MAJID ZIARATBAN

IMAGE PROCESSING & DEEP LEARNING
DATA SCIENTIST

CONTACT

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EDUCATION

September 2005 - January 2011
AMIRKABIR UNIVERSITY OF TECHNOLOGY, TEHRAN, IRAN
• Ph.D. in Electrical Engineering

September 2002 - January 2005
AMIRKABIR UNIVERSITY OF TECHNOLOGY, TEHRAN, IRAN
• M.Sc. in Electrical Engineering

September 1997 - January 2002
GUILAN UNIVERSITY, RASHT, IRAN
• B.Sc. in Electrical Engineering

SKILLS

- Data Mining
- Deep Learning
- Medical Image Analysis
- Document image Analysis
- Natural Language Processing
- Teamwork
- Leadership

PROGRAMMING LANGUAGES

- Python (Pytorch, Tensorflow, Keras)
- MATLAB

REVIEWER EXPERIENCE

PROFILE

Assistant Professor in Electrical Engineering with a strong expertise in Image Processing and Pattern Recognition. Proven track record in research, teaching, and academic administration. Recognized for contributions to medical image analysis and deep learning applications. Enthusiastic about fostering innovation and collaboration in technology-driven projects.

WORK EXPERIENCE

Saint Mary's University, Halifax, Canada
Visiting Researcher 2025 Sep – Present
- patient-specific drug–drug interaction prediction using ML/GNN

Department of Electrical Engineering,
Faculty of Engineering, Golestan University
Assistant professor 2011 – Present
- Conducting research and teaching courses in electrical engineering with a focus on image processing and deep learning.
- Supervising graduate theses in advanced topics related to artificial intelligence and medical image analysis.

Dean of Faculty of Engineering 2018 - 2022
- Led academic initiatives and strategic planning for the faculty.
- Enhanced research collaboration and funding opportunities for faculty members.

Associate Dean of Faculty of Engineering 2015 - 2018
- Assisted in administrative responsibilities and represented the faculty in academic committees

AWARDS

- **First place in ICDAR 2013 Handwriting segmentation contest**
  University at Buffalo, USA, August 2013
- **First place in national handwritten line segmentation competition**
  Birjand University, Iran, March 2013
- **Top-10 list in MSLesSeg challenge (Competition on Multiple Sclerosis Lesion Segmentation from 3D Brain MRI)**
  ICPR, Kolkata, India, December 2024

- Neurocomputing
- Expert Systems with Applications (ESWA)
- International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI)
- Image and Vision Computing (IMAVIS)
- Advanced Signal Processing (JASP)
- Biomedical Signal Processing and Control (BSPC)
- Computers in Biology and Medicine (CIBM)
- International Journal on Document Analysis and Recognition (IJDAR)
- Scientific Reports
- Measurement
- International Journal of Engineering (IJE)
- Journal of Artificial Intelligence & Data Mining (JAIDM)
- Journal of Soft Computing and Information Technology (JSCIT)
- International Conference on Document Analysis and Recognition (ICDAR)

PROJECTS

- Improving performance of Graph classification in medical applications by using graph convolutional networks and attention mechanisms (in progress)
- Detection of Obstructive Sleep Apnea using deep convolutional and sequential networks and attention mechanism (2024)
- Brain tumor classification in MR images by combining attention modules in convolutional networks (2024)
- Face Image Super Resolution Using Generative Adversarial Networks (2024)
- Image-to-Image Translation with Generative Adversarial Networks (2023)
- Design and manufacture of digital blood pressure monitor with the ability to detect arrhythmia by ARM microcontroller (2022)
- Multi-object tracking in 2D images using deep learning (2021)
- Lesion detection and segmentation by using graph analysis and deep learning in dermoscopic images (2021, Advisor)
- Medical single image super resolution by using deep neural networks (2020)
- Online Farsi single-writer subword recognition using hidden Markov model (2018)
- Farsi font recognition in printed text image (2017)

