Cüneyt Gürcan Akçora

University of Central Florida

BA1-419, 12744 Pegasus Drive, Orlando, Florida, 32816 *E-mail:* cuneyt.akcora@ucf.edu
Web: `cakcora.github.io`

Research Interests

- Topological data analysis
- Blockchain data analytics
- Explainable artificial intelligence
- Data Science on complex networks, large-scale graph analysis
- Nonparametric statistics, bootstrap on graphs
- Deep learning and graph mining on Blockchain networks
- Machine learning for privacy and security research on online social networks

Work Experience

- **2023 - now: University of Central Florida, Orlando, FL, USA**
  - ◇ *Associate Professor of Finance, and Computer Science*
  - ◇ *Faculty at the AI Initiative*
  - ◇ *Candidacy talk title: Topological Graph Machine Learning*
- **2019 - adjunct since 2023: University of Manitoba, Winnipeg, MB, Canada**
  - ◇ *Assistant Professor of Computer Science, and Statistics*
  - ◇ *Faculty at Data Science Nexus*
  - ◇ *Candidacy talk title: Statistical Graph Mining: from Social Networks and Event Logs to Blockchain*
- **2016 - 2019: University of Texas at Dallas, TX, USA**
  - ◇ *Postdoctoral Fellow at Computer Science, and Statistics*
  - ◇ *Advisors: Murat Kantarcioglu (CS) and Yulia Gel (Stat.)*
- **2015 - 2016: Huawei Research, Istanbul, Turkey**
  - ◇ *Research Engineer. Intelligent Search Group*
- **2014: Qatar Computing Research Institute (QCRI), Doha, Qatar**
  - ◇ *Research Associate. Data Analytics Group*

Education

- **2010-2014: Università degli Studi dell'Insubria, Varese, Italy**
  - ◇ *Thesis: Profiling user interactions on online social networks*
  - ◇ *Ph.D. in Computer Science*
  - ◇ Advisors: Elena Ferrari and Barbara Carminati
- **2012 Feb-Apr: University of Texas at Dallas, Dallas, TX, USA**
  - ◇ *Visiting researcher, Computer Science*
  - ◇ Advisor: Murat Kantarcioglu

- **2008-2010: State University of New York at Buffalo, Buffalo, NY, USA**
  - ◇ *M.Sc. in Computer Science and Engineering*
  - ◇ *Thesis: Using Microblogs for Crowdsourcing and Public Opinion Mining*
  - ◇ Advisor: Murat Demirbas
- **2005-2006: Gent University, Gent, Belgium**
  - ◇ *Electronics and Information Systems*
  - ◇ *Erasmus Exchange Student*
- **2002-2007: Karadeniz Technical University, Trabzon, Turkey**
  - ◇ *B.Sc. in Electrical and Electronics Engineering*

Honors and Awards

◇ Fulbright Scholar to USA, 2008-2010.
◇ Amazon Web Services Research Grant, 2013.
◇ NSF travel award for SAMSI at Duke University, 2017.
◇ IBM travel award for SIGKDD, July 2010.
◇ IEEE travel award for ICDM, December 2012.
◇ Graduated as an honor student from Karadeniz Technical University, 2007.

Postdoctoral Researchers

2022 Dec - 2023 Sep **Md. Zulfikar Alom**
◇ *Computer Science*

Graduate Students

Students at University of Central Florida

2025 Jan - Current **Abdulkadir Erol**
◇ *PhD student in Computer Science*

Students at University of Manitoba

2023 Sep - Current **Baha Rababah with Carson Leung**
◇ *PhD student in Computer Science*

2021 Jan - Current **Poupak Azad**
◇ *PhD student in Computer Science*

2021 Sep - Current **Funmilola Mary Taiwo**
◇ *PhD student in Statistics*

2021 Sep - Current **Kiarash Shamsi**
◇ *PhD student in Computer Science*

2020 - 2022 **Asif Neloy with Max Turgeon**
◇ *MSc in Computer Science*
◇ Thesis: Disentangled conditional variational autoencoder for unsupervised anomaly detection.

2020 - 2022 **Md. Abdullah Al Mamun with Rasit Eskicioglu**
◇ *MSc in Computer Science*
◇ Thesis: Real-time integration of IoT sensor and IOTA tangle for securing IoT infrastructure.

Undergraduate Students

2024 - Current	**Ronan Buck**, UCF CS
2023 - Current	**Bao Ngo**, UM CS
2022 - 2024	**Jason Chu**, UM CS
2023 - 2023	**Shuya Zhi**, UM CS
2021 - 2022	**Blessings Manatsa** ◇ *Mitacs Business Strategy Grantee in Computer Science*

Internships

2012 Jun-Aug	**Yahoo! Research Barcelona** ◇ *Advisor: Francesco Bonchi*
2005 July-Aug	**University of Cairo**, Cairo, Egypt ◇ IAESTE Student Program

Military Service

2014 Nov - 2015 Apr	Private, **Nigde Il Jandarma Komutanligi, Nigde, Turkey**

Grants

Internal grants

- **FoS 2021-2022**: With Xuemiao Hao (Actuaries), A Comprehensive Analysis of Use Cases and Application Domains of Blockchain in Insurance, Interdisciplinary Research Grant of UManitoba, $15,000.

External grants

- **MITACS 2022-2023**: Co-Investigator with Liqun Wang, Shaowei Wang, Carson Leung and Get-Greenline Inc. *Data Science for Business Analytics* (unused after approval due to research pivot), $90,000.
- **Research Manitoba Health Council 2021-2023**: Principal Investigator with Carson Leung and Protegra Inc. *Bonafide: A Novel Protocol and Software Infrastructure for Improving Online Information Sharing and Control.* Innovation Proof-of-Concept 4413, $150,000.
- **MITACS 2021-2022**: Principal Investigator with Carson Leung and Protegra Inc. *Bonafide: A Novel Protocol and Software Infrastructure for Improving Online Information Sharing and Control.* Mitacs Accelerate, $90,000.
- **NSERC 2020-2025**: Principal Investigator. Data Science on Blockchains, NSERC discovery grant with an additional supplement for early researchers, DGECR-2020-00302, $135,000.
- ◇ **CANSSI 2021**: Co-Investigator With Dorcas Ofori-Boateng, Postdoctoral Research Full Fellowship from the Canadian Statistical Sciences Institute (2020-2021, unused due to tenure track appointment of Dr. Ofori-Boateng at the Portland State Univ.), $80,000.

