

Associate Professor, Department of Computer Science

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Email: soukaina.boubrahimi@usu.edu | soukainafilali@gmail.com**EDUCATION**

PhD in Computer Science Georgia State University, Atlanta, GA, USA	August 2020
Masters of Science in Software Engineering Al Akhawayn University in Ifrane, Morocco	June 2015
Study Abroad Semester The University of Vermont, VT, USA	Fall 2012
Bachelor of Science in Computer Science Al Akhawayn University in Ifrane, Morocco	June 2014

PROFESSIONAL EXPERIENCE**Jul 2025 – now:** Associate Professor, Department of Computer Science, **Utah State University**, Logan, UT**Aug 2020 – Jun 2025:** Assistant Professor, Department of Computer Science, **Utah State University**, Logan, UT**Jun 2019-Aug 2019:** Data Science Intern, **Expedia Group**, Seattle, WA**Jun 2018-Aug 2018:** Data Science Intern, **LexisNexis Risk Solutions**, Alpharetta, GA**May 2013-Aug 2013:** Web Developer Intern, **SQLI Agency**, Rabat, Morocco**PUBLICATIONS**

I use the **bold** font style to indicate student authors that have been under my main advising and underline font style to mark student authors that have been under my co-advising.

Journal Articles

To indicate journal articles' impact, I used the Impact Factor when it is available and the CiteScore index as a secondary metric when the impact factor is not available. While Impact Factor adopts a 2-year window calculation that only includes citable articles, Cite Score uses a 3-year window computation that includes all documents indexed by Scopus.

[J1] **Akkala, A.**, Boubrahimi, S.F., Hamdi, S.M., **Hosseinzadeh, P.** and Nassar, A., 2025. Improved Streamflow Forecasting Through SWE-Augmented Spatio-Temporal Graph Neural Networks. *Hydrology* (in press).

Impact Factor: 3.1

[J2] **Li, P., Bahri, O.**, Boubrahimi, S. F., & Hamdi, S. M. (2025). Evaluating Time Series Augmentation Techniques for Deep Learning-Based Solar Flare Prediction. *The Astrophysical Journal Supplement Series*, 280(2), p.52.

<https://doi.org/10.3847/1538-4365/adfa2a>**Impact Factor: 8.7**

[J3] **Hosseinzadeh, P.**, Boubrahimi, S.F. and Hamdi, S.M., 2025. An End-to-end Ensemble Machine Learning Approach for Predicting High-impact Solar Energetic Particle Events Using Multimodal Data. *The Astrophysical Journal Supplement Series*, 277(2), p.34. <https://doi.org/10.3847/1538-4365/adb1c4>

Impact Factor: 8.7

[J4] **Li, P., Bahri, O., Hosseinzadeh, P.**, Boubrahimi, S.F. and Hamdi, S.M., 2025. Info-CELS: Informative Saliency Map-Guided Counterfactual Explanation for Time Series Classification. *Electronics*, 14(7), p.1311. <https://doi.org/10.3390/electronics14071311>

Impact Factor: 2.6

- [J5] **Akkala, A.**, Boubrahimi, S.F., Hamdi, S.M., **Hosseinzadeh, P.** and Nassar, A., 2025. Spatio-Temporal Graph Neural Networks for Streamflow Prediction in the Upper Colorado Basin. *Hydrology*, 12(3), p.60. <https://doi.org/10.3390/hydrology12030060>
Impact Factor: 3.1
- [J6] **Bahri, O., Li, P.**, Boubrahimi, S.F. and Hamdi, S.M., 2025. Predicting Solar Energetic Particle Events with Time Series Shapelets. *The Astrophysical Journal*, 980(1), p.128. <https://doi.org/10.3847/1538-4357/ada601>
Impact Factor: 5.4
- [J7] **Vural, O.**, Hamdi, S.M. and Boubrahimi, S.F., 2025. Solar Flare Prediction Using Multivariate Time Series of Photospheric Magnetic Field Parameters: A Comparative Analysis of Vector, Time Series, and Graph Data Representations. *Remote Sensing*, 17(6), p.1075. <https://doi.org/10.3390/rs17061075>
Impact Factor: 4.2
- [J8] **Bahri, O., Li, P.**, Boubrahimi, S. F., & Hamdi, S. M. (2024). Discord-Based Counterfactual Explanations for Time Series Data. *Data Mining and Knowledge Discovery*. , 38(6), 3347–3371. <https://doi.org/10.1007/s10618-024-01028-9>
Impact Factor: 4.8
- [J9] **Hosseinzadeh, P.**, Boubrahimi, S. F., & Hamdi, S. M. (2024). Toward Enhanced Prediction of High-impact Solar Energetic Particle Events Using Multimodal Time Series Data Fusion Models. *Space Weather*, 22(6), e2024SW003982. <https://doi.org/10.1029/2024SW003982>
Impact Factor: 4.29
- [J10] **Saini, K., Alshammari, K.**, Hamdi, S. M., & Boubrahimi, S. F.(2024). Classification of Major Solar Flares from Extremely Imbalanced Multivariate Time Series Data Using Minimally Random Convolutional Kernel Transform. *Universe*, 10(6), 234. <https://doi.org/10.3390/universe10060234>
Impact Factor: 2.5
- [J11] **EskandariNasab, M.**, Hamdi, S.M. and Boubrahimi, S.F., 2024. Impacts of Data Preprocessing and Sampling Techniques on Solar Flare Prediction from Multivariate Time Series Data of Photospheric Magnetic Field Parameters. *The Astrophysical Journal Supplement Series*, 275(1), p.6. <https://doi.org/10.3847/1538-4365/ad7c4a>
Impact Factor: 8.7
- [J12] **Johnson, R.**, Boubrahimi, S. F., *Hamdi, S. M*, Bahri, O. (2024) Combining Empirical and Physics-Based Models for Solar Wind Prediction. *Universe*, 10(5), 191. <https://doi.org/10.3390/universe10050191>
Impact Factor: 2.3
- [J13] **Cascalheira, C.J.**, Corro, K., Hong, C., Rohleen, T.K., Trac, O., Beikzadeh, M., Scheer, J.R., Hamdi, S.M., Boubrahimi, S.F. and Holloway, I.W., 2024. An Analysis of Mpx Communication on Reddit vs Twitter During the 2022 Mpx Outbreak. *Sexuality Research and Social Policy*, pp.1-16. <https://doi.org/10.1007/s13178-024-01058-4>
Impact Factor: 2.5
- [J14] **Velanki, Y., Hosseinzadeh, P.**, Boubrahimi, S.F. and Hamdi, S.M., 2024. Time-Series Feature Selection for Solar Flare Forecasting. *Universe*, 10(9), p.373. <https://doi.org/10.3390/universe10090373>
Impact Factor: 2.5
- [J15] **Thota, S.**, Nassar, A., Boubrahimi, S. F., Hamdi, S. M., & **Hosseinzadeh, P.** (2024). Enhancing Monthly Streamflow Prediction Using Meteorological Factors and Machine Learning Models in the Upper Colorado River Basin. *Hydrology* , 11(5), 66. <https://doi.org/10.3390/hydrology11050066>
Impact Factor: 3.2
- [J16] Boubrahimi, S. F., **Neema, A.**, Nassar, A., Hamdi, S. M., & **Hosseinzadeh, P.** (2023). Spatiotemporal Data Augmentation of MODIS-LANDSAT Water Bodies using Adversarial Networks. *Water Resources Research*, 60(3), e2023WR036342. <https://doi.org/10.1029/2023WR036342>
Impact Factor: 5.24
- [J17] **Hosseinzadeh, P.**, Boubrahimi, S. F., & S. M. Hamdi. (2023). Improving Solar Energetic Particle Event Prediction through Multivariate Time Series Data Augmentation. *The Astrophysical Journal Supplement Series*, 270(2), 31. <https://doi.org/10.3847/1538-4365/ad1de0>
Impact Factor: 8.7

