# Mehdi Dehghani Firouzabadi

*AI Researcher & Developer*

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## Education

2020 – Present **M.Sc. in Computer Science (Data Mining)**, *Tarbiat Modares University*, Tehran, Iran
*Thesis Title:* "An Improved Generative Model Based on Diffusion"

2002 – 2005 **B.Sc. in Computer Engineering (Software)**, *Yazd University*, Yazd, Iran
Graduated in seven semesters with second rank.
*Thesis Title:* "Design and Implementation of a Real Estate Web System"

## Professional Experience

2024 – Present **Startup MMMF**, Tehran, Iran
- Developed a time series forecasting framework for **multivariate** data using deep learning models.

2020 – Present **Freelance Instructor**, Tehran, Iran
- Providing instruction in **Python Programming**, **Machine Learning**, and **Deep Learning**.

2015 – 2019 **Rahian Software Development**, Tehran, Iran
- Collaborated in developing an intelligent gate barrier system designed for parking lot access control.

2014 – 2015 **Sepanta Robotic Research Foundation (SRRF)**, Tehran, Iran
- Collaborated in the design and implementation of an **OCR system** for Persian scripts.

2009 – 2014 **Mehregan Danesh Pazhooh**, Tehran, Iran
- Collaborated on the development of an **in-house CRM software**.

## Research Interests

- Machine Learning and Deep Learning methodologies
- Deep Generative Models, including Diffusion Models and Rectified Flow Models
- Inverse Problems using Score-based Diffusion Models
- Exploration of Latent Space through Dimensionality Reduction Methods
- Time Series Forecasting
- Investigating the influence of consciousness on the generation of random numbers

## Technical Skills

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| Programming Languages | Delphi, C++, Python |
| Python IDEs | Jupyter Notebook, Google Colab, VSCode, PyCharm, Cursor |
| Python Libraries | PyTorch, Pandas, NumPy, Matplotlib, Scikit-Learn, SciPy, OpenCV, Seaborn, Darts (time series forecasting) |
| Model Development Tools | Hydra (configuration management), TensorBoard (visualization), MLflow, Optuna (hyperparameter optimization), Ray (deep learning fine-tuning), Captum (Integrated Gradients for feature selection) |
| Tools & Infrastructure | Git, Linux, LaTeX, Word, Excel, PowerPoint |

## Publications


[1] H. Sagha, S. B. Shouraki, H. Khasteh and M. Dehghani, *"Real-Time IDS Using Reinforcement Learning,"* in **IEEE Second International Symposium on Intelligent Information Technology Application**, Shanghai, 2008.

[2] H. Sagha, S. Kasaei, E. Enayati, M. Dehghani, *"Finding Sparse Features in Face Detection Using Genetic Algorithms,"* in **IEEE International Conference on Computational Cybernetics**, 2008.


## Academic Activities

Presented various academic topics during university courses, including: Pitch Estimation in Speech using Fuzzy Methods, Rotation-Invariant Face Recognition, Voice Transformation and Modification, Time-Varying Spectrum Estimation by Fuzzy Methods, Virtual Reality (VR), Multi-objective Optimization using Evolutionary Algorithms, Tensor Methods in Computer Vision and Deep Learning, Discrete Contrastive Diffusion, Contrastive Clustering, Denoising Diffusion Models.

## Honors & Activities

- Ranked 25th nationally in the M.Sc. Computer Engineering Entrance Exam (2006).
- Ranked 37th nationally in the M.Sc. Computer Science Entrance Exam (2006).
- Provincial winner in the 4th Kharazmi Young Festival for "Real-time Voice Conversion Software" (2002).
- Provincial winner in the 5th Kharazmi Young Festival for "Machine Vision" (2003).
- Official software registration at the High Council of Informatics, Management and Planning Organization (2006).
- Winner of Sharif Business Plan Competition (2007) for "Mobile Text-to-Speech Software".
- Selected for the 2nd Innovation Festival, University of Tehran (2017) for "Cloud-based System for Attendance Tracking".
- Selected for the 3rd Innovation Festival, University of Tehran (2018) for "Smart System for Book Provision and Exchange".
- Selected for IdeaTap Event, Qom Science and Technology Park (2019) for "Specialized Simulator for Sensitive and Critical Environments".
- Selected for the Innovation Festival, University of Tehran (2020) for "VR and AR-based Simulator for Sensitive and Critical Environments".