CURRICULUM VITAE

William F. Eberle, Ph.D.

Professor
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Research Interests
Graph-Based Anomaly Detection, Fraud Detection, Data Mining, and Artificial Intelligence

Academic Degrees
- Doctor of Philosophy (2007) in Computer Science with emphasis in Artificial Intelligence, University of Texas at Arlington. Dissertation: "Information Theoretic, Probabilistic and Maximum Partial Substructure Algorithms for Discovering Graph-based Anomalies." Dissertation advisor: Dr. Lawrence B. Holder.
- Master of Science (1991) in Computer Science, University of Texas at Arlington. Thesis: "Automatic Text Abstractor: A Program to Generate Meaningful Text Descriptions." Thesis advisor: Dr. Lynn Peterson.
- Bachelor of Arts (1986) in Computer Science, University of Texas at Austin.

Academic Experience
- July 2017 – present: Professor in the Department of Computer Science, Tennessee Technological University.
- September 2021 – present: Assistant Dean of Graduate Education for the College of Engineering, Tennessee Technological University.
- August 2023 – present: Co-Director of Machine Intelligence and Data Science (MInDS) Center, Tennessee Technological University.
- August 2017 – June 2018: Assistant Dean (Interim) of Academic Affairs for the College of Engineering, Tennessee Technological University.
- July 2012 – 2017: Associate Professor in the Department of Computer Science, Tennessee Technological University.
- August 2007 – June 2012: Assistant Professor in the Department of Computer Science, Tennessee Technological University.
- September 2004 – August 2007: Graduate Research Assistant/Faculty Associate in Computer Science and Engineering, University of Texas at Arlington.

Industry Experience
- August 2018 – July 2019: Software Engineer III, TEK Systems; Verizon, Colorado Springs, Colorado.
- April 2001 – July 2004: Software Development Manager, Information Technology, MCI, Colorado Springs, Colorado.
- February 2000 – March 2001: Implementation Architect, Information Technology, MCI, Colorado Springs, Colorado.

- June 1996 – January 2000: Senior Application Developer, Network Services, MCI, Colorado Springs, Colorado.
- March 1995 – May 1996: Senior Systems Analyst, Marketing Systems, MCI, Colorado Springs, Colorado.
- May 1993 – February 1995: Senior Specialist, Marketing Systems, MCI, Colorado Springs, Colorado.
- October 1991 – April 1993: Senior Software Developer, Star Wars Defense Initiative, Martin Marietta, Falcon AFB, Colorado.
- October 1990 – October 1991: Senior Computer Systems Engineer, Special Projects Lab, General Dynamics, Fort Worth, Texas.
- June 1986 – October 1990: Computer Systems Engineer, Flight Simulation Lab, General Dynamics, Fort Worth, Texas.

Teaching

- Advanced Data Science and Applications (*designed course*)
- Anomaly and Intrusion Detection Systems (*designed course*)
- Artificial Intelligence
- C/C++ in Unix
- Connections to Computing
- Data Mining (*designed course*)
- Data Structures and Algorithms
- Fundamentals of Data Science (*designed course*)
- Graduate Seminar
- Principles in Computing (*designed course*)
- Professionalism, Communication, and Research in Computing
- Software Analysis and Design
- Software Engineering (*designed course*)

Certifications

- Aspiring Chairs and Faculty Leadership Seminar Series, Chronicle of Higher Education, 2023
- Certified Agile Professional, ICAgile, 2017

Professional Service

Conference Chairs/Co-Chairs

- Co-Chair with David Bisant and Steven Gutstein, Florida Artificial Intelligence Research Society Conference, Special Track on Neural Networks and Data Mining, 2020-2023.
- Co-Chair with Michael Youngblood and Douglas Talbert, Florida Artificial Intelligence Research Society Conference, Special Track on Explainability, Bias, and Trust, 2021-2023.
- Co-Chair with David Bisant, Florida Artificial Intelligence Research Society Conference, Special Track on Data Mining, 2009-2020.
- General Conference Chair, Florida Artificial Intelligence Research Society Conference, 2015-2016.
- Program Chair/Co-Chair, Florida Artificial Intelligence Research Society Conference, 2013-2015.
- Co-Chair with Doug Talbert, IEEE Big Data Conference, Workshop on Mining Big Data to Improve Clinical Effectiveness, 2015.

- Special Tracks Coordinator, Florida Artificial Intelligence Research Society Conference, 2012-2013.

Member

- Homeland Defense & Security Information Analysis Center, 2023-present
- Florida Artificial Intelligence Research Society (FLAIRS), Director, 2022-2023
- Association for Computing Machinery (ACM), 2006-present
- Institute of Electrical and Electronics Engineers (IEEE) Computer Society, 2006-present
- Association for the Advancement of Artificial Intelligence (AAAI), 2006-2011

