Jessica Lin

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Research Interests

My research interests lie at the intersection of data mining and machine learning, with a focus on time series pattern discovery, recommender systems, model interpretability, and interdisciplinary applications across healthcare, security, manufacturing, and user behavior modeling.

Education

- **University of California** — Riverside, CA
  Ph.D. in Computer Science — *Aug 1999 – Jun 2005*
  Thesis: Discovering Unusual and Non-trivial Patterns in Time Series Databases
  Advisor: Dr. Eamonn Keogh
- **University of California** — Riverside, CA
  M.S. in Computer Science — *2002*
- **University of California** — Riverside, CA
  B.S. in Computer Science — *Sep 1995 – Aug 1999*

Research Experience

- **Associate Professor** — Fairfax, VA
  Department of Computer Science, George Mason University — *2012 - present*
- **Subject Matter Expert in support of DoD SBIR** — Herndon, VA
  DTech, Inc. — *11/2019-01/2022*
- **Assistant Professor** — Fairfax, VA
  Department of Computer Science, George Mason University — *2005 - 2012*
- **Data Science Consultant for SEC project** — Charlottesville, VA
  Elder Research, Inc. — *09/2016-11/2017*

Publications (H-index: 35; #citations: 12,904 as of June 16, 2025)

- Edited Volumes as Editor

  1. [Geo'13] Guido Cervone, **Jessica Lin**, and Nigel Waters (Eds.). 2013. Spatio-Temporal Data Mining for Geoinformatics: Methods and Applications. Springer New York, NY. 166 pages.
  2. [DMG'10] **Jessica Lin**, Guido Cervone, and Nigel Waters. 2010. Proceedings of the 1st ACM SIGSPATIAL International Workshop on Data Mining for Geoinformatics. Association for Computing Machinery, New York, NY, USA.

- Book Chapters

  1. [Astronomy'12] **Jessica Lin**, Sheri Williamson, Kirk Borne, and David DeBarr. 2012. Pattern recognition in time series. Advances in Machine Learning and Data Mining for Astronomy. Eds. Kamal, A., Srivastava, A., Way, M., and Scargle, J. Chapman and Hall.

2. [DMKD'10] Chotirat Ann Ratanamahatana, **Jessica Lin**, Dimitrios Gunopulos, Eamonn Keogh, Michail Vlachos, and Gautam Das. 2010. Mining time series data. Data Mining and Knowledge Discovery Handbook 2010, 2nd Edition. Eds. Oded Maimon, Lior Rokach. Springer. Pages 1049-1077
3. [DMKD'05] Chotirat Ann Ratanamahatana, **Jessica Lin**, Dimitrios Gunopulos, Eamonn Keogh, Michail Vlachos, and Gautam Das. 2005. Mining time series data. Data Mining and Knowledge Discovery Handbook 2005. Eds. Oded Maimon, Lior Rokach. Springer. Pages 1069-1103.

- Peer-reviewed Journal Articles

1. [DAMI'24] Xiaosheng Li, Wenjie Xi, and **Jessica Lin**. 2024. RandomNet: Clustering Time Series Using Untrained Deep Neural Networks. Data Min Knowl Disc 38, 3473–3502.
2. [PR'21] Qingzhe Li, Liang Zhao, Yi-Ching Lee, Avesta Sassan, and **Jessica Lin**. 2021. CPM: A general feature dependency pattern mining framework for contrast multivariate time series. Pattern recognition. Vol 12.
3. [DAMI'21] Xiaosheng Li, **Jessica Lin**, and Liang Zhao. 2021. Time Series Clustering in Linear Time Complexity. Data Min Knowl Disc, 35(6): 2369-2388.
4. [Cryptography'21] Sayadi, Hossein, Yifeng Gao, Hosein Mohammadi Makrani, **Jessica Lin**, Paulo Cesar Costa, Setareh Rafatirad, and Houman Homayoun. 2021. Towards Accurate Run-Time Hardware-Assisted Stealthy Malware Detection: A Lightweight, Yet Effective Time Series CNN-Based Approach. Cryptography 5, no. 4: 28.
5. [TSAS'20] Qingzhe Li, Liang Zhao, Yi-Ching Lee and **Jessica Lin**. 2020. Contrast Pattern Mining in Paired Multivariate Time Series of a Controlled Driving Behavior Experiment. ACM Transactions on Spatial Algorithms and Systems (TSAS). 6(4):1-28.
6. [KAIS'19] Yifeng Gao and **Jessica Lin**. 2019. HIME: Discovering Variable-length Motifs in Large-Scale Time Series. Knowledge and Information Systems Journal (KAIS), Springer, 61(1), pp.513-542
7. [ES'19] Iqbal Owadally, Feng Zhou, Rasaq Otunba, **Jessica Lin**, and Douglas Wright. 2019. An Agent-Based System with Temporal Data Mining for Monitoring Financial Stability on Insurance Markets. Expert Syst. Appl. 123: 270-282.
8. [DAMI'18a] Xing Wang, **Jessica Lin**, Nital Patel, and Martin Braun. 2018. Exact Variable-Length Anomaly Detection Algorithm for Univariate and Multivariate Time Series. Data Min Knowl Disc. 32(6): 1806-1844.
9. [DAMI'18b] Yifeng Gao and **Jessica Lin**. 2018. Exploring Variable-Length Time Series Motifs in One Hundred Million Length Scale. Data Min Knowl Disc. 32(5), pp.1200-1228
10. [TKDD'18] Pavel Senin, **Jessica Lin**, Xing Wang, Tim Oates, Sunil Gandhi, Arnold P. Boedihardjo, Crystal Chen, and Susan Frankenstein. 2018. GrammarViz 3.0: Interactive Discovery of Variable-Length Time Series Patterns. ACM Transactions on Knowledge Discovery from Data (TKDD). 12(1): 10:1-10:28.
11. [BMC'16] Gene Shuman, Zoran Durić, Daniel Barbará, **Jessica Lin**, and Lynn H. Gerber. 2016. Improving the Recognition of Grips and Movements of the Hand Using Myoelectric Signals. BMC Medical Informatics and Decision Making 16 (Suppl 2):78.
12. [IDS'13] Chun-Kit Ngan, Alexander Brodsky, and **Jessica Lin**. 2013. Multi-Event Decision Making Over Multivariate Time Series. International Journal of Information and Decision Sciences. 5(3).
13. [JIIS'12] **Jessica Lin**, Rohan Khade, and Yuan Li. 2012. Rotation-Invariant Similarity in Time Series Using Bag-of-Patterns Representation. Journal of Intelligent Information Systems. 39(2): 287-315.
14. [BIP'11] Chun-Kit Ngan, Alexander Brodsky, and **Jessica Lin**. 2011. An event-based service framework for learning, querying, and monitoring multivariate time series. Lecture Notes in Business Information Processing, 102. Springer-Verlag.
15. [DAMI'07] **Jessica Lin**, Eamonn Keogh, Li Wei, and Stefano Lonardi. 2007. Experiencing SAX: A Novel Symbolic Representation of Time Series. Data Min Knowl Disc. 15(2): 107-144.
16. [NGC'07] Stefano Lonardi, **Jessica Lin**, Eamonn Keogh, and Bill Chiu. 2007. Efficient Discovery of Unusual Patterns in Time Series. New Generation Computing, 25(1): 61-93.
17. [MDM'07] **Jessica Lin**, Michail Vlachos, Eamonn Keogh, and Dimitrios Gunopulos. 2007. Multi-Resolution Time Series Clustering and Application to Images. Multimedia Data Mining and Knowledge Discovery, Eds. Valery Al Petrushin and Latifur Khan. Springer. Pages 58-79.

