Mansoor Rezghi

Associate Professor
Department of Computer Science
Tarbiat Modares University, Tehran, Iran
Date of Birth: 1979
Google Scholar Profile
Personal homepage: https://deeptenlab.github.io/DeepTenLab/

Work Experience

2018–Present Head of Department, Department of Computer Science, Tarbiat Modares University, Tehran, Iran.

2019–2023 Deputy Dean for Research and Technology, Faculty of Mathematical Sciences, Tarbiat Modares University, Tehran, Iran.

2019–2024 Marbles Game Studio, Tehran, Iran. Published Games: Battle Party, Released 2024.

2018–Present Associate Professor, Department of Computer Science, Tarbiat Modares University, Tehran, Iran.

2012–2018 Assistant Professor, Department of Computer Science, Tarbiat Modares University, Tehran, Iran.

2011–2012 Nonresident Researcher, Institute for Research in Fundamental Science (IPM), Tehran, Iran.

2009–2012 Assistant Professor, Department of Mathematics, Sahand University of Technology, Tabriz, Iran.

2008 April–December Research visitor, Department of Scientific Computing, Linköping University, Linköping, Sweden.

Education

2003–2009 Applied Mathematics, Tarbiat Modares University, Tehran, Iran

2001–2003 Applied Mathematics, Tarbiat Modares University, Tehran, Iran

1998–2001 Applied Mathematics, Shahid Beheshti University, Tehran, Iran

Research Interests

- Machine Learning, Deep Learning, and Data Science
Tensor and matrix computation in modeling of multidimensional data and deep learning. Generative Models (GAN, Image-to-Image Translation), Trustworthy AI (Adversarial examples, XAI), Deep Reinforcement Learning (Multi-agent RL).

- Image Processing
Sparse Representation, medical image segmentation, fMRI and EEG signals analysis.

- Inverse Problems
Discrete ill-posed problems, Hybrid AI and classical methods in inverse problems.

- Large Scale Linear Solvers
Preconditioning & Krylov subspace methods.

Setting Graduate Programs

2024	Artificial Intelligence PhD Program, Tarbiat Modares University
2021–2022	Member of multidisciplinary Data Science Program, Tarbiat Modares University
2018	Data Mining Master Program, Tarbiat Modares University
2013	Scientific Computing Master Program, Tarbiat Modares University

Grants, Honors & Projects

2024–2027	Board Member, Rajabali Pour Biennial Linear Algebra Prize, Iranian Mathematical Society.
2025	National Elites Foundation, Python-based solvers for lightweight networks based on tensors for CNN, Vision Transformers, and LLM.
2024	Iran National Science Foundation (INSF), Methods based on tensor models in compression of deep networks in machine vision applications, (Grant No. 4031828).
2024	National Elites Foundation, Shaykh Mufid Prize, Grants for PostDoc.
2024	Iran National Science Foundation (INSF), Presenting new methods in deep generative networks based on low training data, (Grant No. 4028074).
2024	Iran National Science Foundation (INSF), Analysis of EEG Brain signals using Graph Neural Networks (GNN) on dynamic graphs of signal windowing, (Grant No. 4024218).
2024	Workshop & AI advisor, Iran Khodro Powertrain Co (IPCO).
2023	Selected Researcher, Tarbiat Modares University.
2023	Iranian Best Linear Algebra Researcher Award (Rajabali Pour Award), By: Iranian Mathematical Society.
2023	Grant for supervision of PostDoc researcher, Joint program of Iranian Mathematical Society and Iran's National Elites Foundation. (This grant was competitive, with only 10 grants for all Iranian universities).
2020–2022	Iran's National Elites Foundation (No. 30D/5141), Deep Learning Can Assist Snake Bite Management, (Supported with a PostDoc grant - Researcher: Dr. Mehdi Rajabzadeh).
2021–2022	Iran National Science Foundation (INSF), Block and fast methods for non-negative matrix factorization, (Supported with a PostDoc grant - Researcher: Mehdi Karimpour, No. 98023510).
2020–2021	Team member of the project: Tehran Municipality ICT Organization, Air Pollution prediction of Tehran city by machine learning techniques.
2015–2016	Center for International Scientific Studies and Collaboration (CISSC), Fast Sparse Image Restoration Techniques Without Boundary Artifacts.