Reviewer/Committees

- Florida Artificial Intelligence Research Society (FLAIRS), 2009-present
- Social Network Analysis and Mining (SNAM) Journal, 2016, 2025
- Transactions on Knowledge Discovery from Data (TKDD), 2012**,** 2021-2022, 2024
- University of Miami, Graduate Program Review, 2022-2023
- Transactions on Knowledge and Data Engineering (TKDE), 2016, 2022
- Transactions on Intelligent Systems and Technology (TIST), 2022
- Association for the Advancement of Artificial Intelligence (AAAI) - 2021
- Transactions on Information Forensics & Security, 2020
- National Nuclear Security Administration (MSIPP), 2020
- Journal of Sustainability (MDPI), 2020
- National Science Foundation, panelist - 2014, 2016, 2018, 2020
- Oak Ridge Associated Universities (ORAU) Program, 2018.
- International Conference on Data Mining (ICDM), 2011-2017.
- SIAM Data Mining Conference (SIAM), 2014-2017.
- Intelligent Data Analysis (IDA) Journal, 2016-2017.
- SIAM Data Mining Conference, Workshop on Mining Networks and Graphs, 2016
- IEEE Big Data Conference, 2015
- IEEE Big Data Conference, Workshop on Mining Big Data to Improve Clinical Effectiveness, 2015
- Tennessee Board of Regents (TBR) Research Initiatives, 2014-2015
- IEEE Frontiers in Education (FIE), 2013-2014
- NSF (IIS) Review Panel, 2008, 2014
- Social Networks Journal, 2014
- International Journal of Pattern Recognition and Artificial Intelligence, 2013
- Journal of Intelligent Information Systems, 2013
- Computer Science Graduate Program Reviewer for University of Central Arkansas, 2012
- International Journal on Artificial Intelligence Tools (IJAIT), 2012
- Intl. Conference on Ubiquitous Information Management and Communication, 2012
- Cyber Security and Information Intelligence Research Workshop, 2011
- ACM Computing Surveys, 2011
- Educational Advances in Artificial Intelligence (EAAI), 2011
- ACM International Conference on Information and Knowledge Management (CIKM), 2010-present
- CAE Workshop on Insider Threat (CAE-WIT), 2010
- International Conference on Tools with AI (ICTAI), 2009

- International Conference on Data Mining (DMIN), 2008-2011

Editor/Advisory Board

- Editorial Review Board Member, *International Journal on Artificial Intelligence Tools*, 2023-2024.
- I. Russell and William Eberle (Editors), *Proceedings of the Twenty-Eighth International Florida Artificial Intelligence Research Society Conference*, AAAI Press, May 2015.
- W. Eberle and C. Boonthum-Denecke (Editors), *Proceedings of the Twenty-Seventh International Florida Artificial Intelligence Research Society Conference*, AAAI Press, May 2014.
- "Overcoming Challenges in Software Engineering Education: Delivering Non-Technical Knowledge and Skills", *IGI Global*, 2013.

Other

- Treasurer, Florida Artificial Intelligence Research Society, 2023-present

University Service

University

- Graduate School Executive Committee, 2019-present
- TTU Student Research Day Judge, 2010-2013, 2015-2018, 2020-present
- Graduate Student Health Insurance Committee, 2022-present
- TTU Preview Day, 2019-2022, 2024
- Engineering & Computer Science Rankings and Reputation Committee, 2023
- Building Naming Committee, 2021
- Prior Learning Assessment, 2017-2018
- Faculty Research Committee, 2012-2018
- Academic Misconduct Committee (Alternate), 2009-2018
- University Research Advisory Committee, 2009-2017; Co-Chair, 2016-2017
- Graduation Application Process Ad-Hoc Committee, 2016-2017
- Community Day – Majors Fair, 2015, 2017
- Office of Research, Grant Development Specialist Search Committee, 2014
- SACSCOC Compliance Committee – Response Development subcommittee, 2013-2014
- TTU Clicker Policy Committee, 2012
- ORNL Graduate School Career Fair, August 2011

College

- College of Engineering Graduate School Executive Committee, 2010-2013, 2019-present
- College of Engineering PhD Review Committee, 2019-2020, 2024-2025
- New Engineering Building Committee, 2020-2024
- CoE Homecoming Tent, 2013-2017
- Strategic Planning – Communication Committee, 2015-2016
- Engineering Executive (EES) – Fall 2015
- Mechanical Engineering Chair Search Committee, 2012-2013
- Benchmark Task Force Committee, 2012-2013
- Chemical Engineering Faculty Search Committee, 2010-2011

Department

- Computer Science Personnel Committee, Chair, 2020-present
- Computer Science Executive Committee, 2020-present
- Computer Science Graduate Committee Member, 2007-2018, 2019-present
- New Prospective Students, 2010-2018, 2019-present
- Graduate Student Club, Advisor, 2023-2024
- Computer Science Graduate Program Coordinator, 2018, 2019-2024
- Tenure and Promotion Committee Chair (Talbert, Ismail, Gupta, Shannigrahi), 2021-2024
- ABET Self-study, 2020
- Master's Program Review Committee, 2019-2020
- SOAR (Student Orientation), 2008-2018
- Visiting Assistant Professor Search Committee, 2018
- Software Engineering Committee (chair), 2010-2017
- Computer Science Executive Committee, 2012-2016
- Boys State Recruitment, May 27, 2016
- Computer Science Faculty Search Committee, 2007-2008, 2013-2015
- Computer Science Chair Search Committee, 2014-present
- The Institute for Computing Initiatives (co-director), 2011-2013
- ACM Mid-Central USA Programming Contest Judge, 2007-2008, 2012
- Machine Learning/Data Mining Reading Group co-coordinator, 2007

Other

- Graduate Education Task Force for the University of Texas System
- IEEE Future City Competition Volunteer