- [J18] Alshammari, K., Hamdi, S. M., & Boubrahimi, S. F. (2023). Identifying Flare-indicative Photospheric Magnetic Field Parameters from Multivariate Time Series Data of Solar Active Regions. *The Astrophysical Journal Supplement Series*, 271(2), 39. <https://iopscience.iop.org/article/10.3847/1538-4365/ad21e4>
Impact Factor: 8.7
- [J19] Hosseinzadeh, P., Nassar, A., Boubrahimi, S. F., & Hamdi, S. M. (2023). ML-Based Streamflow Prediction in the Upper Colorado River Basin Using Climate Variables Time Series Data. *Hydrology*, 10(2), 29. <https://doi.org/10.3390/hydrology10020029>
Cite Score: 3.6
- [J20] Whitman, K., Egeland, R., Richardson, I. G., Allison, C., Quinn, P., Barzilla, J., ..., Boubrahimi, S. F., ..., & Hosseinzadeh, P. (2022). Review of Solar Energetic Particle Models. *Advances in Space Research*. <https://doi.org/10.1016/j.asr.2022.08.006>
Impact Factor: 2.611
- [J21] Aydin, B., Boubrahimi, S. F., Kucuk, A., Nezamdoust, B., & Angryk, R. A. (2021). Spatiotemporal Event Sequence Discovery Without Thresholds. *Geoinformatica*, 25, 149-177. <https://doi.org/10.1007/s10707-020-00427-6>
Impact Factor: 3.29
- [J22] Angryk, R. A., Martens, P. C., Aydin, B., Kempton, D., Mahajan, S. S., Basodi, S., A. Ahmadzadeh, X. Cai, Boubrahimi, S. F., Hamdi, S. M., Schuh, M., & Georgoulis, M. K. (2020). Multivariate Time Series Dataset for Space Weather Data Analytics. *Scientific data*, 7(1), 227. <https://doi.org/10.6084/m9.figshare.12444884>
Impact Factor: 8.501
- [J23] Ma, R., Angryk, R. A., Riley, P., & Boubrahimi, S. F. (2018). Coronal Mass Ejection Data Clustering and Visualization of Decision Trees. *The Astrophysical Journal Supplement Series*, 236(1), 14. <https://doi.org/10.3847/1538-4365/aab76f>
Impact Factor: 8.7
- [J24] Boubrahimi, S. F., Aydin, B., Schuh, M. A., Kempton, D., Angryk, R. A., & Ma, R. (2018). Spatiotemporal Interpolation Methods for Solar Event Trajectories. *The Astrophysical Journal Supplement Series*, 236(1), 23. <https://doi.org/10.3847/1538-4365/aab763>
Impact Factor: 8.7

Conference Papers

In computer science, conference papers are highly selective peer-reviewed papers. To indicate the conference ranking, I used conferenceranks.com to retrieve the Qualis rankings if available or Google Scholar Metrics if not available. The rankings range from A1 (=best) to C (=worst).

- [C1] EskandariNasab, M., Muhammad Hamdi, S. and Filali Boubrahimi, S., 2025. TIMED: Adversarial and Autoregressive Refinement of Diffusion-Based Time Series Generation. *In 2025 IEEE International Conference on Data Mining (ICDM)*. (in press).
Conference Rank: A1
- [C2] Chapagain, S., Hamdi, S.M. and Filali Boubrahimi, S., 2025. Pruning Strategies for Backdoor Defense in LLMs. *In Proceedings of the 34th ACM International Conference on Information & Knowledge Management (CIKM)* (in press).
Conference Rank: A1
- [C3] EskandariNasab, M., Muhammad Hamdi, S. and Filali Boubrahimi, S., 2025. AVATAR: Adversarial Autoencoders with Autoregressive Refinement for Time Series Generation. *In Proceedings of the 2025 SIAM International Conference on Data Mining (SDM)* (pp. 548-557). Society for Industrial and Applied Mathematics.
Conference Rank: A2
- [C4] Hosseinzadeh, P., Li, P., Bahri, O., Boubrahimi, S.F. and Hamdi, S.M., 2025. CACTUS: Cross-Aligned Counterfactual Explanation for Time Series Classification. *In 2025 IEEE 12th International Conference on Data Science and Advanced Analytics (DSAA)* (in press).
Conference Rank: A1¹
- [C5] Li, P., Bahri, O., Hosseinzadeh, P., Boubrahimi, S.F. and Hamdi, S.M., 2025. Diverse and Plausible Counterfactual Explanations for Time Series via Latent Space Optimization. *In 2025 IEEE 12th International Conference on Data Science and Advanced Analytics (DSAA)* (in press)
Conference Rank: A1¹
- [C6] Li, P., Hosseinzadeh, P., Bahri, O., Boubrahimi, S.F. and Hamdi, S.M., 2024, December. Reliable Time Series Counterfactual Explanations Guided by ShapeDBA. *In Proceedings of the 12th IEEE International Conference on Big*

Data (BigData), Washington DC, USA, December 15-18, 2024 (pp. 860-869).

