Mojtaba Nafez

Email | Scholar | LinkedIn | Website

Research Interests

Explainable and Responsible Machine Learning | Computer Vision | Natural Language Processing
Trustworthiness and Reliability in AI | Out-of-Distribution Detection | Self-Supervised Learning

Education

Sharif University of Technology (Iran's #1 University) — Iran, Tehran
M.Sc. in Computer Engineering / Software Engineering — *Aug. 2022 – Present*

- GPA: 3.86/4.00 (18.86/20)
- Thesis: Robust anomaly detection through from-scratch training under adversarial attacks
- Advisor: Prof. Mohammad Hossein Rohban

Iran University of Science & Technology (Iran's #3 University) — Iran, Tehran
B.Sc. in Computer Engineering — *Sep. 2017 – Feb 2022*

- GPA: 3.84/4 (18.37/20), Ranked 3rd among 105 students
- Ranked among the top 5% of students
- Thesis: Weakly-supervised defect detection using deep neural networks
- Advisor: Prof. Mohammad Reza Mohammadi

Publications

- Visit my Google Scholar Profile for the latest status of my publications.

- **Universal Novelty Detection Through Adaptive Contrastive Learning** — Accepted
  *H. Mirzaei, **M. Nafez**, M. Jafari, M. Soltani, M. Aziz, J. Habibi, M. Sabokrou, M. Rohban*
  CVPR 2024 (Link)
- **Scanning Trojaned Models Using Out-of-Distribution Samples** — Accepted
  *H. Mirzaei, A. Ansari, B. Dibaei, **M. Nafez**, M. Madadi, S. Rezaee, Z. Taghavi, A. Maleki, K. Shamsaie, Hajialilue, J. Habibi, M. Sabokrou, M. Rohban*
  NeurIPS 2024 (Link)
- **Adversarially Robust Anomaly Detection through Spurious Negative Pair Mitigation** — Submitted
  M. Nafez, H. Mirzaei*, J. Habibi, M. Sabokrou, M. Rohban*
  ICLR 2025 (Link)
- **A Contrastive Teacher-Student Framework for Novelty Detection under Style Shifts** — Submitted
  *H. Mirzaei, **M. Nafez**, M. Madadi, A. Maleki, M. Hajialilue, Z. Taghavi, S. Rezaee, A. Ansari, B. Dibaei, K. Shamsaie, M. Salehi, J. Habibi, M. W Mathis, M. Soleymani, M. Sabokrou, M. Rohban*
  ICLR 2025 (Link)
- **PatchGuard: Adversarially Robust Anomaly Detection and Localization through Vision Transformers and Pseudo Anomalies** — Submitted
  ***M. Nafez**, A. Koochakian, J. Habibi, M. Rohban*
  CVPR 2025 (Link)
- **Unsupervised Out-of-Distribution Detection: From Low to High Inlier Variation** — Under Preparation
  *H. Mirzaei, **M. Nafez**, M. Jafari, M. Soltani, J. Habibi, M. Sabokrou, M. Rohban*
  ICML 2025 (Link)

Experience

Research Assistant — Oct 2022 – Present
RIML Lab, Sharif University of Technology — *Iran, Tehran*

- Machine Learning, Computer Vision, Deep Learning, Explainable and Responsible AI, Anomaly Detection, Adversarial Robustness, Out of Distribution Detection, Contrastive Learning
- Conducted research under the supervision of Prof. Rohban, and in collaboration with Prof. Solaymani and Prof. Sabokrou

- Contributed to research papers submitted to CVPR2024, NeurIP2024, and ICLR2025, highlighting the lab's interdisciplinary research activities
- Gained valuable experience in research, mentorship, collaboration, and teamwork while significantly enhancing technical skills and expanding expertise in deep learning

Teaching Assistant Sep 2019 – Present

Sharif University of Technology - Iran University of Science & Technology *Iran, Tehran*

- Deep Learning(By Prof. Hamid Beigy), Deep Learning(By Prof. MohammadReza Mohammadi), Head of Artificial Intelligent(By Prof. MohammadHossein Rohban), Head of Artificial Intelligent(By Prof. Behrouz Minaei), Fundamental Programming(By Prof. Zeinab movahedi), Compiler Design(By Prof. Saeed Parsa), Operating System(By Prof. Reza Entezari-Maleki)
- Led and managed a team of over 40 teaching assistants (Link)
- Designing homework, grading, and mentoring

Machine Learning Internship Jul 2021 – Jan 2022

AIMedic *Iran, Tehran*

- Explored and developed deep learning-based 2D and 3D semantic segmentation methods using PyTorch and Keras
- Developed an MRI brain tumor 3D segmentation system
- Developed a cell segmentation system and a semantic segmentation-based skull stripping method

Undergraduate Research Assistant Jul 2021 – May 2022

CVLab IUST, Iran University of Science & Technology *Iran, Tehran*

- Researched and developed a tile surface defect detection system using a weakly-supervised approach with the Keras library
- Conducted research under the supervision of Prof. Mohammad Reza Mohammadi

Highlighted Courses

Deep Learning (19.7/20), Computer Vision (20.0/20), Data Mining (20.0/20), Natural Language Processing (19.8/20), Computational Intelligence (19/20), Artificial intelligence (19.11/20), Digital Signal Processing (19.25/20), Operating System (20.0/20), Data Structures (20/20), Advanced Programming (19.5/20), Software Engineer 1(20.0/20), Wireless Networks (20.0/20), Internet of Things (20.0/20), Compiler Design (19.0/20), Algorithm on Graph Coursera (Audited), Algorithm on String Coursera (Audited)

Highlighted Projects

A persian poem recommendation system based on a Persian/English text/image

NLP Course

- Pytorch, CLIP, Language Models, Contrastive Learning
- Image-text retrieval, text-text retrieval

Pargar: A Consultants Online Platform

Software Engineer Course

- Software Engineering, Backend, Django, Nginx, Docker, Socket Programming

Cell segmentation system and a semantic segmentation

AIMedic Internship (Course Final Project)

- Keras, Semantic Segmentation Models, Deep Learning,

Skills

Programming Languages: Python, Java, C/C++, LATEX
Machine Learning Tools: PyTorch, TensorFlow, Keras, OpenCV, NumPy, Pandas, Scikit
Frameworks & Developer Tools: Linux, Django, Docker, VS Code, Git, ReactJS
Languages: English (Fluent), Persian (Native)

References

Prof. Mohammad Hossein Rohban: rohban@sharif.edu

Prof. Mohammad Sabokrou: mohammad.sabokrou@oist.jp

Prof. Mohammad Reza Mohammadi: mrmohammadi@iust.ac.ir