Awards

- Douglas D. Dankel II Service Award, Florida Artificial Intelligence Research Society, 2023.
- Teacher-Scholar Award, College of Engineering, 2013, 2014, 2016
- QEP Enhancement, 2009-2010, Tennessee Technological University
- Best Paper, FLAIRS Conference, May19, 2009, Florida Artificial Intelligence Research Society
- Annual Celebration of Excellence by Students (ACES), Graduate, Second Place, March 30, 2007, University of Texas at Arlington
- STEM Fellowship, 2005-2007, University of Texas at Arlington
- Outstanding Performer for 4Q, 2000, MCI, Information Technology
- Outstanding Achievement for 2Q, 1997 (Ring of Champions), MCI, Network Services
- Excellence in Customer Retention for 1Q, 1995, MCI, Marketing Systems

Publications (citation counts from Google Scholar on September 2024, unless otherwise noted)

Book Chapters

1. Islam, S. R., & **Eberle, W**. (2022). *Domain Knowledge-Aided Explainable Artificial Intelligence. In Explainable Artificial Intelligence for Cyber Security: Next Generation Artificial Intelligence* (pp. 73-92). Cham: Springer International Publishing. Citations: 4.
2. **Eberle, W.**, Holder, L., & Cook, D. (2009). Identifying Threats Using Graph-Based Anomaly Detection. *Machine Learning in Cyber-Trust*, Springer. Citations: 23.

Journal Articles

1. Barsha, F.L. and **Eberle, W**. (2025) An in-depth review and analysis of mode collapse in generative adversarial networks. *Machine Learning*, Volume 114, Article 141. https://doi.org/10.1007/s10994-025-06772-7 .
2. Ekle, O. A., **Eberle, W**., & Christopher, J. (2025). Adaptive DecayRank: Real-Time Anomaly Detection in Dynamic Graphs with Bayesian PageRank Updates. *Applied Sciences*, 15(6), 3360. https://doi.org/10.3390/app15063360
3. Elshazly, A. A., Elgarhy, I., Eltoukhy, A. T., Mahmoud, M., **Eberle, W**., Alsabaan, M., & Alshawi, T. (2024). False Data Injection Attacks on Reinforcement Learning-Based Charging Coordination in Smart Grids and a Countermeasure. *Applied Sciences, 14(23)*, 10874. https://doi.org/10.3390/app142310874
4. Ekle, O.A. & **Eberle, W.** (2024) Anomaly Detection in Dynamic Graphs: A Comprehensive Survey. *ACM Transactions in Knowledge Discovery from Data*. https://doi.org/10.1145/3669906
5. Elshazly, A. A., Badr, M. M., Mahmoud, M., **Eberle, W**., Alsabaan, M., & Ibrahem, M. I. (2024). Reinforcement Learning for Fair and Efficient Charging Coordination for Smart Grid. *Energies*, *17*(18), 4557. https://doi.org/10.3390/en17184557
6. Islam, S. R., Russell, I., **Eberle, W**., Talbert, D., & Hasan, M. G. M. M. (2024). Advances in Explainable, Fair, and Trustworthy AI. *International Journal on Artificial Intelligence Tools*, Vol. 33, No. 3. https://doi.org/10.1142/S0218213024030015
7. Lamichhane, P. and **Eberle, W.** (2024). Anomaly Detection in Graph Structured Data: A Survey, arXiv, https://arxiv.org/abs/2405.06172.
8. Stone, G. B., Talbert, D. A., & **Eberle, W**. (2022). A Survey of Scalable Reinforcement Learning. *International Journal of Intelligent Computing Research (IJICR)*, Volume 13, Issue 1. Citations: 1.
9. Islam, S. R., Russell, I., **Eberle, W**., & Dicheva, D. (2022). Instilling conscience about bias and fairness in automated decisions. *Journal of Computing Sciences in Colleges*, 37(8), 22-31. Citations: 5.
10. Stone, G. B., Talbert, D. A., & **Eberle, W**. (2022). Utilizing Real-Time Strategy for Penetration Testing. *International Journal of Chaotic Computing (IJCC)*, Volume 8, Issue 1. Citations: 2.
11. Paudel, R., & **Eberle, W**. (2020). An approach for concept drift detection in a graph stream using discriminative subgraphs. *ACM Transactions on Knowledge Discovery from Data*. Article 70. Citations: 23.
12. Mookiah, L., **Eberle, W**., & Mondal, M. (2018). Personalized news recommendation using graph-based approach. *Intelligent Data Analysis, an International Journal*, Volume 22 (4), pp. 881–909. Citations: 12.
13. Liang, D., Tsai, C. F., Dai, A. J., & **Eberle, W**. (2018). A novel classifier ensemble approach for financial distress prediction. *Knowledge and Information Systems*. Citations: 66.

14. Markov, Z., Russell, I., and **Eberle, W.** (2016) Report on the 29th International Florida Artificial Intelligence Research Society Conference (FLAIRS-29). *AI Magazine*.
15. Huang, M. W., Lin, W. C., Chen, C. W., Ke, S. W., Tsai, C. F., & **Eberle, W**. (2016). Data preprocessing issues for incomplete medical datasets. *Expert Systems*, 33(5), 432-438. Citations: 31.
16. Lin, W. C., Tsai, C. F., Ke, S. W., Hung, C. W., & **Eberle, W**. (2015). Learning to detect representative data for large scale instance selection. *Journal of Systems and Software*, *106*, 1-8. Citations: 38.
17. **Eberle, W**., & Holder, L. (2015). Scalable anomaly detection in graphs. *Intelligent Data Analysis*, *19*(1), 57-74. Citations: 11.
18. Chen, Z. Y., Tsai, C. F., **Eberle, W**., Lin, W. C., & Ke, S. W. (2015). Instance selection by genetic-based biological algorithm. *Soft Computing*, *19*, 1269-1282. Citations: 18.
19. Tsai, C. F., **Eberle, W**., & Chu, C. Y. (2013). Genetic algorithms in feature and instance selection. *Knowledge-Based Systems*, *39*, 240-247. Citations: 289.
20. **Eberle, W**., Graves, J., & Holder, L. (2010). Insider threat detection using a graph-based approach. *Journal of Applied Security Research*, *6*(1), 32-81. Citations: 210.
21. **Eberle, W**., & Holder, L. (2007). Anomaly detection in data represented as graphs. *Intelligent Data Analysis*, *11*(6), 663-689. Citations: 176.