<https://doi.org/10.1109/BigData62323.2024.10825447>

Conference Rank: A1¹

- [C7] EskandariNasab, M., Hamdi, S.M. and Boubrahimi, S.F., 2024, December. SeriesGAN: Time Series Generation via Adversarial and Autoregressive Learning. *In Proceedings of the 12th IEEE International Conference on Big Data (BigData)*, Washington DC, USA, December 15-18, 2024 (pp. 860-869).
<https://doi.org/10.1109/BigData62323.2024.10825115>
Conference Rank: A1¹
- [C8] **Hosseinzadeh, P., Li, P., Bahri, O.**, Boubrahimi, S.F. and Hamdi, S.M., 2024, December. ACTS: Adaptive Counterfactual Explanations for Time Series Data Using Barycenters *In Proceedings of the 12th IEEE International Conference on Big Data (BigData)*, Washington DC, USA, December 15-18, 2024 (pp. 860-869).
<https://doi.org/10.1109/BigData62323.2024.10825642>
Conference Rank: A1¹
- [C9] Vural, O., Hamdi, S.M. and Boubrahimi, S.F., 2024, December. EXCON: Extreme Instance-based Contrastive Representation Learning of Severely Imbalanced Multivariate Time Series for Solar Flare Prediction. *In Proceedings of the 12th IEEE International Conference on Big Data (BigData)*, Washington DC, USA, December 15-18, 2024 (pp. 1476-1483). <https://doi.org/10.1109/BigData62323.2024.10825566>
Conference Rank: A1¹
- [C10] Shaw, B., Rhodes, J., Boubrahimi, S.F. and Moon, K.R., 2025. Forest Proximities for Time Series. *Proceedings of the 2025 Intelligent Systems Conference (IntelliSys)*, in press. <https://doi.org/10.48550/arXiv.2410.03098>
Conference Rank: B2
- [C11] Vural, O., Hamdi, S.M. and Boubrahimi, S.F., 2024. Contrastive Representation Learning for Predicting Solar Flares from Extremely Imbalanced Multivariate Time Series Data. *In Proceedings of the 23rd IEEE International Conference on Machine Learning and Applications (ICMLA 2024)*, Florida, USA, December 18-24, 2024 (pp. 1077-1082).
<https://doi.org/10.1109/ICMLA61862.2024.00163>
Conference Rank: B2
- [C12] EskandariNasab, M., Hamdi, S.M. and Boubrahimi, S.F., 2024. Enhancing Multivariate Time Series-based Solar Flare Prediction with Multifaceted Preprocessing and Contrastive Learning. *In Proceedings of the 23rd IEEE International Conference on Machine Learning and Applications (ICMLA 2024)*, Florida, USA, December 18-24, 2024 (pp. 369-376).
<https://doi.org/10.1109/ICMLA61862.2024.00056>
Conference Rank: B2
- [C13] EskandariNasab, M., Hamdi, S.M. and Boubrahimi, S.F., 2024. ChronoGAN: Supervised and Embedded Generative Adversarial Networks for Time Series Generation. *In Proceedings of the 23rd IEEE International Conference on Machine Learning and Applications (ICMLA 2024)*, Florida, USA, December 18-24, 2024 (pp. 567-574).
<https://doi.org/10.1109/ICMLA61862.2024.00083>
Conference Rank: B2
- [C14] Alshammari, K., Hamdi, S.M. and Boubrahimi, S.F., 2024, December. Transformer Model for Multivariate Time Series Classification: A Case Study of Solar Flare Prediction. *In International Conference on Pattern Recognition (ICPR)* (pp. 238-254). Cham: Springer Nature Switzerland.
Conference Rank: A1¹
- [C15] **Hosseinzadeh, P., Bahri, O.**, Boubrahimi, S.F. and Hamdi, S.M., 2024, December. FAT-LSTM: A Multimodal Data Fusion Model with Gating and Attention-Based LSTM for Time-Series Classification. *In International Conference on Pattern Recognition (ICPR)* (pp. 430-445). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-78166-7_28
Conference Rank: A1¹
- [C16] **Bahri, O., Li, P.**, Hosseinzadeh, P., Boubrahimi, S.F. and Hamdi, S.M., 2025. Denoising Optimization-Based Counterfactual Explanations for Time Series Classification. *In International Conference on Pattern Recognition (ICPR)* (pp. 162-179). Springer, Cham.
Conference Rank: A1¹

¹ The Qualis rank for the conference is not available. The conference is ranked #7 in Google scholar metrics in data mining and its closest neighbor is IEEE International Conference on Data Mining (rank #6) which has a Qualis ranking of A1.

