

MohammadReza (Sam) EskandariNasab

Ph.D. Candidate in Computer Science

School of Computing, Utah State University, Logan, UT 84322, USA

✉ sameskandarinasab@gmail.com | ✉ reza.eskandarinasab@usu.edu

🏠 sameskandarinasab.com | 📖 Google Scholar | © ResearchGate | in LinkedIn | 🐙 GitHub

ORCID: 0009-0004-0697-3716

RESEARCH INTERESTS

Pure Machine Learning

- Generative Models (Time-Series Generation)
- Multimodal Learning
- Time Series Analysis (Ensemble Models, Contrastive Learning)

Application of Machine Learning

- Space Weather Analysis
- Solar Flare Forecasting
- Solar Energetic Particle Prediction
- Biomedical Signal Processing

EDUCATION

Ph.D. in Computer Science

May 2023 – Expected July 2027

Utah State University, Utah, USA

- GPA: 4.0/4.0
- Research Interest: Generative Models, Multimodal Learning, Space Weather Prediction, and Time Series Analysis
- Dissertation proposal on diffusion models, multimodal learning, and space weather prediction
- Supervisor: Dr. Shah Muhammad Hamdi

M.Sc. in Computer Science

May 2023 – Dec 2024

Utah State University, Utah, USA

- GPA: 4.0/4.0
- Thesis: Supervised Generative Adversarial Networks for Time Series Generation in Embedding Space
- Supervisor: Dr. Shah Muhammad Hamdi

B.Sc. in Computer Engineering

Aug 2017 – Aug 2021

University of Zanjan

- GPA: 3.88/4.00 (last two years)
- Project: Car Dealership Web Application using Django and React with a Dynamic Reputation-Weighted Pricing Algorithm

EXPERIENCE

Graduate Research Assistant

Jan 2025 – Present

Utah State University, Utah, USA

- Working on a NSF-funded project (#2530946), developing multimodal AI frameworks for solar energetic particle prediction. Contributed to the NSF proposal by introducing **UNISON**, a framework for multimodal data generation and translation.
- Developing **UNISON**, a diffusion transformer-based framework for multimodal data generation and translation. This work is in preparation for submission to ICLR 2026 or ICML 2026.

- Advancing time series-based solar energetic particle prediction through novel preprocessing, feature selection, diffusion-based data augmentation, and ensemble learning. Multiple papers are currently in preparation for submission to *The Astrophysical Journal* and *The Astrophysical Journal Supplement Series*.

Graduate Research Assistant

May 2023 – Jan 2025

Utah State University, Utah, USA

- Conducted research on two NSF-funded projects (#2305781 and #2530946), focusing on generative models for time-series data and machine learning-based solar flare forecasting.
- Proposed four novel generative models for multivariate time-series generation: **TIMED**, a diffusion-based model; **AVATAR**, an adversarial autoencoder-based model; and **SeriesGAN** and **ChronoGAN**, two GAN-based models. This work resulted in first-author publications at IEEE ICDM 2025, SIAM SDM 2025, IEEE BigData 2024, and IEEE ICMLA 2024.
- Proposed a contrastive representation learning-based classifier and novel data preprocessing pipelines for solar flare forecasting, resulting in publications in *The Astrophysical Journal Supplement Series* (2024) and IEEE ICMLA 2024.

Full Stack Developer

May 2023 – Aug 2025

Utah State University, Utah, USA

- Developed **FlaPLeT**, a full-stack web platform published in *SoftwareX* (2026) as part of the NSF-funded project (#2305781), providing a no-code machine learning environment for solar flare prediction.
- Designed and implemented the platform using Django, REST APIs, React, PostgreSQL, Celery, and machine learning frameworks, including TensorFlow, Keras, and Pandas. The platform supports end-to-end workflows, enabling users to upload datasets, preprocess data, configure machine learning models, optimize hyperparameters, train models, and generate performance reports without requiring programming expertise.
- [Architecture Overview \(YouTube\)](#) | [Platform Demonstration \(YouTube\)](#)

PUBLICATIONS

IEEE ICDM is an A* conference, SIAM SDM is an A conference, and *The Astrophysical Journal Supplement Series* (ApJS) is a high-impact journal in astrophysics.