Conference/Workshop Papers

1. Barsha, F.L. & **Eberle, W**. (2025). Early Detection of Mode Collapse in GANs Through Loss Monitoring. In: Computational Science and Computational Intelligence. CSCI 2024. Communications in Computer and Information Science, vol 2501. Springer, Cham. https://doi.org/10.1007/978-3-031-90341-0_20
2. Lamichhane, P.B., Taylor, J. & **Eberle, W**. (2024, December). Effectiveness of Term Frequency-Inverse Graph Frequency (TF-IGF) Technique Against Various Cyber Attacks. *2024 International Conference on Computational Science and Computational Intelligence (CSCI)*.
3. **Eberle, W.**, Gannod, G., & Brown, E. (2024, October) Innovative Practice: Agile Training for Year-Long Capstone Project. *IEEE Frontiers in Education Conference (FIE)*.
4. Ekle, O. A. & **Eberle, W**. (2024, May). Dynamic PageRank with Decay: A Modified Approach for Node Anomaly Detection in Evolving Graph Streams. In *The International FLAIRS Conference Proceedings* (Vol. 37).
5. Barsha, F. L. & **Eberle, W**. (2024, May). Mode Collapse Detection Strategies in Generative Adversarial Networks for Credit Card Fraud Detection. In *The International FLAIRS Conference Proceedings* (Vol. 37).
6. Lamichhane, P. B. & **Eberle, W**. (2022, November). Self-Organizing Map-Based Graph Clustering and Visualization on Streaming Graphs. In *2022 IEEE International Conference on Data Mining Workshops (ICDMW)* (pp. 706-713). IEEE. Citations: 2.
7. Lamichhane, P. B. Mannering, H., & **Eberle, W**. (2022, May). Discovering breach patterns on the internet of health things: A graph and machine learning anomaly analysis. In *The International FLAIRS Conference Proceedings* (Vol. 35). Citations: 3.
8. Islam, S. R., Russell, I., **Eberle, W**., & Dicheva, D. (2022, March). Incorporating the concepts of fairness and bias into an undergraduate computer science course to promote fair automated decision systems. In *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2* (pp. 1075-1075). Citations: 7.

9. Lamichhane, P. B. & **Eberle, W**. (2021, December). Anomaly detection in edge streams using term frequency-inverse graph frequency (tf-igf) concept. In *2021 IEEE International Conference on Big Data (Big Data)* (pp. 661-667). IEEE. Citations: 4.
10. Paudel, R., Tharp, L., Kaiser, D., **Eberle, W**., & Gannod, G. (2021, April). Visualization of Anomalies using Graph-Based Anomaly Detection. In *The International FLAIRS Conference Proceedings* (Vol. 34).
11. Islam, S. R., & **Eberle, W**. (2021, March). Implications of Combining Domain Knowledge in Explainable Artificial Intelligence. In *AAAI Spring Symposium: Combining Machine Learning with Knowledge Engineering*. Citations: 7.
12. Stone, G., Talbert, D., & **Eberle, W**. (2021, February). Using ai/machine learning for reconnaissance activities during network penetration testing. In *International Conference on Cyber Warfare and Security* (pp. 541-XIV). Academic Conferences International Limited. Citations: 3.
13. **Eberle, W**., & Holder, L. (2020, December). Graph Filtering to Remove the" Middle Ground" for Anomaly Detection. In *2020 IEEE International Conference on Big Data (Big Data)* (pp. 2947-2956). IEEE. Citations: 2.
14. Paudel, R., & **Eberle, W**. (2020, August). Snapsketch: Graph representation approach for intrusion detection in a streaming graph. In *Proceedings of the 16th International Workshop on Mining and Learning with Graphs (MLG)*. Citations: 13.
15. S. R. Islam, **W. Eberle**, and S. Ghafoor, "Towards Quantification of Explainability in Explainable Artificial Intelligence Methods," *International Conference of the Florida Artificial Intelligence Research Society* (FLAIRS), May 2020. Citations: 66.
16. P. Kandel and **W. Eberle**, "Node Similarity For Anomaly Detection in Attributed Graphs," *International Conference of the Florida Artificial Intelligence Research Society* (*FLAIRS*), May 2020. Citations: 1.
17. S. R. Islam, **W. Eberle**, S. Ghafoor, A. Siraj, and M. Rogers, "Domain Knowledge Aided Explainable Artificial Intelligence for Intrusion Detection and Response," *Proceedings of the AAAI 2020 Spring Symposium on Combining Machine Learning and Knowledge Engineering in Practice* (*AAAI-MAKE*), March 2020. Citations: 31.
18. R. Paudel, T. Muncy*, and **W. Eberle**, "Detecting DoS Attack in Smart Home IoT Devices Using a Graph-Based Approach," *IEEE Big Data Conference 2019*, December 2019. Citations: 45.
19. R. Paudel, P. Kandel, and **W. Eberle**, "Detecting Spam Tweets in Trending Topics using Graph-Based Approach," *Proceedings of the Future Technologies Conference (FTC),* October 2019. Citations: 6.
20. S. R. Islam, **W. Eberle**, S. C. Bundy, and S. Ghafoor, "Infusing Domain Knowledge in AI-based "black box" Models for Better Explainability with Application in Bankruptcy Prediction," Workshop on Anomaly Detection in Finance, *SIGKDD Conference on Knowledge Discovery and Data Mining (KDD),* August 2019. Citations: 20.
21. F. A. Bhuiyan, M. B. Sharif, P. J. Tinker, **W. Eberle**, D. A. Talbert, S. K. Ghafoor, and L. Frey, "Gene Selection and Clustering of Breast Cancer Data," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2019.
22. S. Velampalli, L. Mookiah, and **W. Eberle**, "Discovering Suspicious Patterns Using a Graph Based Approach," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2019. Citations: 9.
23. R. Paudel, P. Harlan*, and **W. Eberle**, "Detecting the Onset of a Network Layer DoS Attack with a Graph-Based Approach," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2019. Citations: 11.