- [C17] [Chapagain, S.](#), Zhao, Y., Rohleen, T.K., Hamdi, S.M., Filali Boubrahimi, S., Flinn, R.E., Lund, E.M., Klooster, D., Scheer, J.R. and Cascalheira, C.J., 2024, October. Predictive Insights into LGBTQ+ Minority Stress: A Transductive Exploration of Social Media Discourse. *In Proceedings of the 11th International Conference on Data Science and Advanced Analytics (DSAA)* (pp. 1-9).
Conference Rank: A1¹
- [C18] [Cascalheira, C.J.](#), [Chapagain, S.](#), Flinn, R.E., Klooster, D., Laprade, D., Zhao, Y., Lund, E.M., Gonzalez, A., Corro, K., Wheatley, R. and Gutierrez, A., 2024, May. The lgbtq+ minority stress on social media (missom) dataset: A labeled dataset for natural language processing and machine learning. *In Proceedings of the International AAAI Conference on Web and Social Media (ICWSM)* (Vol. 18, pp. 1888-1899).
Conference Rank: B1
- [C19] **Bahri, O., Li, P.**, Boubrahimi, S. F., & Hamdi, S. M. (2023, December). Multiloss-Based Optimization for Time Series Data Augmentation. *In Proceedings of the 11th IEEE International Conference on Big Data (BigData 2023)*, Sorrento, Italy, December 15-18, 2023 (pp. 325-330). <https://doi.org/10.1109/BigData59044.2023.10386614>
Conference Rank: A1¹
- [C20] **Li, P., Bahri, O.**, Boubrahimi, S. F., & Hamdi, S. M. (2023, December). Counterfactual Explanations for Time Series Data via Learned Saliency Maps. *In Proceedings of the 11th IEEE International Conference on Big Data (BigData 2023)*, Sorrento, Italy, December 15-18, 2023 (pp. 718-727). <https://doi.org/10.1109/BigData59044.2023.10386229>
Conference Rank: A1¹
- [C21] [Cascalheira, C.J.](#), [Chapagain, S.](#), Flinn, ..., Boubrahimi, S. F., ..., & Hamdi, S. M. (2023, December) Predicting Linguistically Sophisticated Social Determinants of Health Disparities with Neural Networks: The Case of LGBTQ+ Minority Stress. *In Proceedings of the 11th IEEE International Conference on Big Data (BigData 2023)*, Sorrento, Italy, December 15-18, 2023 (pp. 1314-1321). <https://doi.org/10.1109/BigData59044.2023.10386882>
Conference Rank: A1¹
- [C22] **Bahri, O., Li, P.**, Boubrahimi, S. F., & Hamdi, S. M. (2023, August). Motif Alignment for Time Series Data Augmentation. *In Proceedings of the 25th International Conference Big Data Analytics and Knowledge Discovery, (DaWaK 2023)*, Penang, Malaysia, August 28–30, 2023 (pp. 42–48). https://doi.org/10.1007/978-3-031-39831-5_4
Conference Rank: B1
- [C23] **Li, P., Bahri, O.**, Boubrahimi, S. F. , & Hamdi, S. M. (2023, August). Attention-Based Counterfactual Explanation for Multivariate Time Series. *In Proceedings of the 25th International Conference Big Data Analytics and Knowledge Discovery, (DaWaK 2023)*, Penang, Malaysia, August 28–30, 2023 (pp. 287–293).https://doi.org/10.1007/978-3-031-39831-5_26
Conference Rank: B1
- [C24] **Hosseinzadeh, P., Bahri, O., Li, P.**, Boubrahimi, S. F., & Hamdi, S. M. (2023, December). METFORC: Classification with Meta-Learning and Multimodal Stratified Time Series Forest. *In Proceedings of the 22nd IEEE International Conference on Machine Learning and Applications (ICMLA 2023)*, Florida, USA, December 15-18, 2023 (pp. 124-1244). <https://doi.org/10.1109/ICMLA58977.2023.00188>
Conference Rank: B2
- [C25] **Li, P., Hosseinzadeh, P., Bahri, O.**, Boubrahimi, S. F., & Hamdi, S. M. (2023, December). Adversarial Attack Driven Data Augmentation for Time Series Classification. *In Proceedings of the 22nd IEEE International Conference on Machine Learning and Applications (ICMLA 2023)*, Florida, USA, December 15-18, 2023 (pp. 653-658). <https://doi.org/10.1109/ICMLA58977.2023.00096>
Conference Rank: B2
- [C26] **Bahri, O., Hosseinzadeh, P., Li, P.**, Boubrahimi, S. F. , & Hamdi, S. M., (2023, December). Shapelet-Preserving Bootstrapping For Time Series Data Augmentation. *In Proceedings of the 22nd IEEE International Conference on Machine Learning and Applications (ICMLA 2023)*, Florida, USA, December 15-18, 2023 (pp. 558-565). <https://doi.org/10.1109/ICMLA58977.2023.00069>
Conference Rank: B2
- [C27] [Alshammari, K.](#), [Saini, K.](#), Hamdi, S. M., & Boubrahimi, S. F., (2023, December). End-to-End Attention/Transformer Model for Solar Flare Prediction from Multivariate Time Series Data. *In Proceedings of the 22nd IEEE International Conference on Machine Learning and Applications (ICMLA 2023)*, Florida, USA, December 15-18, 2023 (pp. 558-565). <https://doi.org/10.1109/ICMLA58977.2023.00083>
Conference Rank: B2