Publications (**Asterisks denote a Ph.D. or MS. student**)

H-Index: 23, I10-Index: 36. 2156 citations Source: Google Scholar.

Books

◇ **Blockchain: Fundamentals, Data Structures and Algorithms for Data Science**
C. G. Akcora, Y. R. Gel, M. Kantarcioglu
Course book for Data Science on Blockchains pp 1—489 (2026).
The book is delivered to the publisher.
Cambridge University Press.

Peer Reviewed Conference Papers

- **MiNT: Multi-Network Transfer Benchmark for Temporal Graph Learning**
  K. Shamsi, T. G. B. Ngo, R. Shirzadkhani, S. Huang, F. Poursafaei, P. Azad, R. Rabbany, B. Coskunuzer, G. Rabusseau, C. G. Akcora
  NeurIPS 2025, Thirty-ninth Conference on Neural Information Processing Systems, Datasets and Benchmarks Track, San Diego, CA, USA, pp 1—9 (2025).
- **TopER: Topological Embeddings in Graph Representation Learning**
  A. Tola, F. M. Taiwo, C. G. Akcora, B. Coskunuzer
  NeurIPS 2025, Thirty-ninth Conference on Neural Information Processing Systems, Main Track, San Diego, CA, USA, pp 1—9 (2025).
- **GOttack: Universal Adversarial Attacks on Graph Neural Networks via Graph Orbits Learning**
  Z. Alom, T. G. B. Ngo, M. Kantarcioglu, C. G. Akcora
  ICLR 2025, The Thirteenth International Conference on Learning Representations, Singapore, pp 1—9 (2025).
- **Chainlet Orbits: Topological Address Embedding for the Bitcoin Blockchain**
  P. Azad, B. Coskunuzer, M. Kantarcioglu, C. G. Akcora
  KDD 2025, ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Toronto, Canada, pp 1—9 (2025). (2025).
- **On the Impact of the Lightning Network on Bitcoin Transaction Fees and Network Value**
  S. dos Santos, J. Singh, B. S. Dhillon, R. K. Thulasiram, C. Akcora, S. Kamali
  IEEE International Conference on Blockchain (Blockchain), pp 148–156 (2024).
- **GraphPulse: Topological representations for temporal graph property prediction**
  K. Shamsi, F. Poursafaei, S. Huang, Bao Tran Gia Ngo, B. Coskunuzer, C. G. Akcora
  ICLR 2024, The Twelfth International Conference on Learning Representations pp 1—10, Vienna, Austria (2024).
- **Deep Learning-Based Credit Score Prediction: Hybrid LSTM-GRU Model.**
  ASL, G.S., Shamsi, K., Thulasiram, R.K., Akcora, C. and Leung, C., IEEE Symposium Series on Computational Intelligence (SSCI) pp 395-400 (2023).
- **CALOSYS—A Robust Blockchain-based Marketing Loan Ecosystem for Small Businesses**
  Shamsi, K., Khorasani, K.E., Rouhani, S. and Akcora, C.G., 2023, May.
  IEEE International Conference on Blockchain and Cryptocurrency (ICBC) pp 1-3, (2023).
- **Smart Vectorizations for Single and Multiparameter Persistence**
  B. Coskunuzer, C. G. Akcora, Z. Zhen, I. Dominguez, Y. R. Gel, M. Kantarcioglu
  LoG 2023, Learning on Graphs Conference, pp 1—12.
- **Chartalist: Labeled Graph Datasets for UTXO and Account based blockchains**
  *K. Shamsi, F. Victor, M. Kantarcioglu, Y. Gel, C.G. Akcora
  Neurips 2022, Thirty-sixth Conference on Neural Information Processing Systems pp 1—10 (2022).
- **Reduction Algorithms for Persistence Diagrams of Networks: CoralTDA and PrunIT**
  C. G. Akcora, B. Coskunuzer,Y. R. Gel, M. Kantarcioglu
  Neurips 2022 (Spotlight article), Thirty-sixth Conference on Neural Information Processing Systems pp 1—10 (2022).
- **Topological anomaly detection in dynamic multilayer blockchain networks**
  *D. Ofori-Boateng, I. Segovia Dominguez, C.G. Akcora,*Y. Li, Y. R. Gel, M. Kantarcioglu
  ECML PKDD '21 The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases pp 1—12 (2021).
- **Alphacore: Data Depth based Core Decomposition**
  *F. Victor, C. G. Akcora, Y. R. Gel, M. Kantarcioglu
  KDD '21: The 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, online, pp 1—9 (2021).

◇ **BitcoinHeist: Topological Data Analysis for Ransomware Payment Detection on the Bitcoin Blockchain**
C. G. Akcora,*Y. Li, Y. R. Gel, M. Kantarcioglu
29th International Joint Conference on Artificial Intelligence (IJCAI-PRICAI 2020)
Tokyo, Japan, pp 1—7 (2020).

◇ **Ethereum Token Price Anomaly Prediction with Topological Depth Curves**
*Y. Li, *U. D. Islambekov, C. G. Akcora, E. Smirnova, Y. R. Gel, M. Kantarcioglu
SIAM International Conference on Data Mining (SDM) pp 1—9 (2020).