24. S. R. Islam, S. Ghafoor, and **W. Eberle**, "Mining Illegal Insider Trading of Stocks: A Proactive Approach," *IEEE Big Data Conference 2018*, December, 2018. Citations: 27.
25. G. Gannod, **W. Eberle**, R. Cooke, D. Talbert, K. Hagler, K. Opp, and J. Baniya*, "Establishing an Agile Mindset and Culture for Workforce Preparedness: A Baseline Study," *IEEE Frontiers in Education Conference (FIE)*, October 2018. Citations: 9.
26. S. Velampalli, L. Mookiah, and **W. Eberle**, "Discovering Suspicious Patterns Using a Graph Based Approach," 2018 IEEE Conference on Visual Analytics Science and Technology (VAST), October 21–26, Berlin, Germany.
27. R. Paudel, **W. Eberle**, and L. Holder, "Anomaly Detection of Elderly Patient Activities in Smart Homes using a Graph-Based Approach," *International Conference on Data Science (ICDATA)*, July 2018. Citations: 26.
28. S. R. Islam, **W. Eberle**, and S. K. Ghafoor, "Credit Default Mining Using Combined Machine Learning and Heuristic Approach," *International Conference on Data Science (ICDATA)*, July 2018. Citations: 13.
29. R. Singh, J. Graves, D. Talbert, and **W. Eberle**, "Prefix and Suffix Sequential Pattern Mining", *Conference on Machine Learning and Data Mining (MLDM)*, July, 2018. Citations: 4.
30. R. Paudel, K. Dunn*, **W. Eberle**, and D. Chaung*, "Cognitive Health Prediction on the Elderly Using Sensor Data in Smart Homes," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2018. Citations: 11.
31. S. Velampalli, L. Mookiah, and **W. Eberle**, "Detecting Vehicular Patterns Using a Graph-Based Approach," 2017 IEEE Conference on Visual Analytics Science and Technology (VAST), October 1–6, Phoenix, Arizona, USA.
32. L. Mookiah, C. Dean*, and **W. Eberle**, "Graph-Based Anomaly Detection on Smart Grid Data," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2017. Citations: 15.
33. R. Paudel, **W. Eberle**, and D. Talbert "Detection of Anomalous Activity in Diabetic Patients Using Graph-Based Approach," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2017. Citations: 9.
34. S. R. Islam, **W. Eberle**, and S. Ghafoor, "Mining Bad Credit Card Accounts from OLAP and OLTP," *International Conference on Computing and Data Analysis*, May 2017. Citations: 3.
35. S. Velampalli and **W. Eberle**, "Novel Graph Based Anomaly Detection Using Background Knowledge," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2017. Citations: 26.
36. N. Thakkar, L. Mookiah, D. Talbert, and **W. Eberle**, "Anomalies in Student Enrollment Using Visualization," (short paper) *International Conference of the Florida AI Research Society (FLAIRS)*, May 2017. Citations: 1.
37. L. Mookiah and **W. Eberle**, "Co-Ranking Authors in Heterogeneous News Networks," 2016 International Conference on Computational Science and Computational Intelligence, December 2016. Citations: 2.
38. S. Velampalli and **W. Eberle**, "Novel Application of MapReduce and Conceptual Graphs," 2016 International Conference on Computational Science and Computational Intelligence, December 2016. Citations: 3.
39. **W. Eberle** and L. Holder, "Identifying Anomalies in Graph Streams Using Change Detection," *Conference on Knowledge Discovery and Data Mining (KDD) Mining and Learning with Graphs (MLG)*, August 2016. Citations: 8.

