEEE Transactions on Dependable and Secure Computing, Elsevier Journal of Information Sys-

tems (IS), Fundamenta Informaticae.

- <u>External Reviewer</u> for ICDT 2017, SIGMOD 2015 (Industrial Track), ICDCS 2014, IEEE Transactions on Neural Networks, VLDB 2014, MLG 2013, SIGMOD 2013, ICDE 2013, WWW 2013, VLDB 2013, ICDM 2012, SIGMOD 2011, SDM 2011, SIGKDD 2010, SDM 2010, SIGMOD 2010, ICDM 2010, ICDM 2009, ICDE 2009.

- <u>Grant Reviewer</u> for Hong Kong GRF 2020.

- <u>Conference Session Chair</u> for IEEE Blockchain 2022, SIGMOD 2022, ICDE 2021, VLDB 2020, VLDB 2019, CIKM 2017, COMAD 2016, VLDB 2015.

- <u>Panel Member</u> for ICDE 2022.

- <u>Industry Panel Chair</u> for GFMI Conference Optimizing Data Governance, Quality and Consistency in Financial Services, Singapore 2019.

- <u>External Examiner for PhD Dissertation</u>, Aalto University, 2022.

- <u>Judge</u> for The Global Undergraduate Awards (UA), the world's leading undergraduate awards programme (undergraduateawards.com), 2020.

- <u>Industry Attachment Co-ordinator</u> for the School of Computer Science and Engineering, Nanyang Technological University, Singapore (2020-2022).

- <u>Jury Member for the Outstanding PhD Thesis Award</u> for the School of Computer Science and Engineering, Nanyang Technological University, Singapore (2021).

- <u>Innovation Mentor for Singapore Ministry of Education's Innovation Programme (IvP)</u>, Singapore, (2022).