18. [KAIS'06] Eamonn Keogh, **Jessica Lin**, Sang-Hee Lee, and Helga Van Herle. 2006. Finding the Most Unusual Time Series Subsequence: Algorithms and Applications. Knowledge and Information Systems Journal (KAIS), 11(1): 1-27.
19. [TITB'06] Eamonn Keogh, **Jessica Lin**, Ada Fu, and Helga Van Herie. 2006. Finding Unusual Medical Time Series Subsequences: Algorithms and Applications. IEEE Transactions on Information Technology in Biomedicine, 10(3): 429-439.
20. [InfoVis'05] **Jessica Lin**, Eamonn Keogh, and Stefano Lonardi. 2005. Visualizing and Discovering Non-Trivial Patterns in Large Time Series Databases. Information Visualization, 4(2): 61-82.
21. [KAIS'05] Eamonn Keogh and **Jessica Lin**. 2005. Clustering of Time Series Subsequences is Meaningless: Implications for Previous and Future Research. Knowledge and Information Systems Journal (KAIS), 8(2): 154-177.
22. [Econometrics'04] **Jessica Lin**, Eamonn Keogh, 2004, Finding or not finding rules in time series. Applications of Artificial Intelligence in Finance and Economics (Advances in Econometrics, Volume 19), Pages 175-201.

- Peer-Reviewed Conference Articles

1. [PKDD'25a] Prommy Sultana Hossain, Emanuela Marasco, **Jessica Lin**, and Michael King. 2025. I Forgot About You!: Exploring Multi-Label Unlearning (MLU) for Responsible Facial Systems. In Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD 2025). Porto, Portugal. September 15-19. [*To Appear*]
2. [PKDD'25b] Wenjie Xi and **Jessica Lin**. 2025. RandomAD: Time Series Anomaly Detection with Untrained Convolutional Kernels. In Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD 2025). Porto, Portugal. September 15-19. [*To Appear*]]
3. [PAKDD'24] Wenjie Xi, Arnav Jain, Li Zhang and **Jessica Lin**. 2024. Efficient and Accurate Similarity-Aware Graph Neural Network for Semi-Supervised Time Series Classification. In Proceedings of the 28th Pacific-Asia Conference on Knowledge Discovery and Data Mining. Taipei, Taiwan. May 7-10.
4. [SDM'23] Li Zhang, Jiahao Ding, Yifeng Gao, and **Jessica Lin**. 2023. PMP: Privacy-Aware Matrix Profile against Sensitive Pattern Inference for Time Series. In Proceedings of the 2023 SIAM International Conference on Data Mining. Minneapolis, MN. April 27-29.
5. [SDM'22] Li Zhang, Nital Patal, Xiuqi Li, and **Jessica Lin**. 2022. Joint Time Series Chain: Detecting Unusual Evolving Trend across Time Series, In Proceedings of the 2022 SIAM International Conference on Data Mining. Alexandria, VA. April 28-30.
6. [ICDM'22] Li Zhang, Yan Zhu, Yifeng Gao, and **Jessica Lin**. 2022. Robust Time Series Chain Discovery with Incremental Nearest Neighbors. In Proceedings of the 2022 IEEE International Conference on Data Mining. Orlando, FL. Nov 28-Dec 1.
7. [INMM'21] Natacha Peter-Stein, David Farley, Constantin Brif, Nicholas Pattengale, Chase Zimmerman, Yifeng Gao, **Jessica Lin**, Mitchell Negus, Rachel Slaybaugh, Daniel Archer, Michael Willis, James Ghawaly, and Andrew Nicholson. 2021. Development of Novel Approaches to Anomaly Detection and Surety for Safeguards Data. In Proceedings of the 2021 INMM/ESARDA Joint Annual Meeting. August 23-26. Virtual Meeting.
8. [IOLTS'21] Yifeng Gao, Hosein Mohammadi Makrani, Mehrdad Aliasgari, Amin Rezaei, **Jessica Lin**, Houman Homayoun, and Hossein Sayadi. 2021. Adaptive-HMD: Accurate and Cost-Efficient Machine Learning-Driven Malware Detection using Microarchitectural Events. In Proceedings of the 2021 IEEE 27th International Symposium on On-Line Testing and Robust System Design (IOLTS 2021). Torino, Italy. June 28-30.
9. [SDM'20] Li Zhang, Yifeng Gao, and **Jessica Lin**. 2020. Semantic Discord: Finding Unusual Local Patterns for Time Series. In Proceedings of the SIAM International Conference on Data Mining. Cincinnati, May 2020.
10. [EDBT'20] Yifeng Gao, **Jessica Lin**, Constantin Brif, Ensemble Grammar Induction For Detecting Anomalies in Time Series. In Proceedings of the 23rd International Conference on Extending Database Technology (EDBT 2020), Copenhagen, Mar. 2020.

