Sanaz H. Fard

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Education

Michigan State University Ph.D. in Computer Science — *Michigan, USA - 2021 - Present*
- **Advisor:** Dr. Emily Dolson, **GPA:** 4/4

Paris 12 University (UPEC) — *Paris, France - 2017 - 2018*
- M.Sc. in Complex Systems Engineering (Computer Engineering)

Amirkabir University of Technology — *Tehran, Iran - 2016 - 2019*
- M.Sc. in Artificial Intelligence (Computer Engineering)

Research Experience

Large-Scale Epidemiological Modeling with Machine Learning on Wafer-Scale Engine (U.S. Department of Energy–funded research) — *Michigan State University, USA - Sep. 2024 - Present*
- Modeled real-world interactions within a large-scale population using machine learning
- Designed algorithms to analyze massive, dynamic networks in real time for disease-spread prediction
- Studied evolutionary epidemiology and population dynamics at scale
- Leveraged Wafer-Scale Engine (high-performance computing/ accelerator-based system) for large-scale simulation and modeling

Robustness of Metrics under Incomplete Data in Ecological Networks — *Michigan State University, USA - Aug 2023 - Present*
- Analyzed robustness of graph metrics under uncertainty and missing data
- Identified stable features and metrics for evolving and corrupted real-world networks

Machine Learning on Large-Scale Graphs — *Michigan State University, USA - 2021 - 2023*
- Proposed a novel temporal link prediction approach for large graphs
- Designed a dynamic graph learning framework integrating temporal and structural features
- Demonstrated significant performance improvements on large real-world datasets (e.g., PubMed)

Learning and Optimization in Large-Scale Spatio-Temporal System (Industry-funded project with SPIN) — *Michigan State University, USA - May 2025 - Present*
- Modeled campus roads, intersections, and scooters as a dynamic graph
- Optimized scooter deployment strategies under real-world constraints

Information Extraction — *Télécom Paris, France - 2020*
- Explored information extraction to enhance language model understanding of pronoun resolution and contextual dependencies

Robust Face Recognition Using Multi-view Learning — *Amirkabir University of Technology, Tehran, Iran - 2016 - 2019*
- Proposed and implemented a face recognition model by deep learning,multi-view learning,transfer learning,low-rank representations

AI Framework for Human Activity Recognition — *Paris 12 University, Paris, France - 2017 - 2018*
- Recorded and manually labeled human activity recognition datasets for a Parkinson's patient rehabilitation AI framework

A Two-Dimensional Self-coordination Mechanism of Agents — *Tehran, Iran - 2015 - 2019*
- Proposed and implemented a novel approach for resource optimization and resource allocation in multi-agent environments.

Publications

CNA	**Robustness of Network Structural Metrics under Incomplete Data**, Sanaz Hasanzadeh Fard, Emily Dolson	*CNA 2025*
ALife	**Extending a Phylogeny-based Method for Detecting Signatures of Multi-level Selection for Applications in Artificial Life** , Matthew Andres Moreno, Sanaz Hasanzadeh Fard, Luis Zaman, Emily Dolson	*ALife 2025*
arXiv	**A Low-Cost Machine Learning Approach for Timber Diameter Estimation**, Fatemeh Hasanzadeh Fard, Sanaz Hasanzadeh Fard, Mehdi Jonoobi	*arXiv 2025*
IEEE	**Temporal Link Prediction Using Graph Embedding Dynamics**, Sanaz Hasanzadeh Fard, Mohammad Ghassemi	*BigMM 2023*
IEEE	**Machine Learning on Dynamic Graphs: A Survey on Applications**, Sanaz Hasanzadeh Fard	*BigMM 2023*
Springer	**A Two-Dimensional Self-coordination Mechanism of Agents in a Minority Game**, Sanaz Hasanzadeh Fard, Hadi Tabatabaee Malazi	*FSEN 2019*

Skills

ML, AI, Data Science	Deep Learning, Representation Learning, Graph Machine Learning, Time Series Analysis, Sequence Prediction
Algorithms & Theory	Algorithmic Problem Solving, Game Theory, Graph Algorithm, Algorithm Design, Optimization
ML Systems & Data Tools	TensorFlow, PyTorch, Scikit-learn, NumPy, Pandas, NetworkX, Hugging Face, Transformers, LLMs
Programming & Systems	Python, C/C++, SQL, Git, AWS, High-Performance Computing (HPC)
Research & Modeling Applications	Social Networks Analysis, Recommender Systems, Anomaly Detection, Population Dynamics, Complex Systems Computational Social Science, Urban & Mobility Modeling, Epidemiology & Healthcare Systems