◇ **ChainNet: Learning on Blockchain Graphs with Topological Features**
*N. C. Abay, C. G. Akcora, *U. D. Islambekov, Y. R. Gel, M. Kantarcioglu, B. Thuraisingham
The 19th IEEE International Conference on Data Mining (ICDM)
Beijing, China, pp 1—10 (2019).

◇ **Attacklets: Modeling High Dimensionality in Real World Cyberattacks**
C. G. Akcora, J. Bakdash, Y. R. Gel, L. Marusich, M. Kantarcioglu, B. Thuraisingham
IEEE International Conference on Intelligence and Security Informatics (ISI) (34%)
Florida, Miami, USA pp 1—5 (2018).

◇ **Forecasting Bitcoin Price with Graph Chainlets**
C. G. Akcora, *A. K. Dey, Y. R. Gel, M. Kantarcioglu
The 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)
Melbourne,Australia, pp 1—12 (2018).

◇ **Temporal rules discovery for web data cleaning**
Z. Abedjan, C. G. Akcora, M. Ouzzani, P. Papotti, M. Stonebraker
The 42nd Very Large Data Bases Conference (VLDB)
New Delhi, India, pp 336—347 (2015).

◇ **Discovering trust patterns in ego networks**
C. G. Akcora, E. Ferrari
The 4th IEEE/ACM International Conference on Social Network Analysis and Mining (ASONAM)
Beijing, China, pp 224—229 (2014).

◇ **Multi-dimensional conversation analysis across online social networks**
*W. Lucia, C. G. Akcora, E. Ferrari
The 3rd IEEE International Conference on Social Computing and its Applications (SCSM)
Karlsruhe, Germany, pp 369—376 (2013).

◇ **Risks of friendships on social networks**
C. G. Akcora, B. Carminati, E. Ferrari
The 12th IEEE International Conference on Data Mining (ICDM)
Brussels, Belgium, pp 810—815 (2012).

◇ **Privacy in social networks, how risky is your social graph?**
C. G. Akcora, B. Carminati, E. Ferrari
The 28th IEEE International Conference on Data Engineering (ICDE)
Washington D.C, USA, pp 9—19 (2012).

◇ **Network and profile based measures for user similarities on social networks**
C. G. Akcora, B. Carminati, E. Ferrari
The 12th IEEE International Conference on Information Reuse and Integration (IRI)
Las Vegas, NV, USA, pp 292—298 (2011).

◇ **Building virtual communities on top of online social networks**
C. G. Akcora, B. Carminati, E. Ferrari
The 5th European Conference on Information Management and Evaluation (ECIME)
Como, Italy, pp 12—23 (2011).

◇ **Crowd-sourced sensing and collaboration using Twitter**
M. Demirbas, *M. A. Bayir, C. G. Akcora, *Y. S. Yilmaz, H. Ferhatosmanoglu

The 11th IEEE Int. Symp. on a World of Wireless, Mobile and Multimedia Networks (WoWMoM) Montreal, Canada, pp 1—9 (2010).

Journal Publications

- **Machine Learning for Blockchain Data Analysis: Progress and Opportunities**
  P. Azad, C. G. Akcora, A. Khan
  Distributed Ledger Technologies: Research and Practice, 2024.
- **A topological approach for capturing high-order interactions in graph data with applications to anomaly detection in time-varying cryptocurrency transaction graphs**
  Umar Islambekov, Hasani Pathirana, Omid Khormali, Cüneyt Akçora, Ekaterina Smirnova.
  Foundations of Data Science, pp 1–22 (2024). `https://doi.org/10.3934/fods.2024024`.
- **Bioelectronic Medicine: a multidisciplinary roadmap from biophysics to precision therapies**
  M. A. Gonzalez-Gonzalez, S. V. Conde, R. Latorre, S. Thebault, M. Pratelli, N. C Spitzer, A. Verkhratsky, M. Tremblay, C. G. Akcora, A. G. Hernandez-Reynoso, M. Ecker, J. Coates, K. L. Vincent and B. Ma
  Frontiers in Integrative Neuroscience, pp 1–38 (2024).
- **Network models of protein phosphorylation, acetylation, and ubiquitination connect metabolic and cell signaling pathways in lung cancer**
  K. Ross, G Zhang, C. G. Akcora, Y. Lin, B. Fang, J. Koomen, E. Haura, M. Grimes
  PLOS Computational Biology, pp 1–72 (2023).
- **Topological Forest**
  M. A. Bayir, *K. Shamsi, C. G. Akcora
  IEEE Access, pp 1–10 (2023).
- **Data Science for Blockchain**
  C. G. Akcora, Y. R. Gel, M. Kantarcioglu
  SIAM News, online at `https://sinews.siam.org/Details-Page/data-science-for-blockchain` (2022).
- **Blockchain Networks: Data Structures of Bitcoin, Monero, Zcash, Ethereum, Ripple and Iota**
  C. G. Akcora, Y. R. Gel, M. Kantarcioglu
  Wiley Wires Surveys in Computer Science, pp 1—39 (2021).
- **On the Role of Local Blockchain Network Features in Cryptocurrency Price Formation**
  *A. K. Dey, C. G. Akcora, Y. R. Gel, M. Kantarcioglu
  Canadian Journal of Statistics, pp 1—33 (2020).
- **GraphBoot: Quantifying Uncertainty in Node Feature Learning on Large Networks**
  C. G. Akcora, Y. R. Gel, M. Kantarcioglu, V. Lyubchich, B. Thuraisingham, IEEE Transactions on Knowledge and Data Engineering, pp 1—16 (2019).
- **Blockchain Analytics for Intraday Financial Risk Modeling**
  Matthew Dixon, C. G. Akcora, Yulia R. Gel, M. Kantarcioglu, Springer's Digital Finance, pp 1—25 (2019).
- Invited paper: **Blockchain Data Analytics**
  C. G. Akcora, Matthew Dixon, Yulia R. Gel, M. Kantarcioglu, IEEE Bulletin of Intelligent Informatics, pp 1—8 (2018).
- **Bitcoin Risk Modeling with Blockchain Graphs**
  C. G. Akcora, Matthew Dixon, Yulia R. Gel, M. Kantarcioglu, Economics Letters, pp 1—5 (2018).
- **Blockchain: A graph primer (2017 Edition)**
  C. G. Akcora, Y. R. Gel, M. Kantarcioglu
  arXiv:1708.08749, pp 1—16 (2017).