Published

1. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, “FlaPLeT: A full-stack web platform for end-to-end time series data processing and machine learning in solar flare prediction,” *SoftwareX*, vol. 33, p. 102540, 2026. <https://doi.org/10.1016/j.softx.2026.102540>. **Impact factor: 2.4**. *Peer-Reviewed Journal*.
2. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, “TIMED: Adversarial and autoregressive refinement of diffusion-based time series generation,” in *2025 IEEE International Conference on Data Mining (ICDM)*, 2025, pp. 1194–1203. <https://doi.org/10.1109/ICDM65498.2025.00128>. **Acceptance rate: 13.5%**. *Peer-Reviewed Conference*.
3. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, “AVATAR: Adversarial Autoencoders with Autoregressive Refinement for Time Series Generation,” *SIAM International Conference on Data Mining (SDM 25)*, April 2025. <https://doi.org/10.1137/1.9781611978520.59>. **Acceptance rate: 26.7%**. *Peer-Reviewed Conference*.
4. Z. Raeisi, O. Bashiri, **M. EskandariNasab**, *et al.*, “EEG microstate biomarkers for schizophrenia: a novel approach using deep neural networks,” *Cognitive Neurodynamics*, vol. 19, p. 68, 2025. <https://doi.org/10.1007/s11571-025-10251-z>. **Impact factor: 3.9**. *Peer-Reviewed Journal*.

5. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, "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*, vol. 275, no. 1, p. 6, Oct. 2024. <https://dx.doi.org/10.3847/1538-4365/ad7c4a>. **Impact factor: 8.6. Peer-Reviewed Journal.**
6. **M. EskandariNasab**, Z. Raeisi, R. A. Lashaki, and H. Najafi, "A GRU–CNN model for auditory attention detection using microstate and recurrence quantification analysis," *Scientific Reports*, vol. 14, no. 1, p. 8861, Apr. 2024. <https://doi.org/10.1038/s41598-024-58886-y>. **Impact factor: 3.8. Peer-Reviewed Journal.**
7. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, "SeriesGAN: Time Series Generation via Adversarial and Autoregressive Learning," *IEEE International Conference on Big Data (Big Data)*, Oct. 2024. <https://doi.org/10.1109/BigData62323.2024.10825115>. **Acceptance rate: 18.8%. Peer-Reviewed Conference.**
8. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, "ChronoGAN: Supervised and Embedded Generative Adversarial Networks for Time Series Generation," *International Conference on Machine Learning and Applications (ICMLA)*, Sep. 2024. <https://doi.org/10.1109/ICMLA61862.2024.00083>. **Acceptance rate: 24.3%. Peer-Reviewed Conference.**
9. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, "Enhancing Multivariate Time Series-based Solar Flare Prediction with Multifaceted Preprocessing and Contrastive Learning," *International Conference on Machine Learning and Applications (ICMLA)*, Sep. 2024. <https://doi.org/10.1109/ICMLA61862.2024.00056>. **Acceptance rate: 24.3%. Peer-Reviewed Conference.**
10. **EskandariNasab, MohammadReza**, "Supervised Generative Adversarial Networks for Time Series Generation in Embedding Space" (2024). All Graduate Theses and Dissertations, Fall 2023 to Present, 387. <https://digitalcommons.usu.edu/etd2023/387>. *Thesis.*

Under Review

11. N. Nelson, O. Vural, **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, "Causal Discovery in Photospheric Magnetic Field Time Series for Interpretable Solar Flare Prediction," *The Astrophysical Journal Supplement Series*, March 2026. **Impact factor: 8.6. Under Review.**

In Submission

12. **M. EskandariNasab**, G. Woodhouse, S. M. Hamdi, and S. F. Boubrahimi, "Evaluating the Role of Data Preprocessing in Machine Learning-Based Solar Energetic Particle Event Prediction," *The Astrophysical Journal Supplement Series*, August 2026. **Impact factor: 8.6. In Submission.**
13. **M. EskandariNasab**, G. Woodhouse, S. M. Hamdi, and S. F. Boubrahimi, "Toward Reliable and Accurate Solar Energetic Particle Event Forecasting," *The Astrophysical Journal*, August 2026. **Impact factor: 5.7. In Submission.**
14. **M. EskandariNasab**, S. M. Hamdi, and S. F. Boubrahimi, "A Comprehensive Survey of How Data Augmentation Can Improve Solar Energetic Particle Event Prediction," *The Astrophysical Journal Supplement Series*, September 2026. **Impact factor: 8.6. In Submission.**

HONORS & AWARDS

NSF Grant Award to Attend SHINE 2026 Workshop

June 2026

- Received an NSF grant to attend the SHINE 2026 Workshop in Madison, WI. Presented a poster on a novel data preprocessing pipeline for machine learning-based Solar Energetic Particle prediction and participated in sessions led by NSF, NASA, and leading space weather researchers.