PUBLICATIONS

JOURNAL PAPERS

1. Mohammadi M, Ziaratban M. TCAFNet: Transformer-Guided Cross-Scale Attention and Deep Semantic Fusion for Brain Tumor Classification from MRI. IET Image Processing (Accepted)
2. Cheshmberah A, Ziaratban M. A Multi-Branch Attention-Enhanced Architecture for OSA Detection Using ECG Signals. IET Signal Processing, Volume 2026, Article ID 5631289, https://doi.org/10.1049/sil2/5631289
3. Shariatnia S, Ziaratban M, Rajabi A, Salehi A, Abdi Zarrini K, Vakili M. Modeling the diagnosis of coronary artery disease by discriminant analysis and logistic regression: a cross-sectional study. BMC medical informatics and decision making. 2022 Mar 29;22(1):85.
4. Bagheri F, Tarokh M.J, Ziaratban M. Skin lesion segmentation by using object detection networks, DeepLab3+, and active contours. Turkish Journal of Electrical Engineering and Computer Sciences. 2022;30(7):2489-507.
5. Bagheri F, Tarokh M.J, Ziaratban M. Skin lesion segmentation based on mask RCNN, Multi Atrous Full-CNN, and a geodesic method. International Journal of Imaging Systems and Technology. 2021 Sep;31(3):1609-24.
6. Bagheri F, Tarokh M.J, Ziaratban M. Skin lesion segmentation from dermoscopic images by using Mask R-CNN, Retina-Deeplab, and graph-based methods. Biomedical Signal Processing and Control. 2021 May 1;67:102533.
7. Bagheri F, Tarokh M.J, Ziaratban M. Semantic segmentation of lesions from dermoscopic images using yolo-deeplab networks. International Journal of Engineering. 2021 Feb 1;34(2):458-69.
8. Bagheri F, Tarokh M.J, Ziaratban M. Two-stage skin lesion segmentation from dermoscopic images by using deep neural networks. Jorjani Biomedicine Journal. 2020 Jul 10;8(2):58-72.
9. Ziaratban M. Script-Independent Handwritten Text line Segmentation Using Directional 2D Filters. Journal of Soft Computing and Information Technology. 2020 May 21;9(1):46-60.
10. Ashurpour M, Ziaratban M. Online Handwritten Persian Isolated Letter Recognition by Using Discrete Markov Models and Language-Based Features. Journal of Soft Computing and Information Technology. 2017 Sep 23;6(2):51-68.
11. Bagheri F, Dehghan M, Ziaratban M. Selecting the most proper location to construct hospitals and health centers in a city by Genetic Algorithm. Jorjani Biomedicine Journal. 2017 Oct 10;5(2):78-90.
12. Valipour S., Ziaratban M., Shaligram A. D, Improving Capabilities of the Adaptive Recursive Least-Squares Filter in the Ocular Artifact Removal from EEG Signal, Indian Journal of Science and Technology, Vol 9(13), April 2016, pp. 1-11.
13. Ziaratban M., Bagheri F., Farsi Font Recognition based on The Fonts of Text Samples Extracted by SOM, Journal of Mathematics and Computer Science (JMCS), 15 (2015), 40-56.
14. Bagheri F., Ziaratban M., Tarokh M.J., Predicting Behaviors of Insurance Costumers by Using the Genetic Algorithm, Journal of Mathematics and Computer Science (JMCS), 14 (2014) pp. 54 – 70.
15. Bagheri F, Alizadeh Majd H, Mehrbakhsh Z, Ziaratban M. Use of data mining algorithms in assessing the affecting factors on predicting the health status of newborns. Jorjani Biomedicine Journal. 2014 Oct 10;2(2):68-59.
16. Ziaratban M., Faez K., Adaptive Script-Independent Text Line Extraction, IEICE Transactions, Vol. 94-D(4), pp. 866-877, 2011.
17. Ziaratban M., Faez K., Detection and Compensation of Undesirable Discontinuities within the Farsi/Arabic Subwords, The International Arab Journal of Information Technology, Vol. 8, No. 3, pp. 229-237, July 2011.
18. Ziaratban M., Faez K., Non-uniform slant estimation and correction for Farsi/Arabic handwritten words, IJDAR, Vol. 12, pp. 249–267, 2009.