- **Detecting anomalies in social network data consumption**
  C. G. Akcora, B. Carminati, E. Ferrari, M. Kantarcioglu
  Springer Social Network Analysis and Mining, Vol. 4, pp 231—245 (2014).
- **User similarities on social networks**
  C. G. Akcora, B. Carminati, E. Ferrari
  Springer Social Network Analysis and Mining, Vol. 3, pp 475—495 (2013).
- **Trend sensing via Twitter**
  Y. S. Yilmaz, *M. F. Bulut, C. G. Akcora, *M. A. Bayir, M. Demirbas
  Inderscience Ad Hoc and Ubiquitous Computing, Vol. 14, 16—26 (2013).

Workshops

- **Are Existing Large Language Models Robust Against Jailbreak Attacks?**
  B. Rababah, S. T. Wu, M. Kwiatkowski, C. K. Leung, C. G. Akcora
  IEEE International Conference on Big Data (BigData), pp 5383–5391 (2024).
- **SOK: Prompt Hacking of Large Language Models**
  B. Rababah, S. T. Wu, M. Kwiatkowski, C. K. Leung, C. G. Akcora
  IEEE International Conference on Big Data (BigData), pp 5392–5401 (2024).
- **Identifying breakpoints in public opinion**
  C. G. Akcora, *M. A. Bayir, M. Demirbas, H. Ferhatosmanoglu
  The 1st Workshop on Social Media Analytics (KDD'10 SOMA)
  Washington D.C, USA, pp 62—66 (2010).

Panels

- **Coinbase Machine Learning and Blockchain Summit**
  C. G. Akcora, Rajarshi Gupta (ML head at Coinbase), Bhaskar Krishnamachari (University of Southern California), Mohammad Sadoghi (UC Davis), Lori Vergara (PalmNFT)
  Online, (2023).
- **AI for Security and Security for AI**
  C. G. Akcora, E Bertino, M Kantarcioglu (UT Dallas), S Samtani (Indiana University), S Mittal (University of North Carolina), M Gupta (Maanak Gupta)
  ACM Conference on Data and Application Security and Privacy (CodaSPY)
  Dallas, Texas, (2019).

Book Chapters

- **Using Deep Learning to Generate Relational HoneyData**
  N. C. Abay, C. G. Akcora, Y. Zhou, M. Kantarcioglu, B. Thuraisingham
  Springer, Automated Cyber Deception, pp 1—16 (2019).

Encyclopedia Entries

- **User Similarities on Social Networks**
  C. G. Akcora, E. Ferrari
  Springer Encyclopedia of Social Network Analysis and Mining (ESNAM), pp 1734—1743 (2014).
- **Graphical User Interfaces for Privacy Settings**
  C. G. Akcora, E. Ferrari
  Springer Encyclopedia of Social Network Analysis and Mining (ESNAM), pp 1—8 (2014).

Translation

- English-Turkish, **Fundamentals of Information Systems Security**
  David Kim and Michael G. Solomon, ISBN: 978-605-033-000-7
  Chapter 3: Malicious Attacks, Threats, and Vulnerabilities, pp 70—110
  Publisher: NOBEL Akademik Yayıncılık, Edited by Ozgu Can (2019).

Other Publications, Under Submission

- ◇ **TopoFormer: Topology Meets Attention for Graph Learning**
  M. J. Uddin, A. Tola, C. G. Akcora, B. Coskunuzer

- ◇ **Hydra: Towards Transferable Multi-Task Learning on Temporal Graphs**
  K. Shamsi, F. Poursafaei, T. G. B. Ngo, R. Rabbany, B. Coskunuzer, G. Rabusseau, S. Huang, C. G. Akcora

- ◇ **ATEX-CF: Attack-Informed Counterfactual Explanations for Graph Neural Networks**
  Y. Zhang, S. B. Yang, A. Khan, C. G. Akcora

- ◇ **Adversarial Graph Neural Network Benchmarks: Towards Practical and Fair Evaluation**
  T. G. B. Ngo, Z. Alom, F. Errica, M. Kantarcioglu, C. G. Akcora

- ◇ **Explaining the Power of Topological Data Analysis in Graph Machine Learning**
  F. M. Taiwo, U. Islambekov, **Cuneyt Akcora**
  arXiv preprint arXiv:2401.04250 (2024).
- ◇ **Wise-GNN: Enhancing GNNs with Wise Embeddings**
  M. J. Uddin, A. Tola, **Cuneyt Akcora**, B. Coskunuzer
  arXiv preprint (2024).
- ◇ **Topological Methods in Machine Learning: A Tutorial for Practitioners**
  B. Coskunuzer, **Cuneyt Akcora**
  arXiv preprint arXiv:2409.02901 (2024).
- ◇ **How to Not Get Caught When You Launder Money on Blockchain**
  Cuneyt Akcora, Y. R. Gel, M. Kantarcioglu
  Editorial requests would have made the article unrecognizable, so we did not consider a resubmission.
  Editor's rejection note: *Thanks for the resubmission, but I am still not finding that this paper is appropriate for XXX. Frankly, I was expecting a much more significant revision... The amount of material about how to launder money without getting caught is too much for a XXX paper.*
  `https://arxiv.org/pdf/2010.15082.pdf`, pp. 1—7.
- ◇ **Twitter: Roots, Influence and Applications**
  Cuneyt Akcora, M. Demirbas
  Technical Report, Department of Computer Science and Engineering
  University at Buffalo, NY, pp. 1—24 (2010).