IEEE ICDM Conference Travel Award

Nov 2025

- Received a competitive \$500 travel award from IEEE ICDM 2025, funded by the National Science Foundation (NSF), and granted to a limited number of students across the United States.

Contributor to NSF Award #2530946 (CAIG Project)

Jul 2025

- Contributed to the accepted NSF RISE ICER proposal (\$749,989, Utah State University) by proposing UNISON, a novel multimodal generative model with new loss functions and architectures for space weather time series.

SIAM SDM 2025 Student Travel Award

May 2025

- Awarded a highly competitive \$800 travel grant, free conference registration, and SIAM membership by the Society for Industrial and Applied Mathematics (SIAM).

Awarded Thesis-Based M.Sc. in Computer Science

Dec 2024

- Awarded a Master's degree midway through PhD studies at Utah State University in recognition of outstanding research contributions and academic excellence.

IEEE BigData Conference Travel Award

Dec 2024

- Awarded a competitive \$800 travel grant from IEEE BigData 2024 Conference, funded by the NSF. This recognition was given to only 35 students across the United States for their academic achievements and contributions to the field.

Graduate Student Travel Award, Utah State University

2024–2025

- Received two Graduate Student Travel Awards (\$300 each) from Utah State University to support travel to IEEE BigData 2024 and IEEE ICDM 2025 in Washington, DC, for presenting accepted first-author papers.

NSF Grant Award for SHINE 2024 Workshop Presentation

Aug 2024

- Received an NSF grant to attend the SHINE 2024 Workshop in Juneau, Alaska. Delivered the opening talk of a workshop session on the impact of data preprocessing on solar flare prediction and presented a poster demonstrating state-of-the-art accuracy in solar flare forecasting.

NSF-Funded Research Assistantship Award

Oct 2022

- Awarded an NSF-funded Research Assistantship to develop a machine learning-based web service that enables AI model training for solar flare prediction without coding knowledge. Funded by the NSF through the Office of Advanced Cyberinfrastructure (Award #2305781).

Direct PhD Admission at Utah State University

Oct 2022

- Admitted into Utah State University's direct-entry PhD program through interview and high test scores to study computer science and conduct research on time series analysis and solar flare prediction.

TALKS & POSTERS

SHINE 2026 Workshop — Poster Presentation

June 2026

Madison, WI

- Presented a poster introducing a novel data preprocessing pipeline for improving machine learning-based Solar Energetic Particle prediction.

- IEEE International Conference on Data Mining (ICDM 2025)** — Oral Presentation Nov 2025
Washington, D.C.
- Presented the first-author paper titled *TIMED* in an oral session at IEEE ICDM 2025.
- SIAM International Conference on Data Mining (SDM 2025)** — Oral Presentation May 2025
Alexandria, Virginia
- Delivered an oral presentation of the first-author paper titled *AVATAR*, accepted at SIAM SDM 2025.
- Utah State University** — Ph.D. Qualifying Examination Mar 2025
Utah
- Delivered an oral qualification presentation, presenting two recent research papers and responding to questions from a five-member committee to advance to Ph.D. candidacy.
- IEEE International Conference on BigData (BigData 2024)** — Oral Presentation Dec 2024
Washington, D.C.
- Delivered an oral presentation of the first-author paper titled *SeriesGAN*, accepted at IEEE BigData 2024.
- IEEE ICMLA 2024** — Virtual Oral Presentation Dec 2024
Miami, Florida
- Presented two first-author papers accepted as regular papers at IEEE ICMLA 2024 through pre-recorded video presentations.
- Utah State University** — Master's Thesis Defense Nov 2024
Utah
- Delivered an oral defense of the master's thesis titled *Supervised Generative Adversarial Networks for Time Series Generation in Embedding Space*.
- SHINE 2024 Workshop** — Session Speaker & Poster Presentation Aug 2024
Juneau, Alaska
- Delivered a session talk at the SHINE 2024 Workshop on the impacts of data preprocessing on solar flare prediction in the session *Machine Learning-Based Predictions of Solar Flares and SEP Events*.
 - Presented a poster showcasing state-of-the-art methods to achieve a Mean TSS of 0.835 in solar flare prediction.
- Utah State University** — STEM Outreach Presenter Jun 2024
- Delivered a presentation as part of the NSF-funded project (Award No. 2305781) on data science and the application of artificial intelligence to space weather prediction for Indigenous high school seniors in Utah, promoting interest in STEM education and careers.