2015–2016	Cognitive Sciences and Technologies Council, Analysis of brain functional networks along with compact and multi-linear display of partial correlation matrix, Supported with a Master Thesis Grant - Researcher: Ali Noroozi.
2012–2014	Iran National Science Foundation (INSF), Matrix and Inverse Problems in Image Deblurring, (Grant No. 88001060).
2011–2012	IPM, Institute for Research in Fundamental Sciences, Tehran, Iran, Tensor Based Methods for Three Dimensional Image Restoration Problems.
July 21–25, 2008	Travel Fund, SIAG/Linear Algebra Summer School, Castro Urdiales, Spain.

Preprints

- L. Elden, M. Rezghi, A Simple Efficient Algorithm for Multi-way Spectral Partitioning of Bipartite Graphs.

- M. Moulavi, T. Saeeidi, M. Rezghi, Multidimensional Data Analysis Based on Block Convolutional Tensor Decomposition, arXiv.

Submitted Papers

1. Mahmoudabadi, Mohammad, Amir Mohammad Kharazi, and Mansoor Rezghi. "ALGA: Input-Adaptive Local and Global Attention for Vision Transformers." Authorea Preprints (2025).
2. K. Eybpoush, M. Rezghi, An Enhanced Spectral Clustering Method Preserving multi levels of Local and Global Structures, submitted 2025. Neurocomputing (Revised).
3. S.T. Mortazavi, SS-SAGAN: Stereographic Spherical Self-Attention Generative Adversarial Network, submitted 2025.
4. M. Mahmoudabadi, S. Tabatabei Mortazavi, M. Rezghi, Mask-Guided Object-Aware Single Image-to-Image Translation Using Multi-scale GANs, Journal of Visual Communication and Image Representation, submitted 2025.
5. K. Haghjouei, M. Rezghi, TenAd: A Tensor-based Low-rank Black Box Adversarial Attack for Video Classification, submitted 2024.
6. M. Nasiri, M. Rezghi, Heterogeneous Multi-Agent Reinforcement Learning via Mirror Descent Policy Optimization, Autonomous Agents and Multi-Agent Systems.

List of High-level Journals with Published Papers

1. Pattern Recognition
2. IEEE Transactions on Knowledge and Data Engineering
3. IEEE Transactions on Image Processing
4. SIAM Journal on Matrix Analysis and Applications
5. Engineering Applications of Artificial Intelligence
6. Expert Systems with Applications
7. Applied Soft Computing

8. Linear Algebra and its Applications
9. Applied Intelligence
10. Nature Scientific Reports
11. Frontiers in Neuroinformatics
12. Advances in Data Analysis and Classification
13. Journal of Visual Communication and Image Representation
14. Journal of Computational and Applied Mathematics
15. Journal of Computational Science
16. International Journal of Machine Learning and Cybernetics