40. L. Mookiah, **W. Eberle**, and Maitrayi Mondal, "Detecting Change in News Feeds Using a Context-Based Graph," *International Conference on Data Mining (DMIN), 2016*. Citations: 1.
41. D. Cruz, D. Talbert, **W. Eberle**, and J. Biernacki, "A neural network approach for predicting microstructure development in cement," *Int'l Conf. Artificial Intelligence, ICAI'16*, pp. 328-334, 2016. Citations: 10.
42. L. Mookiah, **W. Eberle**, and L. Holder, "Discovering Suspicious Behavior Using Graph-Based Approach," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2015. (*Nominated for Best Student Paper*). Citations: 3.
43. C. Chaparro* and **W. Eberle**, "Detecting Anomalies in Mobile Telecommunication Networks Using a Graph Based Approach," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2015. Citations: 18.
44. L. Mookiah, **W. Eberle**, and A. Siraj, "Survey of Crime Analysis and Prediction," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2015. Citations: 22.
45. I. Russell and **W. Eberle** (Editors), "Proceedings of the Twenty-Eighth International Florida Artificial Intelligence Research Society Conference," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2015.
46. **W. Eberle** and L. Holder, "Streaming Data Analytics for Anomalies in Graphs," *2015 IEEE International Symposium on Technologies for Homeland Security*, April 2015. Citations: 3.
47. V. Ford, A. Siraj, and **W. Eberle**, "Smart Grid Energy Fraud Detection Using Artificial Neural Networks," *IEEE Symposium Series on Computational Intelligence (SSCI)*, December 2014. Citations: 161.
48. L. Mookiah, **W. Eberle**, and L. Holder, "Detecting Suspicious Behavior Using a Graph-Based Approach," *IEEE Symposium on Visual Analytics Science and Technology (VAST)*, November 2014. Citations: 11.
49. **W. Eberle** and L. Holder, "A Partitioning Approach to Scaling Anomaly Detection in Graph Streams," *IEEE International Conference on Big Data*, October 2014. Citations: 10.
50. **W. Eberle** and C. Boonthum-Denecke (Editors), "Proceedings of the Twenty-Seventh International Florida Artificial Intelligence Research Society Conference," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2014.
51. **W. Eberle** and L. Holder, "Incremental Anomaly Detection in Graphs," *Proceedings of the IEEE ICDM Workshop on Incremental Clustering, Concept Drift and Novelty Detection (IcIaNov)*, December 2013. Citations: 12.
52. **W. Eberle**, D. Talbert, E. Simpson*, L. Roberts*, and A. Pope, "Using Machine Learning and Predictive Modeling to Assess Admission Policies and Standards," *9th Annual National Symposium on Student Retention*, November 2013. Citations: 4.
53. **W. Eberle**, J. Karro, N. Lerner, and M. Stallmann, "Integrating Communication Skills in Data Structures and Algorithms Courses," *Frontiers in Education (FIE) Conference*, October 2013. Citations: 2.
54. C. Morack* and **W. Eberle**, "Computer Science Widening the STEM Education Spectrum," *Frontiers in Education (FIE) Conference*, October 2013.
55. A. McCormick and **W. Eberle**, "Discovering Fraud in Online Classified Ads," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2013. Citations: 17.

56. **W. Eberle**, L. Holder, and B. Massengill, "Graph-Based Anomaly Detection Applied to Homeland Security Cargo Screening," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2012. Citations: 9.
57. B. Sherrill*, **W. Eberle** and D. Talbert, "Analysis of Student Data for Retention Using Data Mining Techniques," *National Symposium of Student Retention*, November 2011. Citations: 3.
58. **W. Eberle** and L. Holder, "Compression versus Frequency for Mining Patterns and Anomalies in Graphs," *Conference on Knowledge Discovery and Data Mining (KDD) Mining and Learning with Graphs (MLG)*, August 2011. Citations: 6.
59. **W. Eberle** and L. Holder, "Graph-Based Knowledge Discovery: Compression versus Frequency," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2011. Citations: 2.
60. **W. Eberle** and L. Holder, "Detecting Insider Threats Using a Graph-Based Approach," *Proceedings of the 2010 CAE Workshop on Insider Threat*, November 2010.
61. **W. Eberle**, L. Holder and J. Graves, "Using a Graph-Based Approach to Discovering Cybercrime," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2010. Citations: 2.
62. **W. Eberle**, L. Holder and J. Graves, "Detecting Employee Leaks Using Badge and Network IP Traffic," *IEEE Symposium on Visual Analytics Science and Technology (VAST)*, October 2009. Citations: 11.
63. **W. Eberle** and L. Holder, "Applying Graph-based Anomaly Detection Approaches to the Discovery of Insider Threats," *IEEE International Conference on Intelligence and Security Informatics (ISI)*, June 2009. Citations: 39.
64. **W. Eberle** and L. Holder, "Discovering Anomalies to Multiple Normative Patterns in Structural and Numeric Data," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2009. ***Best Paper Award***. Citations: 5.
65. **W. Eberle** and L. Holder, "Graph-Based Approaches to Insider Threat Detection," *Proceedings of the 5th Annual Workshop on Cyber Security and Information Intelligence Research (CSIIRW)*, April 13-15, 2009. Citations: 42.
66. **W. Eberle** and L. Holder, "Mining for Insider Threats in Business Transactions and Processes," *Computational Intelligence in Data Mining (CIDM)*, IEEE Symposium Series on Computational Intelligence, March 30-April 2, 2009. Citations: 20.
67. **W. Eberle** and L. Holder, "Insider Threat Detection Using Graph-Based Approaches," *Cybersecurity Applications and Technologies Conference for Homeland Security (CATCH)*, March 3-4, 2009. Citations: 2.
68. **W. Eberle** and L. Holder, "Analyzing Catalano/Vidro Social Structure Using GBAD," *VAST 2008 Challenge Track*, VisWeek, October, 2008. Citations: 5.
69. **W. Eberle** and L. Holder, "Discovering Structural Anomalies in Graph-Based Data," *Proceedings of the IEEE ICDM Workshop on Mining Graphs and Complex Structures*, October 2007. Citations: 183.
70. **W. Eberle** and L. Holder, "Mining for Structural Anomalies in Graph-based Data," *International Conference on Data Mining (DMIN)*, June 2007. Citations: 46.
71. **W. Eberle** and L. Holder, "Detecting Anomalies in Cargo Using Graph Properties," *IEEE International Conference on Intelligence and Security Informatics*. May, 2006. Citations: 16.