Public Media

Radio Interviews

- ◇ ***CBC Radio One - Canada****. Risks and the Future of AI, July 2023.*

Podcasts

- ◇ **Tech Detonator Show - Canada**. Government, Humans, CHATGPT models & Careers with Artificial Intelligence, May 2023.

Presentations

Keynotes

- ◇ ***Topology-Informed Fine-Tuning and Quantization of Large Language Models****, online at the Special Session on Large Language and Foundation Models 2025, Co-located with DSAA 2025. Birmingham, UK, (October 9, 2025).*

Conference Tutorials

- ◇ **Graph-based Management and Mining of Blockchain Data**.
  CIKM '22: Proceedings of the 31st ACM International Conference on Information and Knowledge Management, Atlanta, Georgia, USA (October 2022).
- ◇ **Data Science on Blockchains**.
  KDD '21: Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining, online (2021).
- ◇ **Blockchain Graph Models and Blockchain Data Analytics**.
  DMS Blockchain Workshop organized by the United States National Science Foundation sites.google.com/view/nsf-blockchain-workshop (June 16, 2021).
- ◇ **Data Science on Blockchains**.
  Cuneyt Akcora, Yulia R. Gel, Murat Kantarcioglu. SIAM International Conference on Data Mining (SDM) (May 7–9, 2021).
- ◇ [Online due to COVID-19] **Data Science on Blockchains**.
  Cuneyt Akcora, Yulia R. Gel, Murat Kantarcioglu. The IEEE Conference on Data Engineering (ICDE), Dallas, USA (April 20–24, 2020).
- ◇ **Blockchain Data Analytics**.
  Cuneyt Akcora, Yulia R. Gel, Murat Kantarcioglu. The Pacific-Asia Conference on Knowledge Discovery and Data Mining (PaKDD), Macau, China (Spring 2019).
- ◇ **Blockchain Data Analytics**.
  Cuneyt Akcora, Yulia R. Gel, Murat Kantarcioglu. The IEEE International Conference on Data Mining (ICDM), Singapore (17 November 2018).

Invited Courses in STEM

- ◇ ***Applications of topology in online social networks and Blockchain networks**, Instituto de Matemáticas de la Universidad de Sevilla, Spain, (May 22-26, 2023).*
- ◇ ***Blockchain Data Analytics**, School of Statistics, University of Minnesota, Minneapolis, Minnesota, USA (November 2018).*

Invited Talks in Finance

- ◇ **Agentic AI and Finance**.
  UCF Global Artificial Intelligence & Business Innovation Program, Orlando, (November 2025).

Invited Talks in STEM

- ◇ ***A Topological Analysis of Large Language Models**.*
  Large Language and Foundational Models Workshop at the 12th IEEE International Conference on Data Science and Advanced Analytics (DSAA), online (October 2025).
- ◇ ***The Chainlet Methodology for Blockchains**.*
  SIAM Conference on Financial Mathematics (SDM FM 2025), Miami, USA, (July 2025).
- ◇ ***A Topological Analysis of Large Language Models**.*
  SIAM Conference on Financial Mathematics (SDM FM 2025), Miami, USA, (July 2025).
- ◇ ***Leveraging Machine Learning on Blockchain Graphs for Next-Generation Solutions**.*
  International Statistics Conference 2024 (ISC 2024), Institute of Applied Statistics, Sri Lanka (December 2024).
- ◇ ***Next Generation Solutions for Agentic Finance**.*
  University of Central Florida (April 2025).
- ◇ ***Leveraging Machine Learning on Blockchain Graphs for Next-Generation Solutions**.*
  International Statistics Conference 2024 (ISC 2024), Institute of Applied Statistics, Sri Lanka (December 2024).
- ◇ ***Topological Aspects and Neural Scaling Laws for Temporal Graph Foundation Models**.*
  Department of Statistics, University of Maryland at Baltimore, Orlando, Florida (November 2024).

- ◇ ***Topological Aspects and Neural Scaling Laws for Temporal Graph Foundation Models***.
  Department of Statistics, University of Central Florida, Orlando, Florida (October 2024).
- ◇ ***Leveraging Machine Learning on Blockchain Graphs for Next-Generation Solutions***.
  Florida Institute of Certified Public Accountants, online (October 2024).
- ◇ ***Bureau Language Model***.
  Presented by Kiarash Shamsi, Equifax Research Labs, online (August 2024).
- ◇ ***Adversarial Graph Machine Learning on Blockchain***.
  AI Institute, University of Central Florida (March 2024).
- ◇ ***AI and the Role of UCF in the Upcoming AI Age***.
  Seminole State College, Florida (November 2023).
- ◇ ***Adversarial Graph Machine Learning on Blockchains***.
  Coinbase Machine Learning and Blockchain Research Summit
  https://www.coinbase.com/ml-bc-summit, online (May 2023).
- ◇ ***Topological Graph Machine Learning on Blockchains***.
  University of Central Florida, online (May 2023).
- ◇ ***Topological Graph Machine Learning on Blockchains***.
  University of Northern Illinois, online (April 2023).
- ◇ ***Money Laundering on Blockchain: Measures and Countermeasures***.
  Bits and Blocks (Blockchain) Workshop
  https://bitsandblocks2021.super.site/, online (December 2021).
- ◇ ***Topological Data Analysis for Ransomware Detection on the Bitcoin Blockchain***.
  Digital Forensics Research Conference
  https://dfrws.org/conferences/dfrws-usa-2021/, online (July 2021).
- ◇ ***E-Crime Detection on Blockchains***.
  New York University, Center for Data Science, online (March 2021).
- ◇ ***Topological Data Analysis for Ransomware Detection on the Bitcoin Blockchain***.
  Data Science Nexus Invited Talk, online, Canada (December 2020).
- ◇ ***Topological Data Analysis for Ransomware Detection on the Bitcoin Blockchain***.
  The Smart Cybersecurity Network (Serene-RISC) Annual Workshop, online, Canada (October 2020).
- ◇ ***Topological Data Analysis on Networks – Applications and Scalability Issues***.
  University of Montana, Department of Mathematical Sciences, USA (September 2020).
- ◇ ***Topological Data Analysis on Networks – Applications and Scalability Issues***.
  Virginia Commonwealth University, Department of Biostatistics, USA (September 2020).
- ◇ ***Data Science on Blockchains***.
  Joint Statistical Meetings, online (August 2020).
- ◇ ***Explainable Artificial Intelligence***.
  Sightline Innovation Inc., Winnipeg, Manitoba, Canada (February 2020).
- ◇ ***Learning on Blockchain Graphs with Topological Features***.
  SAMSI Workshop on Foundations of Blockchain Data Analytics, Durham, NC, USA (October 2019).
- ◇ ***Blockchain Data Analytics: A New Frontier in Data Science***.
  The 36th Annual Quality and Productivity Research Conference, Washington D.C., USA (June 2019).
- ◇ ***Multi-Layer Analysis of Biological Networks***.
  International Chinese Statistical Association, ICSA China Conference, Tianjin, China (July 2019).
- ◇ ***Blockchain Data Privacy and Security***.
  Annual Computer Security Applications Conference (ACSAC), Puerto Rico (December 2018).
- ◇ ***Understanding Cryptocurrency Price Formation from Time Series of Local Blockchain Graph Features***.
  Joint Statistical Meetings (JSM), Vancouver, Canada (August 2018).