- [C28] Boubrahimi, S. F., & Hamdi, S. M. (2022, October). On the Mining of Time Series Data Counterfactual Explanations using Barycenters. *In Proceedings of the 31st ACM International Conference on Information & Knowledge Management (CIKM 2022)*, Georgia, USA, October 17-21, 2022 (pp. 3943-3947). <https://doi.org/10.1145/3511808.3557663>
Conference Rank: A1
- [C29] Bahri, O., Li, P., Boubrahimi, S. F., & Hamdi, S. M. (2022, December). Temporal Rule-Based Counterfactual Explanations for Multivariate Time Series. *In Proceedings of the 21st IEEE International Conference on Machine Learning and Applications (ICMLA 2022)*, Nassau, Bahamad, December 12-14, 2022 (pp. 1244-1249). <https://doi.org/10.1109/ICMLA55696.2022.00200>
Conference Rank: B2
- [C30] Li, P., Bahri, O., Boubrahimi, S. F., & Hamdi, S. M. (2022, December). Fast Counterfactual Explanation for Solar Flare Prediction. *In Proceedings of the 21st IEEE International Conference on Machine Learning and Applications (ICMLA 2022)*, Nassau, Bahamad, December 12-14, 2022 (pp. 1238-1243). <https://doi.org/10.1109/ICMLA55696.2022.00199>
Conference Rank: B2
- [C31] Cascalheira, C. J., Hamdi, S. M., Scheer, J. R., Saha, K., Boubrahimi, S. F., & De Choudhury, M. (2022, May). Classifying Minority Stress Disclosure on Social Media with Bidirectional Long Short-Term Memory. *In Proceedings of the 16th International AAAI Conference on Web and Social Media (ICWSM 2022)* (Vol. 16, pp. 1373-1377). <https://pubmed.ncbi.nlm.nih.gov/35765687>
Conference Rank: B1
- [C32] Li, P., Bahri, O., Boubrahimi, S. F., & Hamdi, S. M. (2022, December). SG-CF: Shapelet-Guided Counterfactual Explanation for Time Series Classification. *In Proceedings of the 10th IEEE International Conference on Big Data (BigData 2022)*, Osaka, Japan, December 17-20, 2022 (pp. 1238-1243). <https://doi.org/10.1109/BigData55660.2022.10020866>
Conference Rank: A1²
- [C33] Bahri, O., Li, P., Boubrahimi, S. F., & Hamdi, S. M. (2022, December). Shapelet-based Temporal Association Rule Mining for Multivariate Time Series Classification. *In Proceedings of the 10th IEEE International Conference on Big Data (BigData 2022)*, Osaka, Japan, December 17-20, 2022 (pp. 242-251). <https://doi.org/10.1109/BigData55660.2022.10020478>
Conference Rank: A1¹
- [C34] Muzaheed, A. A. M., Hamdi, S. M., & Boubrahimi, S. F. (2021, December). Sequence model-based end-to-end solar flare classification from multivariate time series data. *In Proceedings of the 20th IEEE International Conference on Machine Learning and Applications (ICMLA 2021)*, California, USA, December 13-15 (pp. 435-440). <https://doi.org/10.1109/ICMLA52953.2021.00074>
Conference Rank: B2
- [C35] Li, P., Boubrahimi, S. F., & Hamdi, S. M. (2021, December). Shapelets-based Data Augmentation for Time Series Classification. *In Proceedings of the 20th IEEE International Conference on Machine Learning and Applications (ICMLA 2021)*, California, USA, December 13-15 (pp. 1373-1378). <https://doi.org/10.1109/ICMLA52953.2021.00222>
Conference Rank: B2
- [C36] Chowdhury, S. S., Boubrahimi, S. F., & Hamdi, S. M. (2021, December). Time Series Data Augmentation using Time-Warped Auto-Encoders. *In Proceedings of the 20th IEEE International Conference on Machine Learning and Applications (ICMLA 2021)*, California, USA, December 13-15 (pp. 467-470). <https://doi.org/10.1109/ICMLA52953.2021.00111>
Conference Rank: B2
- [C37] Ma, R., Boubrahimi, S. F., Angryk, R. A., & Ma, Z. (2020, May). Evaluation of hierarchical structures for time series data. *In Proceedings of the 5th IEEE International Conference on Big Data Analytics (ICBDA 2020)*, Xiamen, China, May 8-11 (pp. 94-99). <https://doi.org/10.1109/ICBDA49040.2020.9101255>
Conference Rank: B2²

¹ The Qualis rank for the conference is not available. The conference is ranked #7 in Google scholar metrics in data mining and its closest neighbor is IEEE International Conference on Data Mining (rank #6) which has a Qualis ranking of A1..

- [C38] Boubrahimi, S. F., Hamdi, S. M., Ma, R., & Angryk, R. (2020, December). On the Mining of the Minimal Set of Time Series Data Shapelets. In *Proceedings of the 8th IEEE International Conference on Big Data (BigData 2020)*, virtual, December 10-13 (pp. 493-502). <https://doi.org/10.1109/BigData50022.2020.9378454>
Conference Rank: A1¹
- [C39] Hamdi, S. M., Filali Boubrahimi, S., & Angryk, R. (2019, November). Tensor Decomposition-Based Node Embedding. In *Proceedings of the 28th ACM International Conference on Information and Knowledge Management (CIKM 2019)*, Beijing, China, November 3-7 (pp. 2105-2108). <https://dl.acm.org/doi/10.1145/3357384.3358127>
Conference Rank: A1
- [C40] Hamdi, S. M., Wu, Y., Boubrahimi, S. F., Angryk, R., Krishnamurthy, L. C., & Morris, R. (2018, December). Tensor Decomposition for Neurodevelopmental Disorder Prediction. In *the Proceedings of the 11th International Conference of Brain Informatics (BI 2018)*, Arlington, TX, USA, December 7-9 (pp. 339-348). <https://doi.org/10.1145/3357384.3358127>
Conference Rank: B2²
- [C41] Ma, R., Ahmadzadeh, A., Boubrahimi, S. F., & Angryk, R. A. (2019, June). A Scalable Segmented Dynamic Time Warping for Time Series Classification. In *the Proceedings of the 18th International Conference of Artificial Intelligence and Soft Computing (ICAISC 2019)*, Zakopane, Poland, June 16-20, (pp. 407-419). https://doi.org/10.1007/978-3-030-20915-5_37
Conference Rank: B2²
- [C42] Boubrahimi, S. F., & Angryk, R. (2018, December). Heuristics Significance of Neuro-Ensemble-based Time Series Classification. In *Proceedings of the 6th IEEE International Conference on Big Data (BigData 2018)*, Washington, USA, December 10-13, (pp. 6-15). <https://doi.org/10.1109/BigData.2018.8622390>
Conference Rank: A1¹
- [C43] Boubrahimi, S. F., Ma, R., & Angryk, R. (2018, October). Neuro-Ensemble for Time Series Data Classification. In *Proceedings of the 5th International Conference on Data Science and Advanced Analytics (DSAA 2018)*, Turin, Italy, October 1-4 (pp. 50-59). <https://doi.org/10.1109/DSAA.2018.00015>
Conference Rank: A1³³
- [C44] Ma, R., Boubrahimi, S. F., & Angryk, R. (2018, September). Time Series Distance Density Cluster with Statistical Preprocessing. In *Proceedings of the 20th International Conference Big Data Analytics and Knowledge Discovery (DaWaK 2018)*, Regensburg, Germany, September 3-6 (pp. 371-381). Springer International Publishing. https://doi.org/10.1007/978-3-319-98539-8_28
Conference Rank: B1
- [C45] Boubrahimi, S. F., Ma, R., Aydin, B., & Angryk, R. (2018, September). Neuro-Ensemble. In *Proceedings of the 1st International Conference on Artificial Intelligence and Knowledge Engineering (AIKE 2018)*, California, USA, September 26-28 (pp. 54-61). <https://doi.org/10.1109/AIKE.2018.00016>
Conference Rank: B2²
- [C46] Hamdi, S. M., Aydin, B., Boubrahimi, S. F., Angryk, R., Krishnamurthy, L. C., & Morris, R. (2018, September). Biomarker Detection from fMRI-Based Complete Functional Connectivity Networks. In *Proceedings of the 1st International Conference on Artificial Intelligence and Knowledge Engineering (AIKE 2018)*, California, USA, September 26-28 (pp. 17-24). <https://doi.org/10.1109/AIKE.2018.00011>
Conference Rank: B2² (1 of 3 Best Paper Candidates)
- [C47] Boubrahimi, S. F., & Angryk, R. (2018, September). Multivariate Time Series Nearest Neighbor Search: A Case Study on Solar Flare Prediction. In *Proceedings of the 1st International Conference on Artificial Intelligence and Knowledge Engineering (AIKE 2018)*, California, USA, September 26-28 (pp. 162-163). <https://doi.org/10.1109/AIKE.2018.00035>
Conference Rank: B2²
- [C48] Boubrahimi, S. F., Ma, R., Aydin, B., Hamdi, S. M., & Angryk, R. (2018, August). Scalable KNN Search Approximation for Time Series Data. In *Proceedings of the 24th International Conference on Pattern Recognition (ICPR 2018)*, Beijing, China, August 20-24 (pp. 970-975). <https://doi.org/10.1109/ICPR.2018.8546103>