STUDENT MENTORSHIP

- Garrett Woodhouse** — B.Sc. in Computer Science, Utah State University Summer 2026
- Mentored Garrett through NSF Award #2530946 on ML-based Solar Energetic Particle (SEP) prediction by conducting weekly research meetings. Guided the development of novel data preprocessing pipelines, ensemble machine learning models, and scientific writing, resulting in two manuscripts submitted to *The Astrophysical Journal Supplement Series*.

- Mentored Kishore through weekly meetings on his M.Sc. thesis involving the deployment of *FlaPLeT.org*, a full-stack machine learning web platform that I designed and developed. Guided the migration of the system from a Windows environment to a Linux-based production server.

PROFESSIONAL SERVICE

Peer Review

- **Biomedical Signal Processing and Control** (Elsevier), 2024–Present — Reviewed 15 manuscripts.
- **Artificial Intelligence** (Elsevier), 2025–Present — Reviewed 1 manuscript.
- **The Astrophysical Journal** (IOP Publishing), 2026–Present — Reviewed 1 manuscript.
- **SoftwareX** (Elsevier), 2026–Present — Reviewed 2 manuscripts.
- **Pattern Recognition Letters** (Elsevier), 2026–Present — Reviewed 1 manuscript.
- **Astronomy and Computing** (Elsevier), 2025–Present — Reviewed 2 manuscripts.
- **Neurocomputing** (Elsevier), 2025–Present — Reviewed 1 manuscript.
- **Information Fusion** (Elsevier), 2025–Present — Reviewed 2 manuscripts.
- **Information Sciences** (Elsevier), 2025–Present — Reviewed 1 manuscript.
- **IEEE International Conference on Data Mining (IEEE)**, 2026–Present — Co-reviewed 2 conference submissions.
- **Journal of Neural Engineering** (IOP Publishing), 2025–Present — Reviewed 3 manuscripts.
- **Biomedical Physics & Engineering Express** (IOP Publishing), 2025–Present — Reviewed 3 manuscripts.
- **IEEE Journal of Biomedical and Health Informatics (IEEE)**, 2025–Present — Reviewed 1 manuscript.
- **Internet of Things and Cyber-Physical Systems (KeAi)**, 2025–Present — Reviewed 1 manuscript.
- **Applied Energy** (Elsevier), 2026–Present — Reviewed 1 manuscript.

COMMUNITY SERVICE

IEEE International Conference on Data Mining (IEEE ICDM) — Student Volunteer

Nov 2025

Washington, DC

- Provided help desk support at IEEE ICDM 2025, assisting attendees with room directions, session navigation, and general conference inquiries.

IEEE International Conference on Big Data (IEEE BigData) — Student Volunteer

Dec 2024

Washington, DC

- Provided technical and logistical support at IEEE BigData 2024, assisting session chairs and coordinating conference sessions.

GRADUATE COURSES

- **Machine Learning for Data Science (4.0/4.0)** — Utah State University, Spring 2025
- **Data-Driven Programming Languages Processing (4.0/4.0)** — Utah State University, Spring 2025
- **Introduction to Database Systems (4.0/4.0)** — Utah State University, Fall 2024
- **Introduction to Data Analysis (4.0/4.0)** — Utah State University, Fall 2024
- **Applied Deep Learning (4.0/4.0)** — Utah State University, Spring 2024
- **Advanced Data Mining (4.0/4.0)** — Utah State University, Spring 2024

- **Machine Learning with Graphs** (4.0/4.0) — Utah State University, Fall 2023
- **Time Series Data Mining** (4.0/4.0) — Utah State University, Fall 2023
- **Human Factors in Computing** (4.0/4.0) — Utah State University, Summer 2023