Conference Posters/Abstracts

1. S. Velampalli, L. Mookiah, and **W. Eberle**, "Detecting Vehicular Patterns Using a Graph-Based Approach," *International Conference of the Florida AI Research Society (FLAIRS)*, May 2018.
2. D. Talbert, **W. Eberle**, and M. Liu, "Never-Ending Medical Learning," *American Medical Informatics Association (AMIA) Annual Symposium*, November 2016.
3. D. Cruz, D. Talbert, **W. Eberle**, and J. Biernacki, "Might artificial intelligence be an opportunity for cement modelers?", *American Ceramic Society Cement Division Annual Meeting*, July 2016.
4. C. Sutherland and **W. Eberle**, "Predictive Modeling of Cave Entrances Utilizing Hyperspectral Imagery and Digital Elevation Models," *Tennessee Geographic Information Council*, 2016. **Viewer's Choice Award and First Place Best Spatial Analysis Award**.

(* indicates undergraduate student author)

Invited Talks

1. "Park Ranger Works With Tech Students To Bring Alvin C York's World To Life," *Good Morning Cookeville with Jason and Sheila*, WHUB FM, June 1, 2023.
2. "Artificial Intelligence," Newstalk 94.1, May 31, 2023.
3. "Anomaly Detection." TECHnovations, WTTU Radio, November 13, 2014.
4. "Analysis of Student Data for Retention Using Data Mining Techniques." Consortium for Student Retention Data Exchange (CSRDE) Webinar, September 11, 2013.
5. "Graph-Based Anomaly Detection." SIAM Southeastern Sectional Annual Meeting, University of Tennessee, Knoxville, Tennessee, March 24, 2013.
6. "Graph-Based Anomaly Detection." School of Sciences Fall Symposium, Belmont University, Nashville, Tennessee, October 25, 2011.
7. "Graph-Based Anomaly Detection." National Security Agency (NSA), Baltimore, Maryland, October 11, 2011.
8. "Anomaly Detection in Relational Data for the Discovery of Insider Threats". DoD - Information Assurance Symposium, March 8-9, 2011.
9. "Communication in Software Design". Teaching Communication Skills in the Software Engineering Curriculum, Chautauqua 2008, Miami University, June 11, 2008.

Grants/Contracts

1. **W. Eberle** and D. Talbert, "TnTech AI-Corps Pilot Program," *Cybersecurity Education Research and Outreach Center (CEROC)*, 10/01/23-05/31/26, $152,238.
2. M. Ismail, E. Brown, **W. Eberle**, and C. Radian, "Cyber Redi - a Bridge Program to the Master's Degree in Computer Science Cybersecurity Concentration at Tennessee Technological University (TNTech)," *Center of Inclusive Computing (CIC) Northeastern University*, 01/01/25-08/30/25, $72,000.
3. **W. Eberle** and D. Talbert, "Travel: FLAIRS Conference Experience for Workforce Development in Artificial Intelligence," *National Science Foundation*, NSF 23-1, 10/01/23-05/31/24, $35,816.
4. "REU Site: CyberAI: Cybersecurity Solutions Leveraging Artificial Intelligence for Smart Systems," *National Science Foundation* (Mohamed Mahmoud PI, Syed Hasan Co-PI). 2024-2027, $464,837. (*Senior Personnel*)

5. "REU Site: Secure and Privacy-Preserving Cyber Physical Systems: Software and Hardware Approaches," *National Science Foundation* (Mohamed Mahmoud PI, Syed Hasan Co-PI). 2020-2022, $375,963. (*Senior Personnel*)
6. **W. Eberle**, "Pattern Learning and Anomaly Detection across Multiple Data Streams", Tennessee Technological, Office of Research Grant, 7/1/17-6/30/18, $9000.
7. **W. Eberle** and L. Holder, "III: Small: Collaborative Research: Anomaly Detection in Graph Streams," *National Science Foundation, NSF 12-580*, 09/2013-08/2016, $458,790. (*extended through 2017*)
8. "EAGER: Multi-Stream Graph Mining," *National Science Foundation* (Lawrence Holder PI). 2016-2017, $99,999. (*Senior Personnel*)
9. "Tennessee Cybercorps: A Hybrid Program in Cybersecurity", *National Science Foundation* (Ambareen Siraj PI, Mohammad Rahman Co-PI, Doug Talbert Co-PI). 2016 – 2020, $3,951,889. (*Senior Personnel*)
10. "REU Site: Secure and Privacy in the Future Smart Cities," *National Science Foundation* (Mohamed Mahmoud PI, Syed Hasan Co-PI). 2016-2019, $359,972. (*Senior Personnel*)
11. **W. Eberle**, "Hybrid and Graph-Based Data Mining of Medical Information Data", *Tennessee Technological University, Office of Research Grant*, 7/1/14-6/30/15, $9,438.
12. **W. Eberle** and D. Talbert, "Healthcare 180 Visualizer," *Healthcare 180 LLC, A Tennessee Company*, 06/01/2014 – 08/31/2014, $80,000.
13. Institute for Modeling, Simulation, and Computing, *College of Engineering* (Stephen Scott PI). November 2012 – June 2014, $25,000. (*Senior Personnel*)
14. "SecKnitKit (Security Knitting Kit): Integrating Security into Traditional Computer Science Courses", *National Science Foundation* (Ambareen Siraj PI, Sheikh Ghafoor Co-PI). 2012 – 2014, $199,872. (*Senior Personnel*)
15. **W. Eberle**, "Validation of Graph-Based Anomaly Detection on Company Internal Controls", Tennessee Technological, Office of Research Grant, 7/1/12-6/30/13, $3,455.
16. **W. Eberle** and L. Holder, "Detecting Anomalies in Shipping Data Using a Graph-Based Approach," *DHS Border and Maritime Security, BAA 10-01*, 09/21/2010 – 09/20/2012, $413,360.
    (*Received performance rating of "Very Good" from the program director*)
17. **W. Eberle**, "Using Data Mining and Machine Learning for Retention of College Students," *Tennessee Technological University Faculty Research Grant*, 7/1/10 – 6/30/11, $4,380.
18. CPATH: Incorporating Communication Outcomes into the Computer Science Curriculum, *National Science Foundation* (Janet Burge PI, Co-PIs: Jerry Gannod, Paul Anderson, MU, Mladen Vouk, Michael Carter, North Carolina State University). 2010 – 2012, $800,000. (*participant*)
19. **W. Eberle**, "Graph-Based Anomaly Detection in Real-World Domains", *Tennessee Technological University Faculty Research Grant*, 7/1/08-6/30/09, $2,890.
20. L. Holder and **W. Eberle**, "Insider Threat Detection Using a Graph-based Approach", *DHS Cyber-Security Research and Development Program*, 03/18/2008-03/17/2010, $327,667.