CONFERENCE PAPERS

1. Emadi S.M., Ziaratban M. Improving the performance of the CycleGAN for image-to-image translation by adding two discriminators to the original architecture, Proceedings of The 28th International Computer Conference, the Computer Society of Iran January 25 and 26, 2023 Sharif University of Technology, Tehran, (CSICC 2023) (in Persian)
2. Moslemipoor F., Shahraeini M., Ziaratban M., Safa A., Optimal Routing between Sensors-Actuators in Smart Grids Using Linear Matrix Inequalities, Proceedings of The 8th Iranian Conference on Signal Processing and Intelligent Systems (ICSPIS 2022), pp. 1-6, 2022.
3. M. Ziaratban, L. Nourmohammadi, F. Bagheri, License Plate Detection and Component extraction, The International Conference in New Research of Electrical Engineering and Computer Science, 2015, pp-1-8.
4. M. Ziaratban, F. Bagheri, Extracting local reliable text regions to segment complex handwritten textlines, 8th Iranian Conference on Machine Vision and Image Processing (MVIP 2013), University of Zanjan, Zanjan, Iran, Sep 10-12, 2013.
5. M. Ziaratban, F. Bagheri, Improving Farsi Font Recognition Accuracy by Using Proposed Directional Elliptic Gabor Filters. The First Iranian Conference on Pattern Recognition and Image Analysis, March 6-8th 2013.
6. M. Ziaratban, K. Faez, F. Bagheri, Content-Independent Farsi Font Recognition Based on Dynamic Most-Frequent Connected Components, 21st International Conference on Pattern Recognition, ICPR'12, Japan, pp. 729-733, 2012.
7. M. Ziaratban, K. Faez, An Adaptive Script-Independent Block-Based Text Line Extraction, 20th International Conference on Pattern Recognition, ICPR'10, pp. 249-252, 2010.
8. M. Ziaratban, K. Faez, F. Bagheri, FHT: An Unconstraint Farsi Handwritten Text Database, ICDAR 2009, Catalonia, Spain, July 26-29, pp. 281-285, 2009.
9. M. Ziaratban, K. Faez, A Novel Two-Stage Algorithm for Baseline Estimation and Correction in Farsi and Arabic Handwritten Text lines, 19th International Conference on Pattern Recognition, ICPR, 2008, Tampa Convention Center, Tampa, FL, USA, pp. 1-5, 2008.
10. M. Ziaratban, K. Faez, F. Allahveiradi, Novel Statistical Description for the Structure of Isolated Farsi/Arabic Handwritten Characters, ICFHR 2008, Montréal, Québec, Canada, 2008.
11. M. Ziaratban, S. Kasaei, F. Bagheri, A New Video Compression Algorithm without Sending the Difference Frame, CSICC 2008, Sharif University of Technology, Kish Island, Iran, March 2008.
12. F. Faradji, A.H. Rezaie, M. Ziaratban, A Morphological-Based License Plate Location, in 14th IEEE International Conference on Image Processing (ICIP), September 2007, San Antonio, Texas, USA.
13. M. Ziaratban, K. Faez, M. Ezoji, Use of Legal Amount to Confirm or Correct the Courtesy Amount on Farsi Bank Checks, in 9th International Conference on Document Analysis and Recognition (ICDAR), September 2007, Parana, Brazil.
14. M. Ziaratban, K. Faez, F. Faradji, Language-Based Feature Extraction Using Template Matching In Farsi/Arabic Handwritten Numeral Recognition, in 9th International Conference on Document Analysis and Recognition (ICDAR), September 2007, Parana, Brazil.
15. M. Ziaratban, R. Safabakhsh, M. Ezoji, A Fast Approach to Prune NN-MLP's Hidden Layer in Farsi Handwriting Digit Recognition, CSICC 2007, Shahid Beheshti University, Iran, Feb 2007, pp. 2028-2033.
16. M. Ziaratban, M.H. Moradi, M. Ezoji, Improving the Performance of Fuzzy classifier Systems Using Membership Functions Learning and Rule Pruning for the Application of Farsi Handwritten Numeral Recognition, MVIP 2007, Ferdowsi University of Mashhad, Iran, Feb 2007.
17. S. Mozaffari, K. Faez, F. Faradji, M. Ziaratban, S.M. Golzan, A Comprehensive Isolated Farsi/Arabic Character Database for Handwritten OCR Research, Proceedings of IWFHR 2006, Paris, France, Oct. 23-26, 2006.

18. S. Mozaffari, K. Faez, H. R. Kanan, M. Ziaratban, Character Recognition Using Fractal Representation and Iterated Function System, Conference of Fractals in Engineering V, June 22-24, 2005, Tours, France.

19. S. Mozaffari, K. Faez, M. Ziaratban, Character Representation and Recognition Using Quad-tree Based Fractal Encoding Scheme, Proceedings of ICDAR 2005, Seoul, Korea, Aug. 28- Sept 1, 2005, Vol. 2, pp.819-823.

20. S. Mozaffari, K. Faez, M. Ziaratban, Structural Decomposition and Statistical Description of Farsi/Arabic Handwritten Numeric Characters, Proceedings of ICDAR 2005, Seoul, Korea, Aug. 28- Sept 1, 2005, Vol.1, pp. 237-241.

21. M. Ezoji, K. Faez, M. Ziaratban, S. Mozaffari, GA-Based Affine PPM Using Matrix Polar Decomposition, Proceedings of MVA2005 IAPR Conference on Machine Vision Application, Tsukuba Science City, Japan, May 16-18 2005.

22. S. Mozaffari, K. Faez, M. Ziaratban, A Hybrid Structural/Statistical Classifier for Handwritten Farsi/Arabic Numeral Recognition, Proceedings of MVA2005 IAPR Conference on Machine Vision Application, Tsukuba Science City, Japan, May 2005.

23. S. Mozaffari, K. Faez, H. R. Kanan, M. Ziaratban, Farsi/Arabic Handwritten Digit Recognition Using Fractal, Wavelet Nearest Neighbor Classifiers and Eigen image Method, Proceeding of First ICMSAO 2005, Sharjah, Feb, 2005.

24. M. Ziaratban, K. Faez, M. Ezoji, Proposing a New Structural Method Based on Smoothed Segmented Image for Recognition of Farsi/Arabic Handwritten Numerals, Proceedings of MVIP2005, Tehran, Iran, University of Tehran, Feb. 2005, pp. 76-82.