Selected Journal Published Papers

1. M. Rezghi, A.M. Kharazi, M. Badzohreh, Hierarchical Local-Global Tensor Layer(HLGTL) in Deep Convolutional Neural Network, Expert systems with applications, 2026.
2. M. Mahmoudabadi, CycleGAN++: Enhancing Performance through Parameter Sharing and Domain Alignment, Multimedia Tools and Applications, submitted 2024.
3. J. Fatahi, M. Rezghi, Unified Graph Convolutional Subspace-Neighbor Clustering with Missing Data via ADMM, 2025, Neurocomputing
4. M. Karimpour, M. Rezghi, A double sided deep nonnegative matrix factorization network for feature extraction of two dimensional data, Expert Systems with Applications, 271, 126652.
5. M. Rezghi, E. Baratnezad, A novel fuzzy Co-clustering method for recommender systems via inverse stereographic NMF, Expert Systems with Applications, 259, 2025.
6. M. Rezghi, F. Mohammadian, and F.B. Ebrahimi, Automatic Text summarization based on the power of reconstructing sentences from each other in a sparse reconstruction framework, Mathematical Research, 2023.
7. K. Eybpoush, M. Rezghi, A. Heydari, A Novel Conformal Deformation Based Sparse Subspace Clustering, International Journal of Machine Learning and Cybernetics, 14 (5), 2023, pp.1579-1590.
8. V. Honarbakhsh, H. Siahkoohi, M. Rezghi, and H. Sabeti, SeisDeepNET: An extension of Deeplabv3+ for full waveform inversion problem, Expert Systems with Applications, 213, 2023.
9. M. Rezghi, F. Mohammadian, F. Behzad, Automatic text summarization based on the power of reconstructing sentences from each other in a thin reconstruction, Mathematical Research, 9 (3), 111-135, 2023.
10. M. Karimpour, M. Rezghi, A block column iteration for nonnegative matrix factorization, Journal of Computational Science, (64), 2022.
11. T. Saeeidi, M. Rezghi, A Novel Enriched Version of Truncated Nuclear Norm Regularization for Matrix completion of Inexact Observed Data, IEEE Transactions on Knowledge and Data Engineering, 34, 2022.

12. M. Rajabzadeh, M. Rezghi, A Comparative Study on Image-based Snake Identification Using Machine Learning, Nature Scientific Reports, 2021.

13. K. Eybpoush, M. Rezghi, A. Heydari, Applying Inverse Stereographic Projection to Manifold Learning and Clustering, Applied Intelligence, 2021.

14. A.M. Karimi, S. Sadeghnejad, M. Rezghi, Well-to-well correlation and identifying lithological boundaries by principal component analysis of well-logs, Computers & Geosciences, 2021.

15. P. Parvasideh, M. Rezghi, A Novel Dictionary Learning Based on Total Least Squares Approach with Application in High Dimensional Biological Data, Advances in Data Analysis and Classification, 1-23, 2020.

16. S. Ahmadi, M. Rezghi, A novel extension of Generalized Low-Rank Approximation of Matrices based on multiple-pairs of transformations, Pattern Recognition, 2020.

17. M. Amoozegar, B. Minaei-Bidgoli, M. Rezghi, H. Fanaee, Extra-adaptive robust online subspace tracker for anomaly detection from streaming networks, Engineering Applications of Artificial Intelligence, 2020.

18. A. Noroozi, M. Rezghi, A Tensor Based Framework for rs-fMRI Classification and Functional Connectivity Construction, Frontiers in Neuroinformatics 14, 46, 2020.

19. A. Khorram, M. Khalooei, M. Rezghi, End-to-end CNN+ LSTM deep learning approach for bearing fault diagnosis, Applied Intelligence, 1-16, 2020.

20. F. Kazemi, M. R. Eslahchi, M. Rezghi, Image Denoising by a Novel Variable-order Total Fractional Variation Model, Mathematical Methods in the Applied Sciences, 2020.

21. F. Kazemi, M. Rezghi, M. R. Eslahchi, A Hybrid Image Denoising Method Based on Integer and Fractional-Order Total Variation, Iranian Journal of Science and Technology, Transactions A: Science, 44, pp. 1803-1814 (2020).

22. M. Rezghi, Even Order Toeplitz Tensor: Framework for Multidimensional Structured Linear Systems, Computational and Applied Mathematics, 2019.

23. N. Binesh, M. Rezghi, Fuzzy clustering in community detection based on nonnegative matrix factorization with two novel evaluation criteria, Applied Soft Computing, 69, 689-703, 2018.

24. M. Rezghi, A Novel Fast Tensor-Based Preconditioner for Image Restoration, IEEE Transactions on Image Processing 26 (9), 4499-4508, 2017.

25. R. Feiz, M. Rezghi, A splitting method for total least squares color image restoration problem, Journal of Visual Communication and Image Representation 46, 48-57, 2017.

26. A. Rastghar, M. Rezghi, A Multilinear discriminant analysis method using a subtraction criteria, Mathematical Research, 3, 25-36, 2017.