11. [AAAI'20] Xuchao Zhang, Yifeng Gao, **Jessica Lin**, and Chang-Tien Lu. 2020. TapNet: Multivariate Time Series Classification with Attentional Prototype Network, in AAAI Conference on Artificial Intelligence (AAAI 2020), New York, NY. Feb 7-12.
12. [GLSVLSI'20] Hossein Sayadi, Yifeng Gao, Hosein Mohammadi Makrani, Sai Manoj, Avesta Sasan, Setareh Rafatirad, **Jessica Lin**, and Houman Homayoun. 2020. StealthMiner: Specialized Time Series Machine Learning for Run-Time Stealthy Malware Detection based on Microarchitectural Features. Great Lakes Symposium on VLSI (GLSVLSI '20). Association for Computing Machinery, New York, NY. Sep 8-11.
13. [GOMACTech'20] Hossein Sayadi, Yifeng Gao, Hosein Makrani, Avesta Sasan, **Jessica Lin**, Setareh Rafatirad, and Houman Homayoun. 2020. Towards Runtime Hardware-Assisted Stealthy Malware Detection. In Proceedings of the 45th Government Microcircuit Applications and Critical Technology Conference (GOMACTech'20), March 2020.
14. [ICDM'19a] Yifeng Gao and **Jessica Lin**. 2019. Discovering Subdimensional Motifs of Different Lengths in Large-Scale Multivariate Time Series. In Proceedings of the IEEE International Conference on Data Mining (ICDM 2019). Beijing, China. Nov 8-11. [acceptance rate: 9.08%]
15. [ICDM'19b] Qingzhe Li, Liang Zhao, Yi-Ching Lee, Yanfang Ye, **Jessica Lin**, and Lingfei Wu. 2019. Contrast Feature Dependency Pattern Mining for Controlled Experiments with Application to Driving Behavior. In Proceedings of the 19th IEEE International Conference on Data Mining (ICDM 2019). Beijing, China. Nov 8-11.
16. [IJCAI'19] Xiaosheng Li, **Jessica Lin**, and Liang Zhao. 2019. Linear Time Complexity Time Series Clustering with Symbolic Pattern Forest. In Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019). Macao, China. Aug 10-16.
17. [SDM'19] Xiaosheng Li and **Jessica Lin**. 2019. Linear Time Motif Discovery in Time Series. In Proceedings of the 2019 SIAM International Conference on Data Mining (SDM). Calgary, Alberta, Canada. May 2-4.
18. [SSDBM'19] Rasaq Otunba, Raimi A. Rufai, and **Jessica Lin**. 2019. Deep Stacked Ensemble Recommender. In Proceedings of the 31st International Conference on Scientific and Statistical Database Management (SSDBM). Santa Cruz, CA. July 23-25, 2019.
19. [EDBT'19] Rohan Khade, **Jessica Lin**, and Nital Patel. 2019. Finding Meaningful Contrast Patterns for Quantitative Data. In Proceedings of International Conference on Extending Database Technology (EDBT). Lisbon, Portugal. March 26-29.
20. [SDM'18] Xiaosheng Li and **Jessica Lin**. 2018. Evolving Separating References for Time Series Classication. In Proceedings of the SIAM International Conference in Data Mining (SDM). San Diego, CA. May 3-5.
21. [EDBT'18a] Daoyuan Li, **Jessica Lin**, Tegawende Bissyande, Jacques Klein, and Yves LeTraon. 2018. Extracting Statistical Graph Features for Accurate and Efficient Time Series Classification. In Proceedings of the 21st International Conference on Extending Database Technology (EDBT). Vienna, Austria. Mar 26-29.
22. [EDBT'18b] Rohan Khade, **Jessica Lin**, Nital Patel and Martin Braun. 2018. Finding Contrast Patterns for Mixed Streaming Data. In Proceedings of the 21st International Conference on Extending Database Technology (EDBT). Vienna, Austria. Mar 26-29.
23. [ICDM'17a] Yifeng Gao, **Jessica Lin**. 2017. Efficient Discovery of Time Series Motifs with Large Length Range in Million Scale Time Series. In Proceedings of the 2017 IEEE International Conference on Data Mining (ICDM 2017). New Orleans, LA. Nov 18-21. [acceptance rate: 9.25%] **shortlisted for best paper award**
24. [ICDM'17b] Xiaosheng Li and **Jessica Lin**. 2017. Linear Time Complexity Time Series Classification with Bag-of-Pattern-Features. In Proceedings of The 2017 IEEE International Conference on Data Mining series (ICDM). New Orleans, LA. Nov 18-21.
25. [SIGSPATIAL'17] Qingzhe Li, **Jessica Lin**, Liang Zhao, and Huzefa Rangwala. 2017. A Uniform Representation for Trajectory Learning Tasks. In Proceedings of the 25th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2017). Redondo Beach, CA. Nov 7-10.
26. [PKDD'17] Yifeng Gao, Qingzhe Li, Xiaosheng Li, **Jessica Lin**, and Huzefa Rangwala. 2017. TrajViz: A Tool for Visualizing Patterns and Anomalies in Trajectory. In Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD). Demo track. Skopje, Macedonia. Sep 18-22.

