# Shayan Shafaei

Shayan Shafaei | shayan.shafaei@ou.edu | +1.405.698.4660

## Summary

A CS PhD candidate working on machine learning. Develop randomized learning algorithms for resource-efficient (both time and memory) and large-scale distributed ML problems.

## Education

PhD in Computer Science at University of Oklahoma — 2022 – present
GPA: 3.52/4.0

MS in Computer Engineering at Sharif University of Technology — 2019 – 2022
Thesis: Aging Based Cache Policy for The Network of Caches
GPA: 4.0/4.0

BS in Electrical and Electronics Engineering at University of Isfahan — 2015 – 2019
Thesis: Modification of the Face Recognition Algorithm Based on the Haar Cascade Method GPA: 3.2/4.0

## Research Papers

1. S. Shafaei, N. Shahabi Sani, and C. Lan, Randomized Weighted Nearest Neighbor Condensing, *under review.*
2. L. Yang, S. Shafaei, and C. Lan, Distributed Sketching with Enhanced Sketch Diversity, *under review.*
3. N. Shahabi Sani, F. Najiantabriz, S. Shafaei, and D. F. Hougen, Evolving Multi-Channel Confidence-Aware Activation Functions for Missing Data with Channel Propagation, *Genetic and Evolutionary Computation Conference (GECCO), 2026.* (Nominated for Best Paper)
4. S. Shafaei, L. Yang, N. Shahabi Sani, Q. Li, and C. Lan, A Novel Distributed kNN Classification Scheme, *SCRS International Conference on Information Technology and Artificial Intelligence (ITAI), 2026.* (Acceptance rate: 10%)
5. N. Shahabi Sani, S. Shafaei, L. Yang, D. Hougen, and C. Lan, Randomized Least Squares for Efficient Low-Rank Matrix Recovery, *SCRS International Conference on Information Technology and Artificial Intelligence (ITAI), 2026.* (Acceptance rate: 10%)
6. Y. Cao, S. Shafaei, L. Yang, and C. Lan, Efficient Estimation of Kernel Matrix Spectral Norm Using Random Features, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2025.*
7. J. Sturges, L. Yang, S. Shafaei, and C. Lan, Efficient Data-Dependent Random Projection for Least Square Regressions, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2025.*

## Experience

**AI Consultant:** Work as an AI consultant and researcher with OU IT Research Computing, supporting researchers across different disciplines in selecting appropriate AI and machine learning tools for their projects. Help project teams understand how to design, implement, and use AI/ML applications and algorithms correctly, while also advising them on how to use computational resources more efficiently. Responsibilities include understanding research goals, recommending suitable modeling approaches, guid-

ing implementation strategies, and helping researchers translate their project needs into practical AI/ML solutions. (Jan 2026-present)

**PhD Research Assistant:** Design randomized learning algorithms for dataset compression to enable efficient training and inference, with a focus on k-nearest neighbor (kNN) classification. Work includes both algorithmic development and theoretical analysis, deriving error bounds to guarantee efficiency, and extending these methods to distributed machine learning settings to minimize communication overhead. (Jan 2022–present)

**PhD Teaching Assistant:** Teaching assistant for *CS4033/5033: Machine Learning Fundamentals* in Fall 2023-2025, and for *CS 4413: Algorithm Analysis* in Spring 2025. I hold weekly office hours, assist students in understanding theoretical and practical aspects of coursework, provide detailed step-by-step feedback on homework and exams, and prepare homework solutions and grade submissions on Canvas. (Aug 2023–Present)

**Master Thesis:** Proposed a new caching strategy to improve router memory efficiency by storing only popular data for adaptive time durations. Developed a cache admission policy that reduces redundancy and increases content diversity across routers. Addressed storage limitations by balancing popularity and lifetime of cached content. Evaluated throughput and hit rate improvements under varying network topologies. Achieved higher cache hit rates and reduced latency compared to baseline algorithms. (Apr 2020 – Jan 2022) Link to Thesis

**MS Teaching Assistant:** Teaching Assistant for Computer Logic Design (Spring 2020) and General Mathematics II (Spring 2020) at Sharif University of Technology, and Computer Logic Design (Spring 2020) at the University of Tehran, as well as Fundamentals of Probability (Fall 2020) at Sharif University of Technology. In all courses except Mathematics, I served as an instructor for an additional weekly session beyond the professor's schedule, presenting extended examples, solving practice problems, and clarifying complex topics. (Sep 2019 – Jan 2022)

**MS Research Assistant:** Served as a Research Associate with Iran's National Elites Foundation, contributing to the design of a Persian-language Text-to-Speech (TTS) system. Focused on adapting deep-learning-based speech synthesis models to Persian phonetics and prosody, building pronunciation dictionaries, and refining text normalization pipelines. The project aimed to create fluent, natural, and intelligible speech output for diverse real-world Persian applications. (Jan 2021 – Oct 2021)

**BS Final Project:** Worked on a face recognition project using the Haar Cascade algorithm (Viola–Jones framework). Modified the detection pipeline to improve processing speed by about 20% and enhanced accuracy for recognizing faces from longer distances (extended range from approximately 1 m to 3 m). (Mar 2019–Jul 2019)

**BS Robotic Team:** Member of the Robotics Team at the University of Isfahan. Designed and built an indoor-size drone, contributing primarily to the object detection module for autonomous navigation. Collaborated on integrating the vision system with flight control for stable indoor performance. Participated in two IranOpen RoboCup competitions representing the university. (Sep 2016–Jul 2019)

## Programming Languages and Tools

Python, R, SQL, MySQL, Java, C++, LaTeX, Git