27. N. Vakili, M. Rezghi, S. M. Hosseini, Improving image segmentation by using energy function based on mixture of Gaussian pre-processing, Journal of Visual Communication and Image Representation 41, 239-246, 2016.

28. M. Yousefi, M. Rezghi, A Projected Alternating Least square Approach for Computation of Nonnegative Matrix Factorization, Journal of Sciences, Islamic Republic of Iran 26 (3), 273-279, 2015.

29. M. Amirmazlaghani, M. Rezghi, H. Amindavar, A novel robust scaling image watermarking scheme based on Gaussian Mixture Model, Expert Systems with Applications, 42(2015), pp. 1960-1971.

30. M. Rezghi, S. M. Hosseini, and L. Elden, Best Kronecker Product Approximation of The Blurring Operator in Three Dimensional Image Restoration Problems, SIAM Journal on Matrix Analysis and Applications, 35(2014), pp. 1086-1104.

31. M. Rezghi, A. Abulkasim, Noise-free principal component analysis: An efficient dimension reduction technique for high dimensional molecular data, Expert Systems with Applications, 41(2014), pp. 7797-7804.

32. M. Yazdani, M. Rezghi, Analysis of free stresses in a cross-ply Composite plate by applying shooting method. Modares Mechanical Engineering, 13 (2013), pp.1-11.

33. M. Abdi, M. Hosseini, M. Rezghi, A novel weighted support vector machine based on particle swarm optimization for gene selection and tumor classification, Computational and Mathematical Methods in Medicine, (2012).

34. Mansoor Rezghi, Lars Elden, Diagonalization of Tensors with Circulant Structure, Linear Algebra and its Applications, 435(2011), pp. 422-447.

35. Mansoor Rezghi, S. M. Hosseini, Lanczos based preconditioner for ill-posed problems, Computing (Springer), 88 (2010), pp. 79-96.

36. Mansoor Rezghi, S. M. Hosseini, A new variant of L-Curve for Tikhonov regularization, Journal of Computational and Applied Mathematics, 231 (2009), pp. 914-924.

37. Mansoor Rezghi, S. M. Hosseini, An ILU Preconditioner for Nonsymmetric positive definite matrices by using the Conjugate Gram-Schmidt process, Journal of Computational and Applied Mathematics, 188 (2006), pp. 150-164.

Conference Publications & Talks

1. B. Mahdavi, M. Nemati Andvari, M. Rajabizadeh, M. Rezghi, Attention based Graph Neural Network for Identifying Coding and Non-coding Breast Cancer Drivers, 4th International Iranian Conference on Bioinformatics, 2025.

2. M. Rezghi, Vision Transformers, Tutorials Speaker, MLKD 2024 The First International Conference on Machine Learning and Knowledge Discovery, Amirkabir University of Technology, December 18-19, 2024.

3. K. Haghjooei, M. Rezghi, QEBB: A Query-Efficient Black-Box Adversarial Attack on Video Recognition Models Based on Unsupervised Key Frame Selection, Proceedings of the 13th International Conference on Pattern Recognition Applications and Methods - Volume 1: ICPRAM, 2024.

4. M. Rezghi, Matrix and tensor modeling in Artificial intelligence and data science, The 12th Seminar on Linear Algebra and its Applications, Tabriz, Iran, 2023. Keynote speaker.

5. M. Rezghi, Tensor in the new age: from deep learning to Alpha-Tensor, AAIC, Tehran, 2023. Keynote speaker.

6. A. Hassanloo, S. Sadeghnejad, M. Nourani, and M. Rezghi, Stylolite detection and image classification from whole core images using convolutional neural networks, Conference: 14th annual meeting of the International Society for Porous Media (InterPore 2022).

7. E. Baratnejad, M. Rezghi, Rainfall Data Analysis of Iran using Complex Networks View, 2020 10th International Conference on Computer and Knowledge Engineering (ICCKE).

8. E. Kia, M. Rezghi, A robust sparse feature selection for hyperspectral images, International Conference of Signal Processing and Intelligent Systems (ICSPIS), 2016.