27. [SSTD'17] Crystal Chen, Arnold P. Boedihardjo, Brian S. Jenkins, Charlotte L. Ellison, **Jessica Lin**, Pavel Senin, and Tim Oates. 2017. STAVIS 2.0: Mining Spatial Trajectories via Motifs. In Proceedings of the 2017 International Symposium on Spatial and Temporal Databases (SSTD). Arlington, VA. Aug 21.
28. [RecSys'17] Rasaq Otunba, Raimi A. Rufai, and **Jessica Lin**. 2017. MPR: Multi-Objective Pairwise Ranking. In Proceedings of the 11th ACM Conference on Recommender Systems (RecSys 2017). Como, Italy. Aug 27-31.
29. [SPIE'17] Elizabeth K. Bowman, Matt Turek, Paul Tunison, Reed Porter, Steve Thomas, Vadas Gintautas, Peter Shargo, **Jessica Lin**, Qingzhe Li, Yifeng Gao, Xiaosheng Li; Ranjeev Mittu, Carolyn Penstein Rose, Keith Maki, Chris Bogart, and Samrihdi Shree Choudhari. 2017. Advanced Text and Video Analytics for Proactive Decision Making. In Next-Generation Analyst V, International Society for Optics and Photonics (SPIE 2017). Anaheim, CA. April 10-11.
30. [CIKM'16] Xing Wang, **Jessica Lin**, Nital Patel and Martin Braun. 2016. A Self-learning and Online Algorithm for Time Series Anomaly Detection, with Application in CPU Manufacturing. In Proceedings of the 25th ACM International Conference on Information and Knowledge Management (CIKM 2016). Indianapolis, IN. Oct 24-26.
31. [ICMLA'16] Yifeng Gao, **Jessica Lin**, Huzefa Rangwala. 2016. Iterative Grammar-Based Framework for Discovering Variable-Length Time Series Motifs. In Proceedings of the 15th IEEE International Conference on in Machine Learning and Applications (ICMLA 2016). Anaheim, CA. Dec. 2016.
32. [EDBT'16] Xing Wang, **Jessica Lin**, Pavel Senin, Tim Oates, Sunil Gandhi, Arnold P. Boedihardjo, Crystal Chen, and Susan Frankenstein. 2016. RPM: Representative Pattern Mining for Efficient Time Series Classification. In Proceedings of the 19th International Conference on Extending Database Technology (EDBT). Bordeaux, France. March 15-18.
33. [SPIE'16] Ranjeev Mittu, **Jessica Lin**, Qingzhe Li, Yifeng Gao, Huzefa Rangwala, Peter Shargo, Joshua Robinson, Carolyn Rose, Paul Tunison, Matt Turek, Stephen Thomas, and Phil Hanselman. 2016. Foundations for Context-aware Information Retrieval for Proactive Decision Support. In Next-Generation Analyst IV, International Society for Optics and Photonics, (SPIE 2016), Baltimore, May 2016.
34. [ICMLA'15a] Xing Wang, Yifeng Gao, **Jessica Lin**, Huzefa Rangwala and Ranjeev Mittu. 2015. A Machine Learning Approach to False Alarm Detection for Critical Arrhythmia Alarms. In Proceedings of the 14th IEEE International Conference on Machine Learning and Applications (ICMLA 2015), Miami, FL. Dec 9-11.
35. [ICMLA'15b] Rohan Khade, **Jessica Lin**, and Nital S. Patel. 2015. Frequent Set Mining for Streaming Mixed and Large Data. In Proceedings of the 14th International Conference on Machine Learning and Applications (ICMLA). Miami, FL. Dec 9-11.
36. [EDBT'15] Pavel Senin, **Jessica Lin**, Xing Wang, Tim Oates, Sunil Gandhi, Arnold P. Boedihardjo, Crystal Chen, and Susan Frankenstein. 2015. Time Series Anomaly Discovery with Grammar-Based Compressions. In Proceedings of the 18th International Conference on Extending Database Technology (EDBT). Brussels, Belgium. March 23-27.
37. [BIBM'15] Gene Shuman, Zoran Duric, Daniel Barbara, **Jessica Lin**, and Lynn H. Gerber. 2015. Using Myoelectric Signals to Recognize Grips and Movements of the Hand. In Proceedings of the IEEE International Conference on Bioinformatics and Biomedicine (BIBM). Washington DC. Nov 9-12.
38. [PKDD'14] Pavel Senin, **Jessica Lin**, Xing Wang, Tim Oates, Sunil Gandhi, Arnold P. Boedihardjo, Crystal Chen, Susan Frankenstein, and Manfred Lerner. 2014. GrammarViz 2.0: a Tool for Grammar-Based Pattern Discovery in Time Series. In Proceedings of the European Conference on Machine Learning and Knowledge Discovery in Databases (ECML PKDD). Nancy, France. Sep 15-19.
39. [GECCO'14] Uday Kamath, **Jessica Lin**, and Kenneth De Jong. 2014. SAX-EFG:An Evolutionary Feature Generation Framework for Time Series Classification. In Proceedings of Genetic and Evolutionary Computation Conference (GECCO '14). Vancouver, Canada. July 12-16.
40. [SEKE'14] Rasaq Otunba and **Jessica Lin**. 2014. APT: Approximate Period Detection in Time Series. In Proceedings of the 26th International Conference on Software Engineering and Knowledge Engineering (SEKE). Vancouver, Canada, July 1-3.
41. [PAKDD'14] Rasaq Otunba, **Jessica Lin**, and Pavel Senin. 2014. MBPD: Motif-Based Period Detection. In Proceedings of the 1st International Workshop on Pattern Mining and Application of Big Data, in conjunction with PAKDD 2014. Tainan, Taiwan. May 13-16.

