NARGES GHASEMI

University of Southern California, Los Angeles, CA

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Education

University of Southern California   **Aug 2023 – May 2028 (Expected)**
Ph.D. in Computer Science (GPA: 3.94/4.0)   *Los Angeles, CA*

Shahid Beheshti University   **Sep 2018 – Feb 2023**
B.Sc. in Computer Engineering, Ranked 1st among 131 students (GPA: 3.96/4.0)   *Tehran, Iran*

Farzanegan1 High School   **Sep 2014 – Jun 2018**
National Organization for the Development of Exceptional Talents (NODET)   *Tehran, Iran*
Diploma in Mathematics and Physics (GPA: 4.0/4.0)

Research Interests

- Large Language Models
- Computer Vision
- Machine Learning
- Interpretability

Research and Professional Experience

NLP Researcher   **Jul 2025 – Present**
CuteLabName Lab, University of Southern California (Advisor: Prof. Jonathan May)   *Los Angeles, CA*

- Conducting research in natural language processing with a focus on the interpretability and alignment of large language models
- Areas of focus include large language models, model steerability, activation engineering, bias detection, and unfaithful reasoning.

CV Researcher   **Aug 2023 – Jul 2025**
Infolab Lab, University of Southern California   *Los Angeles, CA*

- Conducted research in geospatial computer vision with a focus on generative modeling and vision-spatial analysis.
- Areas of focus include generative diffusion models for satellite imagery, autoregressive modeling for vision-spatial data, and object detection for urban analytics.

CV Researcher   **Sep 2022 – Feb 2023**
Image Processing & Distributed Systems Lab, Shahid Beheshti University   *Tehran, Iran*
(Advisor: Prof. Mohsen Ebrahimi Moghadam)

- Conducted thesis on spatiotemporal forecasting to predict respiratory motion in 4D CT scans
- Developed novel chaotic activation functions and chaotic feature extractors to model non-linear breathing dynamics for radiotherapy planning

Machine Learning Intern   **Jun 2021 – Sep 2021**
Institute for Research in Fundamental Sciences (IPM)   *Tehran, Iran*

- Developed a stock price and trend prediction model using a hybrid CNN-LSTM framework to capture multi-scale patterns in financial data.

Technical Skills

Programming Languages: Python, MATLAB, Java, C/C++, SQL, C#, CSS, HTML, Go, JavaScript
Frameworks & Libraries: PyTorch, TensorFlow, Keras, scikit-learn, OpenCV, Pandas, NumPy, Django, GeoPy
Tools & Platforms: Azure, AWS, Git, LaTeX

Academic Honors

- Ranked 1st among 131 undergraduate Computer Engineering students, 2018-2023
- 18th Place, Digikala Cup Data Science Competition (out of 1380 competitors), 2021
- 19th Place, AUT ACM-ICPC Competition, 2019
- Full-Tuition Scholarship, Top 0.5% of 251K+ in Nationwide B.Sc. University Entrance Exam, 2018
- Selected, First Round of Iranian Mathematics Olympiad, 2017
- Semi-Finalist, IMC (Selection Test of International Mathematics Olympiad), 2016
- Bronze Medal, AITMO (Selection Test of Asia Inter-Cities Teenagers Mathematics Olympiad), 2013

Selected Courses

Advanced Natural Language Processing	Text as Data	Probabilistic and Generative models
Machine Learning	Computational Intelligence	Image Processing

Selected Publications and Preprints

Narges Ghasemi[*], Amir Ziashahabi[*], Salman Avestimehr, Cyrus Shahabi. GeoToken: Hierarchical Geolocalization of Images via Next Token Prediction. *IEEE International Conference on Data Mining (ICDM)*, 2025 (accepted).

Amir Ziashahabi[*], **Narges Ghasemi**[*], Sajjad Shahabi, John Krumm, Salman Avestimehr, Cyrus Shahabi. OSMGen: Highly Controllable Satellite Image Synthesis using OpenStreetMap Data. *NeurIPS 2025 UrbanAI Workshop*, 2025 (accepted).