9. M. Khademlou, M. Rezghi, Integrated Single Image Super Resolution Based on Sparse Representation, AISP 2015, Mashhad, Iran.

10. Z. Sharifi, M. Rezghi, M. Nasiri, A new algorithm for solving data sparsity problem based on Nonnegative matrix factorization in recommender systems, ICCK 2014.

11. A. Tavakoli, M. Rezghi, Content based image boundary conditions for image restoration, CSICC 2014, Tehran, Iran.

12. N. Binesh, M. Rezghi, A new similarity measure for extracting information from social networks and improving community detection and recommendation results, IKT 2014.

13. M. Yousefi, M. Rezghi, NMF method in face recognition, PRIA 2013, March 6-8, 2013.

14. N. Binesh, M. Rezghi, Nonnegative matrix factorization for knowledge discovery in social networks, IKT 2013, Shiraz, Iran.

15. N. Binesh, M. Rezghi, Nonnegative matrix factorization as a fuzzy clustering method with a new evaluation method, IFSC 2013, Qazvin, Iran.

16. M. Yousefi, M. Rezghi, Nonnegative Matrix factorization and its application in handwriting digit recognition, 43rd Annual Iranian Mathematics Conference, August 27-30, 2012, Tabriz, Iran.

17. M. Rezghi, A note on fast decomposition of Circulant Tensors with application on image denoising, TDA 2010, September 13-17, 2010, Monopoli, Bari, Italy.

18. M. Rezghi, S. M. Hosseini, Regularized preconditioner for ill-posed problems by bidiagonalization process with application in image restoration. Accepted in 2009 International Conference on Preconditioning Techniques for Scientific and Industrial Applications, August 2009, Hong Kong.

19. M. Rezghi, Fast image restoration with a Tensor framework, Workshop: Inverse Problems and Applications, December 16, 2008, Norrköping, Sweden.

20. M. Rezghi, S. M. Hosseini, Improved NRIF preconditioner for nonsymmetric positive definite linear systems, Accepted in 2007 International Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Scientific and Industrial Applications, July 9-12, 2007, Toulouse, France.

Teaching Experience

1. Generatiev AI , 2026.

2. Special topics in AI (XAI), 2025.

3. Advanced (Deep) Reinforcement Learning, 2025.

4. Advanced Artificial Intelligence, 2024.

5. Deep Learning, 2020–2024.

6. Machine Learning, Every Fall semester from 2012 until 2025.

7. Complex Networks & GNN, 2023.

8. Topics in Artificial Intelligence (GAN and Diffusion models), 2023.

9. Topics in Data Mining, 2022.

10. Big Data Analysis, 2019.

11. Data Mining, 2015, 2016, 2017, 2018.
12. Matrix Computation, 2010, 2012, 2015, 2016, 2017, 2018.
13. Convex Optimization, 2014, 2015, 2016, 2017, 2018, 2019.
14. Multilinear Learning (Special Topics), 2018.
15. Technology of Sparse Linear Systems, 2014.
16. Theory of Computer Science, 2012–2014.
17. Network Flows, 2009.
18. Computational Image Processing, 2015, 2011.

Computer Skills

C++, MATLAB, Python, PyTorch, TensorFlow

Postdoc Researchers

- M. Rajabzadeh, Deep Learning Can Assist in Snake Bite Management, Supported by: Iran's National Elites Foundation.
- M. Karimpour, Fast Scalable Nonnegative Feature Extraction Methods for Large Scale Data, Supported by: Iran's National Elites Foundation.
- N. Mirhosseini, Hybrid deep learning and classic Methods for Solving Inverse Problems.

Graduate Students

Current

M. Saadati, Design and Improvement of a YOLO-based Object Detection Model Utilizing Transformer Architectures with Domain Adaptation and Interpretability Capabilities.

M.Mofidi, Graph-Structured Information Enhanced Vision Transformers.