42. [CIKM'13] Tim Oates, Arnold Boedihardjo, **Jessica Lin**, Crystal Chen, Susan Frankenstein, and Sunil Gandhi. 2013. Motif discovery in spatial trajectories using grammar inference. In Proceedings of ACM International Conference on Information and Knowledge Management (CIKM). San Francisco, CA. Oct 27-Nov 1.
43. [SDM'12] Yuan Li, **Jessica Lin**, and Tim Oates. 2012. Visualizing variable-length time series motifs. In Proceedings of the 2012 SIAM International Conference on Data Mining (SDM). Anaheim, CA. April 26-28. Pages 895-906.
44. [DSS'12] Chun-Kit Ngan, Alexander Brodsky, and **Jessica Lin**. 2012. R-Checkpoint algorithm for multi-event decision making over multivariate time series. In Proceedings of the 16th IFIP Working Group 8.3 International Conference on Decision Support Systems (DSS). Anávissos, Greece. June 27-30. Pages 209-220.
45. [ICEIS'11] Chun-Kit Ngan, Alexander Brodsky, and **Jessica Lin**. 2011. An event-based service framework for learning, querying, and monitoring multivariate time series. In Proceedings of the 13th International Conference on Enterprise Information Systems (ICEIS), Vol 2. Beijing, China. June 8-11. Pages 92-101.
46. [AMS'11] Guido Cervone, **Jessica Lin**, Pasquale Franzese. 2011. Addressing wind direction uncertainty in source estimation through dynamic time warping, In Proceedings of the 91st American Meteorological Society Annual Meeting, Computational Intelligence Methods and Their Applications to Environmental Science, Seattle, WA, January 2011.
47. [CBMS'10] **Jessica Lin** and Yuan Li. 2010. Finding approximate frequent patterns in streaming medical data. In Proceedings of the 23rd IEEE International Symposium on Computer-Based Medical Systems. IEEE Computer Society, Washington DC, USA.
48. [DSS'10] Chun-Kit Ngan, Alexander Brodsky, and **Jessica Lin**. 2010. Decisions on multivariate time series: combining domain knowledge with utility maximization. In Supplemental Proceedings of the 15th International Conference on Decision Support Systems. July 7-10. Lisbon, Portugal.
49. [SSDBM'09] **Jessica Lin** and Yuan Li. 2009. Finding structural similarity in time series data using Bag-of-Patterns representation. In Proceedings of the 21st International Conference on Scientific and Statistical Database Management (SSDBM 2009), Marianne Winslett (Ed.). Springer-Verlag, Berlin, Heidelberg, Pages 461-477.
50. [CBMS'09] **Jessica Lin** and Yuan Li. 2009. Finding structurally different medical data. In Proceedings of the 22nd IEEE International Symposium on Computer-Based Medical Systems. IEEE Computer Society, Washington DC, USA. Pages 1-8.
51. [SDM'08] **Jessica Lin** and David Etter. 2008. Exact and approximate reverse nearest neighbor search in multimedia data. In Proceedings of the SIAM International Conference on Data Mining. Atlanta, GA. April 24-26. Pages 656-667.
52. [UCCTS'08] Eiman Al-Shammari and **Jessica Lin**. 2008. Automated Corpora Creation Using a Novel Arabic Stemming Algorithm. In proceedings of the 2008 International Symposium on Using Corpora in Contrastive and Translation Studies (UCCTS). Hanzhou, China. Sept 25-27.
53. [ADMA'06] Ada Fu, Oscar Leung, Eamonn Keogh, and **Jessica Lin**. 2006. Finding time series discords based on Haar transform. In Proceedings of the 2nd International Conference on Advanced Data Mining and Applications. Xi'an, China. Aug 14-18. Pages 31-41.
54. [PKDD'06] **Jessica Lin** and Eamonn Keogh. 2006. Group SAX: Extending the notion of contrast sets to time series and multimedia data. In Proceedings of the 10th European Conference on Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD). Berlin, Germany. Sept 18-22. Pages 284-296. Lecture Notes in Computer Science, Springer.
55. [ICDM'05] Eamonn Keogh, **Jessica Lin**, and Ada Fu. 2005. HOT SAX: Efficiently finding the most unusual time series subsequence. In Proceedings of the 5th IEEE International Conference on Data Mining (ICDM). Nov 27-30. Houston, TX. Pages 226-233. IEEE Computer Society.
56. [CBMS'05] **Jessica Lin**, Eamonn Keogh, Ada Fu, and Helga Van Herie. 2005. Approximations to magic: finding unusual medical time series. In Proceedings of the 18th International Symposium on Computer-Based Medical Systems. IEEE Computer Society, Washington DC, USA. Pages 329-334.
57. [KDD'04] **Jessica Lin**, Eamonn Keogh, Stefano Lonardi, Jeffrey P. Lankford, and Donna M. Nystrom. 2004. Visually mining and monitoring massive time series. In Proceedings of the tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD '04). ACM, New York, NY, USA, 460-469.

58. [VLDB'04] **Jessica Lin**, Eamonn Keogh, Stefano Lonardi, Jeffrey P. Lankford, and Daonna M. Nystrom. 2004. VizTree: a tool for visually mining and monitoring massive time series databases. In Proceedings of the 30th International Conference on Very large Data Bases - Volume 30 (VLDB '04). VLDB Endowment. Pages 1269-1272.
59. [EDBT'04] **Jessica Lin**, Michail Vlachos, Eamonn Keogh, and Dimitrios Gunopulos. 2004. Iterative incremental clustering of time series. In Proceedings of the IX Conference on Extending Database Technology (EDBT). Lecture Notes in Computer Science, Springer. Pages 106-122.
60. [ICDM'03] Eamonn Keogh, **Jessica Lin**, and Wagner Truppel. 2003. Clustering of time series subsequences is meaningless: implications for past and future research. In Proceedings of the 3rd IEEE International Conference on Data Mining (ICDM). IEEE Computer Society. Pages 115-122.
61. [ICAI'03] **Jessica Lin**, Eamonn Keogh, and Wagner Truppel. 2003. (Not) Finding rules in time series: a surprising result with implications for previous and future research. In Proceedings of the 2003 International Conference on Artificial Intelligence. Las Vegas, NV. June 23-26. Pages 55-61.
62. [ICDM'02] Pranav Patel, Eamonn Keogh, **Jessica Lin**, and Stefano Lonardi. 2002. Mining motifs in massive time series databases. In Proceedings of the 2002 IEEE International Conference on Data Mining (ICDM '02). IEEE Computer Society, Washington, DC, USA, 370-377.

