

# Sina Rashidi

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## Education

- **Sharif University of Technology**, Tehran, Iran Oct 2021 - Jun 2024  
**M.Sc.**, Artificial Intelligence and Robotics, GPA: **16.73/20, 3.6/4.0**  
Thesis: Improving Direct Speech-to-Speech Translation: A Unit-based Pipeline and Synthetic Corpus for Persian and English  
Supervisor: Prof. Hossein Sameti
- **Amirkabir University of Technology**(Tehran Polytechnic), Tehran, Iran Sep 2016 - Sep 2021  
**B.Sc.**, Electrical Engineering (Electronics), GPA: **15.03/20, 3.0/4.0** (last two years)  
Thesis: Building a Fire Detector Guard Robot for Indoor Places Using Real-time Object Detection  
Supervisor: Prof. Amir Jahanshahi, Prof. Mohsen Moezzi

## Research Interests

- Applications of Machine Learning and Deep Learning in Healthcare, Cognitive Science and Social Sciences
- Natural Language Processing and Speech Processing
- Large Language Models, Multimodal Speech, Language, and Vision Models, and Synthetic data generation
- Explainable AI, Counterfactual Reasoning, and Causal Inference

## Research Experience

- **Research Assistant, Columbia University (Remote)** Jan 2024 - Present  
Supervisor: Prof. Maryam Zolnoori
  - Conducted research on the application of natural language and speech processing techniques on cognitive impairment detection from interview speech project
  - Developed multi-modal Transformer-based pipelines for cognitive impairment detection from speech, text, and EHR data
  - Achieved state-of-the-art performance in Alzheimer's Disease detection from speech using Synthetic Data Generation with LLMs, Audio-LLMs, Text-to-Speech models, and Voice Conversion models
  - Fine-tuned multiple open-weight LLMs and Audio-LLMs from HuggingFace for Alzheimer's Disease detection and synthetic speech and text data generation using LoRA
  - Developed an award-winning interface for explainability of acoustic Transformer models for Alzheimer's detection from speech
- **Research Assistant, Sharif University of Technology** Jan 2021 - Jun 2024  
Supervisor: Prof. Hossein Sameti  
Topics: Automatic Speech Recognition, Text-to-Speech Synthesis, Voice Conversion, Speaker Verification, Digital Signal Processing
- **Research Assistant, Amirkabir University of Technology** Feb 2021 - Sep 2021  
Supervisor: Prof. Amir Jahanshahi, Prof. Mohsen Moezzi  
Topics: Real-time Object Detection, Robotics, Data Augmentation, Sensors, Actuators, Single-Board Computers & Edge Devices

## Publications

- **S. Rashidi**, H. Azadmaleki, A. Zolnour, M.J. Momeni Nezhad, and M. Zolnoori. "SpeechCura: A Novel Speech Augmentation Framework to Tackle Data Scarcity in Healthcare," ***Studies in Health Technology and Informatics***, vol. 318, 2025. PMID: 40776267, doi: 10.3233/SHTI251250.
- H. Azadmaleki, Y. Haghbin, **S. Rashidi**, M. J. Momeni Nezhad, and M. Zolnoori. "SpeechCARE: Dynamic Multimodal Modeling for Cognitive Screening in Diverse Linguistic and Speech Task Contexts," ***npj Digit. Med.*** 8, 677 (2025). doi: 10.1038/s41746-025-02026-x.
- A. Zolnour, H. Azadmaleki, Y. Haghbin, F. Taherinezhad, M.J. Momeni Nezhad, **S. Rashidi**, et al. "LLMCARE: early detection of cognitive impairment via transformer models enhanced by LLM-generated synthetic data," ***Frontiers in Artificial Intelligence***, 2025. doi: 10.3389/frai.2025.1669896.
- H. Azadmaleki, Y. Haghbin, **S. Rashidi**, M.J. Momeni Nezhad, M. Naserian, E. Esmaeili, A. Zolnour, and M. Zolnoori. "SpeechCARE: Harnessing Multimodal Innovation to Transform Cognitive Impairment Detection — Insights from the National Institute on Aging Alzheimer's Speech Challenge," ***Studies in Health Technology and Informatics***, vol. 318, 2025. PMID: 40776266, doi: 10.3233/SHTI251249.
- M. Zolnoori, A. Zolnour, **S. Rashidi**, I. Spens, Y. Haghbin, et al. "Detecting Mild Cognitive Impairment Using Follow-Up Call Speech and Electronic Health Record Data in Home Health Care Settings," ***Journal of Gerontological Nursing***, 2025. (accepted)
- **S. Rashidi**, Y. Haghbin, H. Azadmaleki, A. Zolnour, and M. Zolnoori. "Leveraging Text-to-Speech and Voice Conversion as Data Augmentation for Alzheimer's Disease Detection from Spontaneous Speech," ***ICASSP 2026***. (under review)
- **S. Rashidi\***, Y. Haghbin\*, M. McDonald, and M. Zolnoori. "Multimodal Attention Fusion of Speech and EHR Data for Early Detection of Cognitive Decline in Home Healthcare," ***ICASSP 2026***. (under review)
- **S. Rashidi**, H. Sameti. "Improving Direct Persian-English Speech-to-Speech Translation with Discrete Units and Synthetic Parallel Data," ***arXiv preprint arXiv:2511.12690*** 2025. Available: <https://arxiv.org/abs/2511.12690>.