Navid Amini, **Narges Ghasemi**, Manveen Kaur, Mohammad Pourhomayoun and Kouros Nouri-Mahdavi. Assessment of Foot Clearance Impairments in Glaucoma Patients Using Smart Insoles *International Symposium on Visual Computing (ISVC)*, 2025 (accepted).

Narges Ghasemi, Seon Ho Kim, Abdullah Alfarrarjeh, Cyrus Shahabi. Counting Unique Objects in Geo-Tagged Street Images: A Case Study of Homeless Encampments in Los Angeles. *International Conference on Multimedia Modeling (MMM)*, 2025.

Narges Ghasemi, Shahabedin Nabavi, Mohsen Ebrahimi Moghadam, Yasser Shekofteh. Chaotic Convolutional Long Short-Term Memory Network for Respiratory Motion Prediction *International Conference on Image Processing and Vision Engineering (IMPROVE)*, 2024.

[*]Equal contribution

Teaching Experience

Machine Learning for Data Science — Teaching Assistant; University of Southern California
Introduction to Artificial Intelligence — Teaching Assistant; University of Southern California
Machine Learning — Graduate Course — Teaching Assistant; Shahid Beheshti University
Software/Hardware Codesign — Teaching Assistant; Shahid Beheshti University
Computer Simulation — Teaching Assistant; Shahid Beheshti University
Artificial Intelligence — Teaching Assistant; Shahid Beheshti University
Operating Systems — Teaching Assistant; Shahid Beheshti University
Discrete Mathematics — Teaching Assistant; Shahid Beheshti University
Linear Algebra — Teaching Assistant; Shahid Beheshti University
Signal & Systems — Teaching Assistant; Shahid Beheshti University
Engineering Mathematics — Teaching Assistant; Shahid Beheshti University
Design And Analysis of Algorithms — Teaching Assistant; Shahid Beheshti University
Advanced Programming — Teaching Assistant; Shahid Beheshti University
Theory Of Languages And Automata — Teaching Assistant; Shahid Beheshti University

Selected Projects and Coursework

GeoToken: Hierarchical Image Geolocalization *(Python, PyTorch, Transformers)*
Geolocalization framed as next-token prediction for accurate, scalable location inference.
OSMGen: Controllable Satellite Image Synthesis *(Python, PyTorch, Transformers, Diffusion)*
Satellite image generation conditioned on OpenStreetMap for structure-faithful, controllable outputs.
GeoImage2Vec *(Python, PyTorch, Multimodal Models, Contrastive Learning)*
Combined visual and spatial features using contrastive learning for multimodal georeferenced image representation.
BysGNN for POI Forecasting *(Python, PyTorch, GNN, LLM, Semantic Embeddings)*
Hybrid GNN and LLM framework to predict POI visits using spatially aware semantic embeddings.
Truck Detection and Counting *(Python, YOLO, DeepSORT, StrongSORT)*
Developed a truck detection and tracking system using YOLO and SORT-based algorithms for urban traffic analysis.
Flash Reflection Removal *(Python, U-Net, Image Processing)*
Applied a U-Net-based model for removing flash reflections in images; an Image Processing course project.
Chaotic Respiratory Motion Prediction *(Python, TensorFlow, ConvLSTM, Computer Vision)*
Developed a ConvLSTM model to generate future CT scan frames by capturing chaotic respiratory patterns for radiotherapy planning.
Stock Prediction *(Python, TensorFlow, CNN-LSTM)*
Predicted stock prices and trends using a hybrid CNN-LSTM model; an IPM internship project.
Hamshahri News Classification *(Python, Scikit-learn, SVM, Feature Engineering, Kaggle)*
Persian news classification using SVM and feature engineering; ranked 2nd in a Kaggle competition.
Othello Game *(Python, AI, Minimax, Alpha-Beta Pruning)*
Graphical Othello game implementation using MiniMax algorithm with Alpha-Beta pruning; an AI course project.
Minesweeper Game *(MATLAB)*
A graphical Minesweeper game implementation; a MATLAB course project.
2Cars Game *(C++)*
A graphical 2D game.
Jetpack Game *(C++, SBDL)*
A graphical 2D game.