- Peer-Reviewed Workshop Articles

1. [SDMW'25B] Wenjie Xi and **Jessica Lin**. 2025. Time Series Anomaly Detection with Untrained Convolutional Kernels. Workshop on AI for Time Series Analysis (AI4TS), in conjunction with SDM 2025. Alexandria, VA. May 1-3.
2. [SDMW'25A] Wenjie Xi, Rundong Zuo, Alejandro Alvarez, Jie Zhang, and **Jessica Lin**. 2025. Value and Shape-Aware Transformer for Multivariate Time Series Classification. Workshop on AI for Time Series Analysis (AI4TS), in conjunction with SDM 2025. Alexandria, VA. May 1-3.
3. [AI4TS'25] Li Zhang, Yifeng Gao, Mucun Sun, Shuochao Yao, Ashley Gomez, and **Jessica Lin**. 2025. MOAT: Motif-guided Debiasing Framework for Time Series Forecasting. Workshop on AI for Time Series Analysis (AI4TS), in conjunction with AAAI 2025. Philadelphia, PA. Feb 25-March 4.
4. [DLG-AAAI'23] Wenjie Xi, Arnav Jain, Li Zhang and **Jessica Lin**. 2023. LB-SimTSC: An Efficient Similarity-Aware Graph Neural Network for Semi-Supervised Time Series Classification. The Ninth International Workshop on Deep Learning on Graphs: Method and Applications, in conjunction with AAAI 2023. Washington DC. Feb 7-14.
5. [PIKM'15] Sunil Gandhi, Tim Oates, Arnold P. Boedihardjo, Crystal Chen, **Jessica Lin**, Pavel Senin, Susan Frankenstein, and Xing Wang. 2015. A Generative Model for Time Series Discretization Based on Multiple Normal Distributions. PIKM Workshop at International Conference on Information and Knowledge Management (CIKM). Melbourne, Australia. Oct 19-23.
6. [EWG'11] Chun-Kit Ngan, Alexander Brodsky, and **Jessica Lin**. 2011. Multi-event decision making over multivariate time series. In Proceedings of EWG-DSS London Workshop on Decision Systems. Birbeck, UK. June 23-34.
7. [GIS'10] **Jessica Lin**, Guido Cervone, and Pasquale Franzese. 2010. Assessment in error in air quality models using dynamic time warping. In Proceedings of the 1st International Workshop on Data Mining for Geoinformatics, in conjunction with SIGSPATIAL GIS 2010. San Jose, CA. Nov 2, 2010. Pages 38-44.
8. [MDM'10] Yuan Li and **Jessica Lin**. 2010. Approximate variable-length time series motif discovery using grammar inference. In Proceedings of the 10th International Workshop on Multimedia Data Mining, in conjunction with SIGKDD 2010. ACM, New York, NY, USA. Pages 1-9.
9. [ISCAW'08] Eiman Al-Shammari and **Jessica Lin**. 2008. A new Arabic stemming algorithm. In Proceedings of the 2008 ISCA Workshop on Experimental Linguistics. Athens, Greece. Aug 25-27.
10. [SIGIRW'08] Eiman Al-Shammari, **Jessica Lin**. 2008. A novel Arabic lemmatization algorithm. In Proceedings of the 2nd SIGIR Workshop on Analytics for Noisy Unstructured Text Data. Singapore, July 24-27, 2008. p. 113-118.
11. [INEWS'08] Eiman Al-Shammari and **Jessica Lin**. 2008. Towards an error-free Arabic stemming. In Proceeding of the 2nd ACM workshop on Improving non English web searching (INEWS), at the 17th ACM Conference on Information and Knowledge Management. ACM, New York, NY, USA. Pages 9-16.

12. [KDDW'07] David DeBarr and **Jessica Lin**. 2007. Time series classification challenge experiments. In Proceedings of the Workshop and Challenge on Time Series Classification, at the 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. San Jose, CA. Aug 12-15.
13. [ACSW'04] Eamonn Keogh, **Jessica Lin**, Stefano Lonardi, and Bill Chiu. 2004. We have seen the future, and it is symbolic. In Proceedings of the Second Workshop on Australasian Information Security, Data Mining and Web Intelligence, and Software Internationalisation - Volume 32 (ACSW Frontiers '04), J. Hogan, P. Montague, M. Purvis, and C. Steketee (Eds.), Vol. 32. Australian Computer Society, Inc., Darlinghurst, Australia, Australia, Page 83.
14. [MDM'03] **Jessica Lin**, Vlachos, M, Keogh, E., and Gunopulos, D. 2003. Multi-resolution k-means clustering of time series and application to images. In Proceedings of the 4th SIGKDD Workshop on Multimedia Data Mining, in conjunction with SIGKDD 2003. 10 pages.
15. [SIGMOD-W'03a] **Jessica Lin**, Eamonn Keogh, Stefano Lonardi, and Bill Chiu. 2003. A symbolic representation of time series, with implication for streaming algorithms. In Proceedings of the 8th ACM SIGMOD Workshop on Research Issues in Data Mining and Knowledge Discovery (DMKD '03). ACM, New York, NY, USA. Pages 2-11.
16. [SIGMOD-W'03b] **Jessica Lin**, Eamonn Keogh, and Wagner Truppel. 2003. Clustering of streaming time series is meaningless. In Proceedings of the 8th ACM SIGMOD Workshop on Research Issues in Data Mining and Knowledge Discovery (DMKD '03). ACM, New York, NY, USA. Pages 2-11.
17. [SDMW'03a] Michail Vlachos, **Jessica Lin**, Eamonn Keogh, and Dimitrios Gunopulos. 2003. A wavelet-based anytime algorithm for k-means clustering of time series. In Proceedings of the Workshop on Clustering High Dimensional Data and Its Applications, at the 3rd SIAM International Conference on Data Mining. San Francisco, CA. May 3, 2003. 12 pages.
18. [SDMW'03b] **Jessica Lin** and Gunopulos, D. 2003. Dimensionality reduction by random projection and latent semantic indexing. In Proceedings of the Text Mining Workshop, at the 3rd SIAM International Conference on Data Mining. San Francisco, CA. May 3, 2003. 10 pages.
19. [KDDW'02] **Jessica Lin**, Eamonn Keogh, Pranav Patel, and Stefano Lonardi. 2002. Finding motifs in time series. In Proceedings of the 2nd Workshop on Temporal Data Mining, at the 8th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. Edmonton, Alberta, Canada. July 23-26, 2002. 11 pages.