² The conference is new and therefore does not have a Qualis rank yet; however, it will likely receive a rank of B2 if ranked.

¹ The Qualis rank for the conference is not available. The conference is ranked #7 in Google scholar metrics in data mining and its closest neighbor is IEEE International Conference on Data Mining (rank #6) which has a Qualis ranking of A1.

² The conference is new and therefore does not have a Qualis rank yet; however, it will likely receive a rank of B2 if ranked.

³ The conference is relatively new and does not have a Qualis ranking; however, it recently received an A rank by the [CORE conference ranking](#) which corresponds to A1 in Qualis.

Conference Rank: A1

- [C49] Kucuk, A., Aydin, B., Boubrahimi, S. F., Kempton, D., & Angryk, R. A. (2017, August). An Integrated Solar Database (ISD) with Extended Spatiotemporal Querying Capabilities. *In Proceedings of the 15th International Symposium Advances in Spatial and Temporal Databases (SSTD 2017), Virginia, USA, August 21–23* (pp. 405-410). https://doi.org/10.1007/978-3-319-64367-0_25

Conference Rank: B1

- [C50] Boubrahimi, S. F., Aydin, B., Kempton, D., S. S. Mahajan, & Angryk, R. A. (2016, October). Filling the Gaps in Solar Big Data: Interpolation of Solar Filament Event Instances. *In Proceedings of the International Conferences on Big Data and Cloud Computing (BDCloud 2016), Georgia, USA, October 8-10* (pp. 97-104). <https://doi.org/10.1109/BDCloud-SocialCom-SustainCom.2016.25>

Conference Rank: B2⁴

- [C51] Boubrahimi, S. F., Aydin, B., Kempton, D., & Angryk, R. (2016, October). SOLEV: A Video Generation Framework for Solar Events from Mixed Data Sources (Demo Paper). *In Proceedings of the 24th International Conference on Advances in Geographic Information Systems (SIGSPACIAL 16), New York, USA, October 31* <https://doi.org/10.1145/2996913.2996963>

Conference Rank: A2⁴

Workshop Papers

- [W1] Chapagain, S., Hamdi, S.M. and Boubrahimi, S.F., 2025. Advancing Hate Speech Detection with Transformers: Insights from the MetaHate. *ASONAM workshop for Deviant Dynamics in Digital Spaces (DEVIANCE)*. (In press).
- [W2] Li, P., Boubrahimi, S. F. & Hamdi, S. M. (2022, August). Motif-Guided Time Series Counterfactual Explanations. *In Proceedings of the 26th International Conference on Pattern Recognition (ICPR) workshop on Explainable and Ethical AI (XAI 2022), Montreal, Canada, August 21-25* (pp. 203-215). https://doi.org/10.1007/978-3-031-37731-0_16
- [W3] Alshammari, K., Hamdi, S. M., & Boubrahimi, S. F. (2022). *Feature Selection from Multivariate Time Series Data: A Case Study of Solar Flare Prediction*. *In Proceedings of the 10th International Conference on Big Data (Big Data) Workshop on Big Data Analytics for Humanitarian Crises*, Osaka, Japan, December 17-20, 2022 (pp. 4796-4801). <https://doi.org/10.1109/BigData55660.2022.10020669>
- [W4] Muzaheed, A. A. M., Hamdi, S. M., & Boubrahimi, S. F. (2022, December). Sequence Model-Based End-to-End Solar Flare Classification from Multivariate Time Series Data. *In Proceedings of the 20th IEEE International Conference on Machine Learning and Applications (ICMLA 2021), California, USA, December 13-15* (pp. 435-440). <https://doi.org/10.1109/ICMLA52953.2021.00074>
- [W5] **Bahri, O.**, Boubrahimi, S. F., **P. Li**, & Hamdi, S. M. (2022, August). Shapelet-Based Counterfactual Explanations for Multivariate Time Series. *In SIGKDD Workshop on Mining and Learning from Time Series (MiLeTS 2022)*, Washington, USA, August 14-18.
- [W6] Alshammari, K., Hamdi, S. M., Muzaheed, A. A., & Filali Boubrahimi, S. (2022, October). Forecasting Multivariate Time Series of the Magnetic Field Parameters of the Solar Events. *In CIKM workshop for Applied Machine Learning Methods for Time Series Forecasting (AMLTS 2022)*, Georgia, USA, October 17-21.
- [W7] Hamdi, S. M., Ahmad, A. F., & Filali Boubrahimi, S. (2022, October). Multivariate Time Series-Based Solar Flare Prediction by Functional Network Embedding and Sequence Modeling. *In CIKM workshop for Applied Machine Learning Methods for Time Series Forecasting (AMLTS 2022)*, Georgia, USA, October 17-21.
- [W8] **Neema, A.**, Nassar, A., & Boubrahimi, S. F. (2022). Spatiotemporal Data Augmentation for IoT-based Areal Monitoring of the Great Salt Lake. *In SIGKDD International Workshop on Artificial Intelligence of Things*, Washington, USA.
- [W9] **Li, P.**, Boubrahimi, S. F., & Hamdi, S. M. (2021, December). Graph-Based Clustering for Time Series Data. *IEEE International Conference on Big Data Workshop (BigData 2021)*, Florida, USA, December 15-18 (pp. 4464-4467). <https://doi.org/10.1109/BigData52589.2021.9671398>
- [W10] Ma, R., Ahmadzadeh, A., Boubrahimi, S. F., Georgoulis, M. K., & Angryk, R. A. (2019). Solar Pre-Flare Classification with Time Series Profiling. *IEEE Big Data Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data (SABiD 2019)* (pp. 4967-4976). <https://doi.org/10.1109/BigData47090.2019.9006501>