- ◇ ***A Time Series Approach in Blockchain Data Analytics.***
  Michigan State Symposium on Mathematical Statistics and Applications in Honor of Hira L. Koul's Scientific Legacy, East Lansing, Michigan, USA (September 2018).

Guest lectures

- ◇ ***Explainability and Ethics in Artificial Intelligence.***
  University of Washington Tacoma (August 2021).
- ◇ ***Explainable AI.***
  COMP 7950: Advanced Machine Learning, University of Manitoba (April 2021).
- ◇ ***Ransomware Detection in Cryptocurrencies.***
  TCSL 550: Network and Internet Security, University of Washington Tacoma, Computer Science, WA, USA (May 2020).
- ◇ ***A Holistic View of the Blockchain Ecosystem.***
  University of Texas at Dallas, School of Management, Dallas, Texas, USA (April 2020).

Seminars

- ◇ ***Topological Data Analysis for Blockchain Networks.***
  Applied Algebraic Topology Group, University of Minnesota (October 2020).
- ◇ ***Blockchain Data Analytics.***
  Operations Research Seminar, City University of Hong Kong, China (November 2018).
- ◇ ***Blockchain and Statistical Modeling.***
  Rochester Institute of Technology, Department of Statistics, Rochester, NY, USA (May 2018).
- ◇ ***Blockchain Data Analytics.***
  University of Texas at Dallas, Department of Computer Science, Dallas, Texas, USA (April 2018).
- ◇ ***Blockchain and Network Models.***
  Southern Methodist University, Department of Statistics, Dallas, Texas, USA (March 2018).
- ◇ ***Blockchain-based Network Analysis.***
  Instituto Tecnológico Autónomo de México, Department of Computer Science, Mexico City, Mexico (October 2017).
- ◇ ***Graph Mining on Blockchain Networks.***
  Ege University, Department of Computer Science, Izmir, Turkey (August 2016).
- ◇ ***Applications of Graph Analytics in Blockchain.***
  Marmara University, Department of Computer Science, Istanbul, Turkey (June 2016).
- ◇ ***Data Mining with Blockchain Graphs.***
  Bogazici University, Department of Computer Science, Istanbul, Turkey (May 2016).

Faculty Service

- ◇ ***AI Initiative Faculty Search Committee.***
  University of Central Florida (2024).
- ◇ ***Finance Faculty Search Committee.***
  University of Central Florida (2024, 2025).
- ◇ ***CRC Tier 2 in Artificial Intelligence Search Committee, School of Medicine.***
  University of Manitoba (2022).
- ◇ ***UMGF Awards Committee.***
  University of Manitoba (2022).
- ◇ ***Neuroscience Department Council.***
  University of Manitoba (2021).
- ◇ ***Nexus Data Science Conference Organizing Committee.***
  University of Manitoba (2021).

- ◇ ***Faculty of Science AI and Machine Learning Consultant, FoS 2021.***
  University of Manitoba.
- ◇ ***Graduate Awards Committee.***
  University of Manitoba (2020).
- ◇ ***Indigenous Faculty Search Committee.***
  University of Manitoba (2021).
- ◇ ***Graduate Student Admissions Committee.***
  University of Manitoba (2021).

Professional Service

Panel Reviewer

- ◇ NSF-NIH Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science.

Chair Roles

- ◇ ***Area Chair for*** *ICML26, ICLR 2026, NeurIPS 2025.*
- ◇ ***Co-chair for*** *The Fourth IEEE International Conference on Blockchain Computing and Applications (BCCA'2022).*
- ◇ ***Demo chair for*** *IEEE International Conference on Data Engineering (ICDE 2020).*
- ◇ ***Track chair for*** *IEEE International Conference on Cyberspace Data and Intelligence (Cyber DI 2019).*

Editing

- ◇ **Guest Editor** to the special issue on *Advances on Blockchains and Applications* for the *Turkish Journal of Electrical Engineering & Computer Sciences.* Co-editors: Assoc. Prof. Alptekin Küpçü, Koç University, Turkey; Assoc. Prof. Anwitaman Datta, Nanyang Technological University, Singapore. 2022.
- ◇ **Associate editor for**
  - Frontiers in Physics, Social Physics
- ◇ **Co-editor for**
  - the special issue of Big Data and Cognitive Computing: Blockchain Data Analytics and Graph Mining.
- ◇ **Review editor** to the Editorial Board of Cybersecurity and Privacy for Frontiers in Big Data.