- Open-source Tools
  - (With Pavel Senin) GrammarViz: Interative visualization tool for time series pattern discovery
    http://grammarviz2.github.io/grammarviz2_site/
  - (With Li Zhang) TSC22: Robust time series chain discovery algorithm
    https://sites.google.com/view/robust-time-series-chain-22
  - (With Li Zhang) Joint Time Series Chain: unusual evolving trend discovery across time series
    https://github.com/lzhang18/JTSC
  - (With Li Zhang) Semantic Discords: Finding Unusual Local Patterns for Time Series
    https://github.com/lzhang18/Semantic-Discord
  - (With Yifeng Gao) CHIME: Variable-length subdimensional motif discovery tool
    https://github.com/flash121123/CHIME.git
  - HIME: Variable-length motif discovery tool
    https://github.com/flash121123/HIME.git
  - TrajViz: Software for visualizing motifs in spatial trajectories
    https://github.com/flash121123/TrajViz.git
  - VizTree: Time series visualization and pattern discovery tool
    http://www.cs.gmu.edu/~jessica/viztree.htm
  - SAX: Symbolic Aggregate approXimation
    http://www.cs.gmu.edu/~jessica/sax.htm
  - Danger of Dimensionality Reduction: demo examples
    http://www.cs.gmu.edu/~jessica/DimReducDanger.htm

Talks and Presentations

- Invited Talks
  - 2025 (Keynote) Symposium on Intelligent Data Analysis
  - 2025 (Keynote) SDM Workshop on AI for Time Series
  - 2025 Virginia Tech
  - 2025 Stockholm University (Sweden)
  - 2022 ICDM Open Project Forum
  - 2019 National Chiao-Tung University (Taiwan)
  - 2019 Virginia Tech
  - 2018 Carnegie Institution for Science
  - 2018 University of Luxembourg (Luxeumbourg)
  - 2017 (Keynote) Analytics Day at Bureau of Engraving and Printing
  - 2016 Paris Descartes University (France)
  - 2016 National Chiao-Tung University (Taiwan)
  - 2016 National Center of Atmospheric Research (NCAR)
  - 2015 National Chiao-Tung University (Taiwan)
  - 2014 Intel Corporation
  - 2014 National Center of Atmospheric Research (NCAR)
  - 2014 Naval Research Laboratory
  - 2014 University of Maryland, College Park
  - 2013 National Center of Atmospheric Research (NCAR)
  - 2013 Intel Corporation
  - 2012 National Institute of Standards and Technology (NIST)
  - 2012 Elder Research, Inc
  - 2012 Living Social
  - 2009 George Mason University, Guest Speaker in EOS 753 (Observing the Earth and Its Climate)
  - 2009 Virginia Tech
  - 2007 USPS Office of Inspector General
  - 2007 Academia Sinica, Taiwan, Institute of Information Science
  - 2007 National Chengchi University (Taiwan)
  - 2006 IBM Research (Thomas J. Watson Research Center)
- Conference Tutorials
  - SDM 2024 (with Li Zhang and Yifeng Gao): Discovering High-Ordered Semantic Structures in Massive Time Series: Algorithms and Applications
  - SDM 2021 (with Yifeng Gao): Time Series Motif Discovery: Challenges, Recent Advances and its Applications

Teaching

- Course Development
  - CS 674/780: Data Mining on Multimedia Data (Graduate Level)
    Spring 2017, Fall 2013, Fall 2010, Fall 2009, Fall 2008
- Courses Taught
  - CS 782: Advanced Machine Learning (Graduate Level)
    Spring 2025
  - CS 484: Introduction to Data Mining (Undergraduate Level)
    Fall 2024, Spring 2024, Fall 2022, Spring 2021, Fall 2019, Spring 2019, Fall 2018, Spring 2017, Fall 2015
  - CS 584: Theory and Applications of Data Mining (Graduate Level)
    Fall 2024, Fall 2023, Spring 2023, Fall 2022, Spring 2020, Fall 2018, Spring 2016
  - CS 504: Principles of Data Management and Mining (Graduate Level)
    Fall 2018, Spring 2014
  - CS 450: Database Concepts (Undergraduate Level)
    Fall 2021, Fall 2020, Spring 2018, Fall 2015, Spring 2012, Fall 2011, Spring 2011, Fall 2010, Spring 2008
  - INFS 614/CS 550: Database Systems (Graduate Level)
    Fall 2017, Fall 2016, Fall 2013, Spring 2013, Fall 2012, Fall 2009, Fall 2008, Fall 2007
  - CS 695/795: Special Topics in Data Mining (Graduate Level)
    Spring 2023, Spring 2011, Fall 2007, Spring 2007, Fall 2006
  - INFS 590: Program Design and Data Structures (Graduate Level)
    Fall 2006, Spring 2006, Fall 2005

Advising

- Past Ph.D. Students
  - **Li Zhang**, Ph.D. in Computer Science — Spring 2023
    Thesis: Towards Robust and Privacy-aware Time Series Data Mining
    First Position: Assistant Professor at Univ. of Texas, Rio Grande Valley
  - **Rasaq Otunba**, Ph.D. in Information Technology — Fall 2022
    Thesis: Improving Ranking in Recommender Systems Using Hybrid Machine Learning
    First Position: Independent Consultant
  - **Yifeng Gao**, Ph.D. in Computer Science — Summer 2021
    Thesis: Mining Variable-Length Motifs in Large-Scale Time Series Data
    First Position: Assistant Professor at Univ. of Texas, Rio Grande Valley
  - **Xiaosheng Li**, Ph.D. in Computer Science — Fall 2020
    Thesis: Efficient and Effective Mining of Time Series
    First Position: Ant Group
  - **Rohan Khade**, Ph.D. in Computer Science — Fall 2019
    Thesis: A Framework for Finding Patterns in Mixed and Streaming Data
    First Position: Adolpha Inc
  - **Xing Wang**, Ph.D. in Computer Science — Fall 2017
    Thesis: Representative Pattern Mining and Anomaly Detection in Time Series
    First Position: VMWare
  - **Chun-Kit Ngan**, Ph.D. in Information Technology (co-advised with Prof Alexander Brodsky) — Summer 13
    Thesis: A Framework and Algorithms for Multivariate Time Series Analytics: Learning, Monitoring, and Recommendation
    Frist Position: Assistant Professor at Penn State

Eiman Al-Shammari, Ph.D. in Information Technology — Summer 2010
  - *Thesis: Improving Arabic Text Processing via Stemming with Application to Text Mining and Web Retrieval*
  First Position: Assistant Professor at Kuwait University