⁴ The conference is not ranked by Qualis; however, it will likely receive a rank of A2 if ranked given the acceptance rates of ~20%.

- [W11] Ma, R., Ahmadzadeh, A., Boubrahimi, S. F., & Angryk, R. A. (2018). Segmentation of Time Series in Improving Dynamic Time Warping. *IEEE Big Data Workshop on Advances in High Dimensional (AdHD 2018) Big Data* (pp. 3756-3761). <https://doi.org/10.1109/BigData.2018.8622554>
- [W12] Aydin, B., Kucuk, A., Boubrahimi, S. F., & Angryk, R. A. (2017). Top-(R%, K) Spatiotemporal Event Sequence Mining. *IEEE International Conference on Data Mining Workshops (ICDMW 2017)* (pp. 250-257) <https://doi.org/10.1109/ICDMW.2017.39>
- [W13] Hamdi, S. M., Kempton, D., Ma, R., Boubrahimi, S. F., & Angryk, R. A. (2017). A Time Series Classification-Based Approach for Solar Flare Prediction. *IEEE Big Data Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data (SABiD 2017)* (pp. 2543-2551). <https://doi.org/10.1109/BigData.2017.8258213>
- [W14] Boubrahimi, S. F., Aydin, B., Martens, P., & Angryk, R. (2017, December). On the Prediction of >100 MeV Solar Energetic Particle Events Using GOES Satellite Data. *IEEE Big Data Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data (SABiD 2017)* (pp. 2533-2542). <https://doi.org/10.1109/BigData.2017.8258212>
- [W15] Ma, R., Boubrahimi, S. F., Hamdi, S. M., & Angryk, R. (2017). Solar Flare Prediction Using Multivariate Time Series Decision Trees. *IEEE Big Data Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data (SABiD 2017)* (pp. 2569-2578). <https://doi.org/10.1109/BigData.2017.8258216>
- [W16] Boubrahimi, S. F., Aydin, B., Kempton, D., & Angryk, R. (2016) Spatio-Temporal Interpolation Methods for Solar Events Metadata. *IEEE Big Data Workshop on Management, Search and Mining of Massive Repositories of Solar and Stellar Astronomy Data (SABiD 2016)* (pp. 3149-3157). <https://doi.org/10.1109/BigData.2016.7840970>

Book Chapters

- [B1] **Johnson, R.**, Boubrahimi, S. F., Hamdi, S. M., Bahri, O. (2022) Physics-Informed Neural Networks for Solar Wind Prediction. *Lecture Notes in Computer Science*.
- [B2] Ma, R., Ahmadzadeh, A., Boubrahimi, S. F., & Angryk, R. A. (2019) Segmented Dynamic Time Warping: A Comparative and Application Study. *Emerging Tech. and Apps in Data Processing and Management. IGI Global* (pp. 1-19). <https://doi.org/10.4018/978-1-5225-8446-9.ch001>

White Paper

- [P1] G. Nita, M. Georgoulis, I. Kitiashvili, ..., Boubrahimi, S. F., ... (2020) Machine Learning in Heliophysics and Space Weather Forecasting: A White Paper of Findings and Recommendations. <https://doi.org/10.48550/arXiv.2006.12224>

AWARDED GRANTS

Research Grants

- [CAIG Synthetic Data Generation for Solar Energetic Particle Events by Multimodal Augmentation](#) (role: Co-PI, Total: **\$749,989**, duration: 01/2026 to 12/2028). Funding Agency: **NSF**, Cyberinfrastructure Program. Award #: 2530946.
- [CAREER: End-to-End Active Region-based Heliospheric Forecasting System Using Multi-spacecraft Data and Machine Learning](#) (role: sole PI, Total: **\$691,972**, duration: 04/2023 to 03/2028). Funding Agency: **NSF**, Solar Terrestrial Program. Award #: 2240022.
 - Students supported: Peiyu Li & TBD (4 publications).
- [Combining Physics and Machine Learning-based Models for Full-Energy-Range Solar Energetic Particles Events Prediction](#) (role: sole PI, Total: **\$527,129**, duration: 07/2022 to 07/2025). Funding Agency: **NSF**, Solar Terrestrial Program. Award #: 2204363.
 - Students supported: Omar Bahri & Pouya Hosseinzadeh (9 publications).

Education Grant

- *Stackable Credentials in Data Science at Utah State University* (role: Co-PI, Total: **\$218,576**, Boubrahimi, S. F. Part: **\$5,000** duration: 11/2021 to 11/2024). Funding Agency: UT System of Higher Education (USHE).