Software

1. Pattern Learning and Anomaly Detection System (PLADS), http://ailab.wsu.edu/adgs/.
2. Graph-Based Anomaly Detection (GBAD), www.gbad.info.

Advising

PhD

1. Ocheme "Anthony" Ekle (*expected Spring 2026*)
2. George Stone (*expected Spring 2026*)
3. Farhat Lamia Barsha (*expected Fall 2026*)
4. Jeffrey Graves, "NOVEL ENCODINGS FOR USE WITH THE MINIMUM DESCRIPTION LENGTH PRINCIPLE FOR SUBGRAPH MINING", Fall 2022.
5. Prabin Lamichhane, "ANOMALY DETECTION, CLUSTERING, AND VISUALIZATION ON DYNAMIC GRAPHS", Fall 2022. Currently a Senior Data Scientist at Mastercard (Missouri)
6. Sheikh Rabiul Islam, "DOMAIN KNOWLEDGE AIDED EXPLAINABLE ARTIFICIAL INTELLIGENCE", Spring 2020. Currently an Assistant Professor at Rutgers University, Camden, NJ.
7. Ramesh Paudel, "EFFICIENT GRAPH KNOWLEDGE DISCOVERY ON GRAPH STREAMS WITH CONCEPT DRIFT", Spring 2020. Currently a Data Scientist at Sysco Corporation, Houston, TX.
8. Sirisha Velampalli (Jawaharlal Nehru Technological University), "NOVEL GRAPH BASED APPROACHES FOR FINDING INTERESTING SUBSTRUCTURES IN HETEROGENEOUS NETWORKS". Spring 2018. Currently a Machine Learning Research Engineer at DataOrb AI.
9. Lenin Mookiah, "PERSONALIZED CONTEXT MINING OF NEWS STREAMS USING GRAPH-BASED APPROACHES", Summer 2017. Currently a Machine Learning and Software Engineer for eBay (California).

Masters

1. Cade Kennedy (*expected Spring 2026*).
2. Amr Elshazly, "REINFORCEMENT LEARNING-BASED CHARGING COORDINATION WITH ENHANCED EFFICIENCY, FAIRNESS, AND SECURITY FOR SMART GRID," Fall 2024.
3. Sanjida Sharna, "FED-GLAD: FEDERATED GRAPH LEARNING FOR ANOMALY DETECTION," Fall 2024.
4. Matthew Brotherton, "AN ANALYSIS OF IMAGE-BASED MALWARE CLASSIFICATION USING DEEP LEARNING TECHNIQUES," Fall 2023.
5. Anjana Ashokkumar, "Network Attack Detector", Spring 2023.
6. Allyson Jones, Spring 2022.
7. Prajjwal Kandal, "Node Similarity for Anomaly Detection in Attributed Graphs", Spring 2019.
8. Niraj Rajbhandari, "Graph Sampling to Detect Anomalies in Large Graphs and Dynamic Graph Streams", Spring 2018.
9. Sheikh Rabiul Islam, "An Efficient Technique for Mining Bad Credit Accounts from Both OLAP and OLTP", Spring 2018.
10. Raduanul Islam, "Canonical labeling to Improve Compression Approach to Graph Matching", Spring 2017. Google.
11. Rupak Dhunaga, "Real-Time Visualization of Graph Streams", Spring 2016.

12. Jamie Terral, “Exploring Regular Expression-Based Variable-Width Intelligent Part Number Component Translation for Purposes of Engineering Design Knowledge Transfer and Manufacturing Execution Automation”, Spring 2016.
13. Alan McCormick, “Detecting Fraud in Online Classified Ads”, May 2014.
14. Ramesh Paudel, “Linkcube: A Tool for Anomaly Detection in Social Networks Using GBAD”, May 2014.
15. Jeffrey Graves, “Source Code Plagiarism Detection Using a Graph Based Approach”, July 2011.

(Have also served on the project/thesis/dissertation committees for numerous other graduate students.)