- Current Ph.D. Students
  - **Wenjie Xi**, Ph.D. in Computer Science — Expected Summer 2025
    Thesis: Leveraging Local Information Into Deep Learning For Time Series
  - **Majidur Rahman**, Ph.D. in Computer Science — Expected Spring 2027
    Co-advised with Ozlem Uzuner
  - **Prommy Sultana Hossain**, Ph.D. in Computer Science — Expected Spring 2028
    Co-advised with Emanuela Marasco
  - **Allan Fong**, Ph.D. in Computer Science — Expected Spring 2028
  - **Kaiyan Liu**, Ph.D. in Computer Science — Expected Spring 2028
  - **Amirreza Hajrasouliha**, Ph.D. in Computer Science — Expected Spring 2028
    Co-advised with Emanuela Marasco
  - **Thirumalai Vinjamoor Akhil Srinivas**, Ph.D. in Computer Science — Expected Spring 2029

- Mentored Undergraduate Students
  - Melody Barnard (Psychology, co-advised with Yi-Ching Lee and Cing-Dao Kan) — Summer 2018 - Spring 2019
  - Oleg Menyaylenko (co-advised with Yi-Ching Lee and Cing-Dao Kan) — Summer 2018 - Spring 2019
  - Robert Hitt (co-advised with Yi-Ching Lee and Cing-Dao Kan) — Summer 2018 - Spring 2019
  - Michael Norton (co-advised with Yi-Ching Lee and Cing-Dao Kan) — Summer 2018 - Spring 2019
  - Zhanpeng Chen (co-advised with Yi-Ching Lee and Cing-Dao Kan) — Summer 2018
  - William Cho (Johns Hopkins University, co-advised with Huzefa Rangwala) — REU, Summer 2018
  - Howard Baek (University of Washington, co-adivsed with Huzefa Rangwala) — REU, Summer 2018
  - Michael-Andrew Keays (co-advised with Yi-Ching Lee and Cing-Dao Kan) — Summer 2018
  - Joshua Nyden — Summer 2013

- Mentored High School Students
  - Amba Narayanan (John Champe High School) — Summer 2025
  - Ryan Hong (Oakton High School) — Summer 2024
  - Arnav Jain (Thomas Jefferson High School for Science and Technology) — Summer 2022
  - Aaron Lin (Chantilly High School) — Summer 2019
  - Rishabh Misra (Thomas Jefferson High School for Science and Technology) — Summer 2018

Professional Services

- Journal Co-Editor-in-Chief
  - 2025-Present: Big Data Research Journal

- Journal Editorial Board Member
  - ACM Transactions on Intelligent Systems and Technology (TIST)
  - Knowledge and Information Systems Journal (KAIS)
  - Pattern Recognition Journal
  - Big Data Research Journal

- ECMLPKDD Guest Editorial Board (2019)

- Conference Organizer
  - Application Track Program Co-Chair, IEEE 10th International Conference on Data Science and Advanced Analytics (DSAA), 2024
  - Local Arrangement Chair, 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (2022)

- Workshop Organizer
  - General Chair, SIGSPATIAL International Workshop on Data Mining for Geoinformatics, in cooperation with SIGSPATIAL GIS 2010
  - General Chair, Special Session on Data Mining for Geoinformatics in Cooperation with the 17th International Conference on Geoinformatics, 2009
  - Program Chair, International Workshop on Spatial and Spatiotemporal Data Mining (SSTDM 09) in Cooperation with IEEE ICDM 2009
  - Program Chair, International Workshop on Spatial and Spatiotemporal Data Mining (SSTDM 08) in Cooperation with IEEE ICDM 2008

- Area Chair/Meta-Reviewer/Senior Program Committee Member
  - Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD): 2025
  - AAAI Conference on Artificial Intelligence: 2021, 2022, 2024
  - SIAM International Conference on Data Mining (SDM): 2020, 2021, 2022, 2023, 2024, 2025
  - European Conference on Machine Learning and Principles and Practices of Knowledge Discovery in Databases (ECML/PKDD): 2024
  - European Conference on Artificial Intelligence (ECAI): 2023
  - ACM International Conference on Knowledge Discovery and Data Mining (KDD): 2023
  - International Conference on Data Mining (ICDM): 2020

- Journal Reviewer
  - Transaction on Knowledge and Data Engineering (TKDE)
  - Knowledge and Information Systems Journal (KAIS)
  - Data Mining and Knowledge Discovery Journal (DAMI)
  - Machine Learning Journal
  - International Journal on Very Large Data Bases (VLDB Journal)
  - Pattern Recognition Journal
  - Journal of Intelligent Information Systems (JIIS)
  - ACM Computing Survey
  - Computational Intelligence
  - Journal of Classification
  - Biomedical Signal Process Control
  - IEEE Transactions on Parallel and Distributed Systems (TPDS)
  - Information Processing Letters
  - Electronics Letters

- Program Committee Member
  - ICDE Workshop on Multivariate Time Series Analytics: 2024, 2025

- International Conference on Data Mining (ICDM): 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019
- European Conference on Machine Learning and Principles and Practices of Knowledge Discovery in Databases (ECML/PKDD): 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
- SIAM International Conference on Data Mining (SDM): 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019
- ACM Conference of Information and Knowledge Management (CIKM): 2013, 2014
- ACM International Conference on Knowledge Discovery and Data Mining (KDD): 2006, 2007, 2011, 2014, 2015, 2016, 2018, 2019, 2020
- KDD Workshop on Mining and Learning from Time Series (MiLeTS: 2015, 2016, 2022
- International Conference on Machine Learning and Applications (ICMLA): 2010

- Panelist/Proposal Reviewer
  - National Science Foundation: CAREER, IIS, NRT, AAG, BIG DATA, FODAVA, GRFP
  - NASA: ADAP
  - Air Force
  - US Army Engineer Research and Development Center (ERDC) Basic Research

- International External Evaluator/Committee Member
  - PhD Thesis Assessment Committee: Adrien Petralia (Université Paris Cité, France), 2025
  - PhD Halftime Evaluation Committee: Tim Kreuser (Stockholm University, Sweden), 2025
  - National Institute for Research in Digital Science and Technology (INRIA), France
  - PhD Thesis Assessment Committee: Thibault Germain (University of Paris-Saclay, France), 2024
  - PhD Thesis Assessment Committee: Tung Kieu (Aalborg University, Denmark), 2021
  - PhD Thesis External Member: Ahmed Shifaz (Monash University, Australia), 2021
  - PhD Thesis Assessment Committee: Daoyuan Li (University of Luxembourg, Luxembourg), 2018