TECHNICAL SKILLS

Languages	Python, C++, SQL
Data Science	TensorFlow, Keras, PyTorch, Scikit-Learn, sktime, Pandas, NumPy, Matplotlib, Seaborn
Neural Networks	GRU, LSTM, MLP, Autoencoders, CNN, ResNet, U-Net, Transformers, Ensemble Models, Contrastive Learning, Domain Adaptation
Generative AI	Diffusion Models (DDPM), Generative Adversarial Networks (GANs), Adversarial Autoencoders, Variational Autoencoders (VAEs)
Research & Coding	LaTeX, BibTeX, Jupyter Notebook, CUDA
Databases	PostgreSQL, MongoDB, Redis
Web Development	Django, REST APIs, React.js, Celery, HTML, CSS, Nginx, Waitress, Git

DATASETS AND NOTEBOOKS

1. **M. EskandariNasab**, S. M. Hamdi, and S. Filali Boubrahimi, “Cleaned SWAN-SF Dataset (v1.0.0),” *Zenodo*, Jun. 11, 2024. <https://doi.org/10.5281/zenodo.11566472>. *Dataset*.
2. **M. EskandariNasab**, S. M. Hamdi, and S. Filali Boubrahimi, “SWAN-SF Data Preprocessing and Sampling Notebooks (v1.0.0),” *Zenodo*, Jun. 11, 2024. <https://doi.org/10.5281/zenodo.11564789>. *Computational Notebook*.

PROFESSIONAL MEMBERSHIPS

Society for Industrial and Applied Mathematics (SIAM) — Student Member	<i>Apr 2025 – Now</i>
• Membership awarded as part of the SIAM SDM 2025 Student Travel Award package.	
Institute of Electrical and Electronics Engineers (IEEE) — Student Member	<i>Nov 2024 – Now</i>
• Membership awarded by the School of Computing, Utah State University.	
Association for Computing Machinery (ACM) — Student Member	<i>Dec 2024 – Dec 2025</i>

UNDERGRADUATE PROJECTS

Lung Segmentation in Chest X-Ray Dataset using U-Net	<i>2022</i>
<i>Python, Keras, U-Net, NumPy, Pandas, Matplotlib</i>	
• https://github.com/samresume/Lung-Segmentation-using-U-Net	

- Detecting COVID-19 from X-Ray Images using CNNs** 2021
Python, Keras, NumPy
 • <https://github.com/samresume/Detecting-COVID-19-using-CNNs>
- Brain Tumor Detection from MRI Images using CNNs** 2021
Python, Keras, NumPy
 • <https://github.com/samresume/Brain-Tumor-Detection-using-CNNs>
- Detecting Anomalies in Patient Heartbeats using LSTM Autoencoders** 2022
Python, PyTorch, Pandas, Matplotlib, Seaborn
 • <https://github.com/samresume/Detecting-Anomalies-using-LSTM-Autoencoder>
- Forecasting Weather using Australian Weather Data and Neural Prophet** 2021
Python, Pandas
 • <https://github.com/samresume/Forecasting-Weather-using-Neural-Prophet>
- COVID-19 Tweets Sentiment Analysis using BERT Transformer** 2022
Python, PyTorch, BERT, Pandas, NumPy, Matplotlib, Seaborn
 • <https://github.com/samresume/COVID-19-Tweets-Analysis-using-BERT>
- Exploratory Data Analysis on Chronic Kidney Disease Dataset** 2022
Python, Pandas, Matplotlib, Seaborn
 • <https://github.com/samresume/Exploratory-Data-Analysis-on-Kidney-Disease-Dataset>

LANGUAGES

- **English** — Full professional proficiency
- **Persian** — Native or bilingual proficiency

REFERENCES

Shah Muhammad Hamdi, Associate Professor, Utah State University

Supervisor

- s.hamdi@usu.edu | +1 (435) 797-1573
- SER 330, Science Engineering Research Building, Logan, UT 84321

Soukaina Filali Boubrahimi, Associate Professor, Utah State University

Faculty Collaborator

- soukaina.boubrahimi@usu.edu | +1 (435) 797-1020
- SER 332, Science Engineering Research Building, Logan, UT 84321

Hamid Karimi, Assistant Professor, Utah State University

Reference Professor

- hamid.karimi@usu.edu | +1 (435) 797-1233
- SER 326, Science Engineering Research Building, Logan, UT 84321