TEACHING

Courses taught at Utah State University

CS5080/CS6080 Time-Series Data Mining: Fall 2020, Fall 2021, Fall 2022, Fall 2023
CS 6675 Advanced Data Mining: Spring 2021, Spring 2022
CS 5800 - Introduction to Database Systems: Fall 2022, Fall 2023

Courses taught at Georgia State University

CS 2420 Data Structures: Spring 2019

Currently Supervised Graduate Students

Omar Bahri (Ph.D.): Joined my group in Spring 2021. Passed Ph.D. qualifier exam. Expected: Spring 2026.
Tentative Dissertation Topic: Temporal Rule Mining for Space Weather Prediction.
Peiyu Li (Ph.D.): Joined my group in Fall 2021. Passed Ph.D. qualifier exam. Expected: Fall 2026.
Tentative Dissertation Topic: Explainable Methods for Time Series Data Mining.
Pouya Hosseinzadeh (Ph.D.): Joined my group in Spring 2022.
Tentative Dissertation Topic: TBA Expected: Spring 2027.
Yagnashree Velanki (MS in Computer Science): Joined my group in Spring 2023.
Tentative Dissertation Topic: Applied ML in Astrophysics. Expected: Summer 2024.

Completed Supervised Graduate Students

Saichand Thota (MS in Computer Science) – Graduated in Spring 2024. Thesis Title: “Enhancing Monthly Streamflow Prediction Using Meteorological Factors and Machine Learning Models in the Upper Colorado River Basin”.
Rob Johnson (MS in Data Science) – Graduated in Summer 2023. Thesis Title: “Physics-Guided Deep Learning For Solar Wind Modeling at L1 Point”.
Scott Johnson (MS in Computer Science) – Graduated in Summer 2023. Thesis Title: “Comparative Study of Clustering Techniques on Eye-tracking in Dynamic 3D Virtual Environments”.
Ashit Neema (MS in Data Science) – Graduated in Summer 2022. Thesis Title: “Spatiotemporal Data Augmentation of Modis-Landsat Water Bodies Using Generative Adversarial Networks”.
Nikhil Sai Kurivella (MS in Computer Science) – Graduated in Summer 2022. Thesis Title: “Comparative Study of Machine Learning Models on Solar Flare Prediction Problem”.

Mentored Undergraduate Students

Jullian Crank (undergraduate student in Blanding campus) – Mentored part of at the summer [2022 USU Native American Summer Mentorship \(NASMP\) Program](#)
Taylor Begay (undergraduate student in Blanding campus) – Mentored part of at the summer [2022 USU Native American Summer Mentorship \(NASMP\) Program](#)

SERVICE

Professional Service

Panelist:

- NASA: Heliophysics Artificial Intelligence/Machine Learning-Ready Data in 2024.
- Department of Energy (DoE) Panelist: DOE ASCR Data Visualization in 2022.
- NSF Panelist for CISE-IIS: Graph Mining in 2022
- NSF Panelist for GEO-AGS: SHINE in 2022
- NSF Panelist for CISE-OAC: CSSI in 2021
- NSF Panelist for CISE-IIS: CRII in 2021

Conference Reviewer:

- The 33rd International Joint Conference on Artificial Intelligence (IJCAI 2024).
Jeju, South Korea, August 2024.
- The 27th International Conference on Artificial Intelligence and Statistics (AISTAT 2024)
Valencia, Spain, April 2024.
- The 26th International Conference on Artificial Intelligence and Statistics (AISTAT 2023)
Valencia, Spain, April 2023.
- The Solar, Heliospheric, and INterplanetary Environment Workshop (SHINE 2022)

Hawaii, July 2022.

- The 33rd European Conference on Machine Learning Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2022)
Grenoble, France, September.
- The 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2022)
Washington DC, August 2022.
- The 25th International Conference on Artificial Intelligence and Statistics (AISTAT 2022)
Virtual, March 2022.
- The 30th International Joint Conference on Artificial Intelligence (IJCAI 2021).
Montreal, Canada, August 2021.
- The 10th International Conference on Advanced Geographic Information Systems, Applications, and Services GEOProcessing 2018
Rome, Italy, March 2018.

Journal Reviewer:

- The *Data Mining and Knowledge Discovery Journal* 2024.
- The *Entropy Journal* 2024.
- The *American Geophysical Union (AGU) Space Weather Journal* 2022.
- The *IEEE/CAS Journal of Automatica Sinica* 2020.
- The *IEEE Access journal* 2019.

University Service:

- USU Department of Computer Science 2021 Faculty Search Committee member.
- USU Department of Computer Science and Mathematics Data Science Committee member.
- USU Department of Computer Science 2023 Broadening Participation in Computing (BPC) plan committee member.

AWARDS

- | | |
|--|--------------------|
| ▪ USU College of Science Researcher of the Year Award | Spring 2024 |
| ▪ USU CS Department Outstanding Faculty Researcher Award | Spring 2023 |
| ▪ Outstanding Graduate Teaching Award by the computer science department at GSU | Spring 2020 |
| ▪ Outstanding Graduate Research Award by the computer science department at GSU | Spring 2019 |
| ▪ 2CI Astro-Informatics fellowship at Georgia State University | Fall 2017 |
| ▪ Travel grant award (\$1000) from SIGSPATIAL 2016 conference (San Francisco, CA) | Fall 2016 |
| ▪ 3 rd place winner of the Home Depot 24 hours coding challenge | Spring 2016 |
| ▪ President list honors for getting 4.0/4.0 in GPA at Al Akhawayn University in Ifrane | Spring 2013 |
| ▪ 2 nd place winner of the Undergraduate research contest at AUI | Spring 2014 |

PRESS RELEASES

- Appeared in USU Utah State Today news: "[Here Comes the Sun: USU Computer Scientists Develop Models to Predict Extreme Solar Phenomena](#)", **Spring 2025**.
- Appeared in USU Greats magazine: "[AGGIE EXCELLENCE: Space Weather Forecaster](#)", **Spring 2024**.
- Press Interview with USU Utah State Today: "[USU Computer Scientist Soukaina Filali Boubrahimi Receives Prestigious NSF CAREER Award](#)", **Spring 2023**.
- Press Interview with USU Utah State Today: "[Big Ideas: USU Blanding Scholar Jullian Crank Explores 'Out of this World' Science](#)", **Summer 2022**.
- Press Interview with USU Utah State Today: "[Catching Rays: USU Computer Scientist Receives National Science Foundation Grant](#)", **Spring 2022**.
- Press Interview with GSU NexGen: "[Applying CS Research to Multiple Fields at GA State](#)", **Summer 2019**.