Review Duties

- ◇ ***Referee for***
  - *Nature Scientific Reports.*
  - ***IEEE*** *Internet Computing, Communications Magazine*
  - ***IEEE Transactions on*** *Pattern Analysis and Machine Intelligence; Networking, Artificial Intelligence, Network and Service Management; Emerging Topics in Computing; Systems, Man and Cybernetics; Industrial Electronics; Mobile Computing; Services Computing; Dependable and Secure Computing; Industrial Informatics*
  - ***Elsevier*** *Journals of Online Social Networks and Media, Digital Communications and Networks, Computational Statistics and Data Analysis (CSDA)*
  - ***Springer*** *Journals of Classification, Financial Innovation, Grid Computing, Social Network Analysis and Mining, Data Science and Engineering*
  - *The Information Security (IET-IS)*

- *PeerJ Computer Science*
- *EPJ Data Science*
- *The VLDB Journal*
- *ACM Computing Surveys, Transactions on Data Science*
- *Canadian Journal of Statistics*
- *MDPI Sensors*
- *Journal of King Saud University - Computer and Information Sciences*
- ***Oxford Academic*** *Journal of Complex Networks*
- ***Wiley*** *Expert Systems*
- *Jordanian Journal of Computers and Information Technology*

◇ ***Program Committee*** *AAAI26, LLM+G25, ECAI25, IJCAI2025, KDD2025, NeurIPS2025, ICML2025, AISTATS2025, ICLR2025, SRDS2024, IJCAI2024, NeurIPS2024, ICML2024, KDD2024, ECML/PKDD2024, AAAI2024, NeurIPS2023, IEEE ICDM BDA2023, DeFi2023, CAAW2023, DeFi2024, ICBD2023, UYMS2022, BTS2022, CAAW2022, IEEE CIFEr2022, IFCA Workshop on Decentralized Finance 2022, MIDAS2021, Cyber2021, CCCIS2021, CODASPY2022, IFCA Workshop on Decentralized Finance 2021, AAAI2021, CODASPY2021, ECML/PKDD2021, ICLR2022, ICML2022, NeurIPS2022, ECML/PKDD2020, CODASPY2020, CyberDI2020, UYMS2020, NSysS2020, IEEE SSCI2020, ICLR2022, ICML2021, ASEAN-AI2018, VLDB2018, KDD2018, PaKDD2018, KDD2017, SDM2017, SIGMOD2017, ICDE2014, ASONAM2014, ICWSM2014, ICDM2013, SCA2013, CODASPY2012, IRI2011, WWW2011.*

◇ ***Proposal reviewer for*** *NSF, NSERC Discovery, Mitacs Accelerate, Canada.*

Organization of Technical Meetings

◇ Organizer, Session on **Blockchain Networks**, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington D.C. (July 6-11, 2021).

◇ Organizer, Workshop on **AI and Blockchains**, IJCAI-PRICAI, Tokyo, Japan (2020).

◇ Organizer, Workshop on **Blockchain Data Analytics**, Canadian Statistical Sciences Institute, BIRS, Alberta (March 2020).

◇ Organizer, Workshop on **Blockchain Data Analytics**, 19th International Conference on Data Mining (IEEE ICDM), Beijing, China (2019).

◇ Organizer, Workshop on **Foundations of Blockchain Data Analytics**, The Statistical and Applied Mathematical Sciences Institute (SAMSI), North Carolina, U.S. (2019).

◇ Chair, Session on **Behavioral Data Mining**, The 23rd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), Macau, China (2019).

◇ Organizer, Session on **Future of Blockchain from a Big Data Perspective**, 4th International Conference on Big Data and Information Analytics (BigDia), Houston, USA (2018).

Panel Talks

◇ *Panelist,* ***AI for Security and Security for AI****, The 11th ACM conference on Data and Application Security and Privacy (CODASPY), Dallas, USA (2021).*

◇ *Panelist,* ***Blockchain Security and Privacy****, The 9th ACM conference on Data and Application Security and Privacy (CODASPY), Dallas, USA (2019).*
Online event video, starting at 6:30:30

Ph.D. Thesis Committee

◇ Ahod Tareq Alghuried, Advisor: David Mohaisen. Computer Science, University of Central Florida (2024-).

- ◇ Ashani Wickramasinghe, Advisor: Saman Muthukumarana. Statistics, **Advanced Data-Driven Methods for IOT Sensor Data and Anomaly Analysis in Building Environments**, University of Central Florida (2020-2024).
- ◇ Saulo Quinteiro dos Santos, Advisors: Ruppa K. Thulasiram and Shahin Kamali, **Improving Protocols and Miner Strategies for Modern Cryptocurrencies**, University of Manitoba (2019-2024).
- ◇ Le An Lac, Advisors: Carson Leung and Pingzhao Hu, University of Manitoba (2021-2025).
- ◇ Yan Sun, Advisors: Carson Leung and Pingzhao Hu, University of Manitoba (2021-2025).
- ◇ Engin Deniz Tumer, Advisor: Elena Ferrari, **Access control within MQTT-based IoT Environments**, Dipartimento di Scienze Teoriche e Applicate, Università degli studi dell'Insubria, Italy (2018-2022).