- F. Taherinezhad, M. J. Momeni Nezhad, S. Karimi, **S. Rashidi**, et al. "Speech-Based Cognitive Screening: A Systematic Evaluation of LLM Adaptation Strategies," *arXiv preprint* arXiv:2509.03525 2025. Available: <https://arxiv.org/abs/2509.03525>.

## Teaching Experience

### Teaching Assistant, Sharif University of Technology

- Speech Processing (Graduate Course, Instructor: Prof. Hossein Sameti)
- Machine Learning (Graduate Course, Instructor: Prof. Hamid Beigy)
- Signals and Systems (Undergraduate Course, Instructor: Mina Mahmoudi)

Fall 2023  
Spring 2024  
Fall 2024

## Work Experience

### ML Engineer (Speech & NLP), Sharif Information Systems and Data Science Center (Asr Gooyesh Pardaz)

Jan 2022 - Jan 2024

- Contributed to several projects focused on speech processing and natural language processing, including large language model (LLM)-based applications, automatic speech recognition (ASR), and text-to-speech (TTS) systems
- Led the team on the development of the RAG-based custom enterprise chatbot "*Dana*", ensuring successful integration and performance optimization
- Improved existing models and built new models for state-of-the-art ASR and TTS for Persian language by 10%-20%
- Served as an advisor to multiple groups of interns, providing guidance on projects related to speech and language processing technologies, and fostering collaboration within the team

## Related Technical Projects

### Improving Automatic Speech Recognition for Persian Language using Transformer and Conformer models

2023

- Contributed to the development of the Sharif sub-domain for Persian ASR ([nevisa.sharif.edu](http://nevisa.sharif.edu))
- Achieved state-of-the-art performance (8%-10% Word Error Rate) with Conformer model for Persian ASR.

### Sentiment Analysis of Persian Product Reviews by Fine-Tuning LLMs and Pre-Trained Transformers

2023

- Built the Alpaca Persian dataset and fine-tuned BERT and LLaMA-2 models for high-accuracy sentiment analysis of Persian reviews.

### Joint Speech and Text Keypoint Detection from Conference Speech and Audio Books

2023

- Fine-tuned SpeechT5 and implemented a retrieval system to detect keypoints in speech–text multimodal data with high precision.

## Honors

- Achieved the **Special Recognition Prize** and the **Explainability Prize** in the NIA Challenge Competition: Model Arena (Acoustic Track) as a member of the "SpeechCARE" team
- Full Tuition Waiver Scholarship in AI and Robotics from **Sharif University of Technology** (highest-ranked technical university in Iran), 2021
- Full Tuition Waiver Scholarship in Electrical Engineering from **Amirkabir University of Technology**, 2016
- Ranked **11th** among nearly **15,000** participants in nationwide M.Sc. computer engineering entrance exam of universities, 2021
- Ranked **339th** among nearly **200,000** participants in nationwide B.Sc. mathematics entrance exam of universities, 2016

## Professional Activity

### Conference Reviewer, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2026

## Skills

### Technical Skills

- **Programming Languages:** Python, C++, C, JavaScript, TypeScript
- **ML/DL Packages:** Pytorch, Langchain, Tensorflow, Keras, Huggingface Transformers, Numpy, Scikit-learn, Matplotlib, Pandas, FAISS, MLFlow, Gradio
- **Utilities and OS:** Linux, Docker, Git, Microsoft Word and Excel, L<sup>A</sup>T<sub>E</sub>X

**Soft Skills:** Team Leadership, Analytical thinking, Problem solving, Experimental design, Academic writing, Interdisciplinary teamwork, Continuous learning

**Language Skills:** Persian (Native), English (Fluent)

**TOEFL iBT:** **111**/120 (Reading **27**/30, Listening **29**/30, Speaking **26**/30, Writing **29**/30) (November 2024)

## References

- **Maryam Zolnoori, Assistant Professor**, School of Nursing, Columbia University  
Email: mz2825@cumc.columbia.edu
- **Hossein Sameti, Associate Professor**, Computer Engineering Department, Sharif University of Technology  
Email: sameti@sharif.edu