Graduated 2026

2026 H. Dahaei, Application of Mamba and Transformer Models to EEG Signal Processing, 2026

2026 M. Shahbazi,Improving Diffusion Models for Image Generation using Vision Transformers, 2026.

2026 N. Ghasemi, Explainability of Reinforcement Learning in Chess, 2026.

Graduated 2024

2024 A.M. Kharazi, Tensor methods in vision transformers.

2024 M. Badzohreh, Local & Global view in Vision Transformers.

2024 M. A. Soheilian, A novel Vision Transformer based image segmentation.

2024 Panjeh Alibeick, Tensor and quantum based models in deep learning.

Graduated-2023

2023 M. Mahmoudabadi, Multi scale GAN in image to image translation.

2023 Dehghani, Combined GAN-Diffusion deep networks.

2023 M. Nemati, Deep graph neural networks for analysis of Brain data.

2023 S. Moradi, Temporal Tensor factorization for financial time series.

Graduated-2022

2022 A. Asadi, Approximate approaches to design effective CNN networks with fewer parameters.

2022 K. Haghjooei, Adversarial Examples on Video Recognition Models.

2022 S. Tabatabaei Mortazavi, Investigating Multiscale Generative adversarial networks.

2022 M. Rahimi, New Version of UNet network for medical image segmentation.

2022 M. Nasiri, Investigating policy gradient extensions in deep reinforcement learning.

Graduated-2021

2021 K. Eybpoush, Application of manifolds in learning.

2021 M. Amouzghar, Online Anomaly detection in networks by tensor decompositions.

Graduated-2020

2020 F. Mohammadian, Text summarization by dictionary learning approach.

2020 R. Hosseinbeighi, Adversarial policy in deep reinforcement learning.

2020 R. Mohajer, Using multilinear filters in deep CNN Networks.

2020 M. Kazemi, Manifold and Tensor based learning methods on positive definite matrices with application in fMRI data analysis.

2020 E. Baratnejad, Scalable fuzzy community detection of social networks.

Graduated-2019

2019 M. Molavi, Tensor methods for big data analysis.

2019 A.R. Badran, An adaptive deep networks for deep reinforcement learning.

2019 F. Ardashirnia, Deep matrix decomposition methods in data analysis.

2019 F. Harachi, Using multilevel clustering for improving recommender systems.

Graduated-2018

2018 A. Norouzi, Sparse and multilinear methods for analysis of Resting state FMRI images.

2018 T. Saeidi, Large scale data processing with fast low-rank approximation methods.

2018 S. Makki, Recommender Systems based on Matrix Completion.

2018 F. Behzad, Text summarization based on sparse representation.

Graduated-2017

2017 M. Nasiri, Dynamic recommender systems by Tensors, Graduated, Advisor. Iran University of science and industry.

2017 Y. Taebi, Manifold learning of medical images by deep learning.

2017 B. Balali, Image filtering based on content Analysis.

2017 E. Kia, A feature extraction method in the analysis of hyperspectral images via sparse learning.

Graduated-2016

2016 P. Parvasideh, Sparse Learning Approach in Large Scale High Dimensional Data Analysis.

2016 A. Ghaseminia, A multilevel method for dimension reduction and Complex Network Analysis.

2016 A. Fazllolahi, Social Network-Based Recommender systems.

2016 F. Ghanbari, Face recognition via sparse representation approach.

2016 G. Hashemi, Image Restoration based on norm one regularization.

Graduated-2015

2015 M. Khademlou, Image super resolution via sparse representation.

2015 R. Feiz, Computational inverse problem techniques in color image restoration.

2015 A. Rastghar, A tensor framework for high-dimensional data analysis.

Graduated-2014

2014 A. Tavakoli, Content Based Boundary Conditions in Image Restoration.

2014 R. Arjomand, Collaborative Filtering Recommender Systems.

Graduated-2013

2013 N. Binesh, Matrix and Spectral Methods in Social Networks Analysis.

2013 A. Ziaei, Randomized Approach for Boolean Satisfiability Problem.

Graduated-2012

2012	N. Ebrahimpour, Total variation regularization on image restoration.
2012	M. Yousefi, Nonnegative matrix factorization and its application in Data mining.