Ms. Thesis Committee

- ◇ *Ashish Lakhmani,* ***Nature Inspired Algorithmic Strategies for Portfolio Optimization****, Master of Science, Department of Computer Science, University of Manitoba (2024).*
- ◇ *Hamid Hadipour,* ***Deep Learning-Enhanced Drug Discovery: Innovative Molecule Clustering and Interaction Prediction through Graph Analysis****, Master of Science, Department of Computer Science, University of Manitoba (2023).*
- ◇ *Andrew Kozar,* ***Data Collection Using Deep Reinforcement Learning for Serious Games****, Master of Science, Department of Electrical and Computer Engineering, University of Manitoba (2023).*
- ◇ *Japjeet Singh,* ***Data-Driven Risk Forecasting and Algorithmic Trading Models for Cryptocurrencies****, Master of Science, Department of Computer Science, University of Manitoba (2022).*
- ◇ *Kyle Leduc-McNiven,* ***Serious Game Development for Detecting Mild Cognitive Impairment****, Master of Science, Department of Electrical and Computer Engineering, University of Manitoba (2022).*
- ◇ *Qi Wen,* ***Personalized Privacy-Preserving Recommendation System****, Master of Science, Department of Computer Science, University of Manitoba (2022).*
- ◇ *Ashani Nuwanthika Wickramasinghe,* ***Community Detection in Social Networks with an Application to Covid-19 Data****, Master of Science, Department of Statistics, University of Manitoba (2021).*
- ◇ *Kushagra Sharma,* ***Deep Learning-Based ECG Classification Using a Tensorflow Lite Model****, Master of Science, Department of Computer Science, University of Manitoba (2020).*

Undergraduate Thesis Committee

- ◇ Liam Kilkenny, **Machine Learning for Occupancy Prediction of AirBnB Rental Units**, Bachelor of Science, Department of Computer Science, University of Computer Science (2025).

Committee Chair

- ◇ *Michael Guevarra, M.Sc. thesis defense,* ***Reinforcement Learning Agents Providing Real-time Formative Feedback to Users in Training Simulations****, Department of Electrical and Computer Engineering, University of Manitoba (2023).*
- ◇ *Alexa Minary, M.Sc. thesis defense,* ***Mice can Monitor Their Timing Errors****, Department of Biological Sciences, University of Manitoba (2023).*
- ◇ *Le An Lac, M.Sc. thesis defense,* ***Pretest and Stein-type Shrinkage Estimators in Linear and Generalized Partial Linear Models****, University of Manitoba (2021).*
- ◇ *Samuel Morrissette, M.Sc. thesis defense,* ***Assessing Behaviour of Casino Patrons Using Clustering Methods****, University of Manitoba (2021).*
- ◇ *Adriana-Stefania Ciupeanu, candidacy exam for* ***Ph.D. in Mathematics IIS****, University of Manitoba (2021).*

Teaching

- ◇ *CAP 5619, AI for Finance, Spring 2024.*
  FinTech Ms. students (40+ students).
  Finance, University of Central Florida.
- ◇ *CIS 5730, Blockchain and Smart Contracts, Summer 2024.*
  FinTech Ms. students (40+ students).
  Finance, University of Central Florida.
- ◇ *Topological Data Analysis in Networks, University of Seville*
  Three day, online course Python Tutorial. Course videos: part 1 and part 2
- ◇ *Data Science on Blockchains, Udemy MOOC course*
  Online at htt. ps: // www. udemy. com/ course/ data-science-on-blockchains/.
- ◇ *COMP 4190, Advanced Artificial Intelligence, Winter 2021.*
  Core course for undergraduate students (40+ students).
  Computer Science, University of Manitoba.
- ◇ *COMP 2140, Data Structures and Algorithms, Winter 2020, Winter 2021.*
  Core course for undergraduate students (90+ students).
  Computer Science, University of Manitoba.
- ◇ *COMP 7570, Blockchain Data Analytics, Fall 2019, Fall 2020, Fall 2021.*
  Elective course for graduate students (25 students).
  Computer Science, University of Manitoba.
- ◇ *CS 6313, Statistical Methods for Data Science, Fall 2018, Spring 2019.*
  Core course for Data Science specialization (+150 students).
  Computer Science and Engineering, University of Texas at Dallas.
- ◇ *Data Analysis with R, Spring 2013.*
  Master's level course (13 students).
  Computer Science, Università degli Studi dell'Insubria.
- ◇ *Privacy and Security of Data, Spring 2012.*
  Master's level course (11 students).
  Computer Science, Università degli Studi dell'Insubria.

Data Repositories

- ◇ *Chartalist: Labeled Graph Datasets for UTXO and Account based blockchains*
  http: // chartalist. org

Public Datasets

- ◇ *Stanford SNAP: Ethereum Exchanges - AlphaCore Dataset*
  https: // snap. stanford. edu/ data/ ethereum-exchanges. html
- ◇ *Stanford SNAP: Stablecoin ERC20 Transactions Dataset*
  https: // snap. stanford. edu/ data/ ERC20-stablecoins. html
- ◇ *Stanford TGBL-Coin: Dynamic Link Property Prediction Dataset*
  https: // tgb. complexdatalab. com/ docs/ linkprop/ #tgbl-coin
- ◇ *BitcoinHeist Ransomware: Ransomware address features on the Bitcoin Blockchain*
  http: // archive. ics. uci. edu/ ml/ datasets/ BitcoinHeistRansomwareAddressDataset
  https: // www. kaggle. com/ sapere0/ bitcoinheist-ransomware-dataset
  https: // www. openml. org/ d/ 42553.
- ◇ *Bitcoin Transaction Dataset: Bitcoin heterogeneous network data from 2009-2017 (https: // www. kaggle. com/ sapere0/ bitcoin-dataset).*

Software Packages

- ◇ *Github/GraphBoot: A Bootstrapped Sampling framework in Scala/Apache Spark.*
- ◇ *Github/Coinworks: Bitcoin Chain Analysis platform in R/Java/Scala.*

Computer Skills

- ◇ *Languages: Scala, Java, R, PHP, SQL, Python, JavaScript, LaTeX.*
- ◇ *OS/Tools/Libraries: PyTorch Geometric, OpenMPI, Twitter4J, jQuery, Jung.*
- ◇ *Open Source Projects: Apache Storm, Apache Spark.*

Language Skills

- ◇ *Turkish: Native.*
- ◇ *English: Advanced.*
- ◇ *Italian: Upper-intermediate.*
- ◇ *Chinese:* 汉语水平考试四 *(HSK 4).*