

Mohammad R. Naderi Boldaji

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Education

IUT(Isfahan University of Technology)

Isfahan, Iran

M.Sc. IN SYSTEMS TELECOMMUNICATIONS, ELECTRICAL ENGINEERING

Sep. 2019 - Sep. 2022

- **GPA:** 17.14/20 (3.80/4)
- Thesis Topic: Generative Adversarial Networks and Their Applications to Various Computer Vision and Medical Image Analysis Tasks
(Thesis Grade: 20 / 20) **Supervisor:** Prof. Shadrokh Samavi at IUT, McMaster and Seattle Universities

Sutech(Shiraz University of Technology)

Shiraz, Iran

B.Sc. IN ELECTRICAL ENGINEERING

Sep. 2015 - Sep. 2019

- **GPA:** 18.81/ 20 (4/4)
- Thesis Topic: Simulating Mathematical Methods for Medical Image Segmentation
(Thesis Grade: 20 / 20) **Supervisor:** Prof. Sadegh Helfroush at Sutech

Publications

Conference Papers

1. Focal-UNet: UNet-like Focal Modulation for Medical Image Segmentation

Mohammad Reza Naderi[†], MohammadHossain Givkashi[†], Fatemeh Piri, Nader Karimi, Shadrokh Samavi

Published in IEEE World AI IoT Congress (Allot) 2025 (GitHub)

Journal Papers

1. SFI-Swin: symmetric face inpainting with swin transformer by distinctly learning face components distributions

Mohammad Reza Naderi[†], MohammadHossain Givkashi[†], Nader Karimi, Shahram Shirani, Shadrokh Samavi

Published in Multimedia Tools and Applications 2024 (Paper)

2. Supervised deep learning for content-aware image retargeting with Fourier Convolutions

MohammadHossain Givkashi, Mohammad Reza Naderi, Nader Karimi, Shahram Shirani, Shadrokh Samavi

Published in Multimedia Tools and Applications 2024 (Paper)

3. Aesthetic-aware image retargeting based on foreground-background separation and PSO optimization

Mohammad Reza Naderi, MohammadHossain Givkashi, Nader Karimi, Shahram Shirani, Shadrokh Samavi

Published in Multimedia Tools and Applications 2024 (Paper)

4. Dynamic-Pix2Pix: Medical image segmentation by injecting noise to cGAN for modeling input and target domain joint distributions with limited training data

Mohammad Reza Naderi, MohammadHossain Givkashi, Nader Karimi, Ali Emami, Shahram Shirani, Shadrokh Samavi

Published in Biomedical Signal Processing and Control 2023 (Paper)

5. Color image segmentation using multi-objective swarm optimizer and multi-level histogram thresholding

Mohammad Reza Naderi, Samaneh Hosseini Semnani

Published in Multimedia Tools and Applications 2022 (Paper)

Pre-print Papers

1. MSGDD-cGAN: Multi-Scale Gradients Dual Discriminator Conditional Generative Adversarial Network

Mohammad Reza Naderi, Zahra Nabizadeh, Nader Karimi, Shahram Shirani, Shadrokh Samavi

Published on arXiv preprint: arXiv:2109.05614 (Paper)

Research Interests

- Computer Vision
- Deep Learning
- Machine Learning
- Computer Graphics
- Medical Image Analysis
- Diffusion Models
- Transformers
- Flow Matching

[†] EQUAL CONTRIBUTION

Honors & Awards

M.Sc.

- | | | |
|------|---|------------------|
| 2022 | Ranked 3rd , among 20 students who chose System Telecommunications as a subfield | <i>IUT, Iran</i> |
| 2019 | Ranked within the top 1% , among approximately 20,000 participants in the Master's National University Entrance Exam | <i>IUT, Iran</i> |

B.Sc.

- | | | |
|------|--|---------------------|
| 2019 | Honored , as the university's top student for outstanding academic performance and exemplary ethics | <i>Sutech, Iran</i> |
| 2019 | Ranked 1st , among 40 students who chose Electrical Engineering as a field | <i>Sutech, Iran</i> |
| 2015 | Ranked within the top 1% , among approximately 150,000 participants in the Bachelor's National University Entrance Exam | <i>Sutech, Iran</i> |

Skills

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|--------------------|--|
| Programming | Python, MATLAB, C/C++ (Cuda), Latex, Familiar with HTML, CSS |
| AI Tools | PyTorch, TensorFlow, PyTorch Custom C++ and CUDA Extensions |
| Libraries | OpenCV, NPM (NumPy-Pandas-Matplotlib), MMCV, etc. |
| Tools | Linux, Git |

Research Experience

Remote Research Collaborator

Toronto, Canada

UNIVERSITY OF TORONTO

Mar. 2025 - Current

- We are working on conditioning techniques to improve Conditional Diffusion Models.

Research Assistant

Isfahan, Iran

HADIP LAB, ISFAHAN UNIVERSITY OF TECHNOLOGY

2020 - 2022

- **Supervisor:** Prof. Shadrokh Samavi
- Worked on Generative Adversarial Networks and their applications to various image processing tasks such as image inpainting, retargeting, segmentation, domain adaptation and generalization

Teaching Experience

Assistant Instructor

IUT, Iran

COMPUTER PROGRAMMING

2020

Assistant Instructor

Sutech, Iran

SIGNAL AND SYSTEMS

2015

Working Experience

Co-Founder and Vice President Engineering

Isfahan Iran

KANZOVA CONSTRUCTION, ISFAHAN, IRAN

2022-current

- Spearhead the application of AI technologies to revolutionize interior and exterior design for apartments and café-restaurants, ensuring innovative, functional, and aesthetically appealing results

Languages

English IELTS Academic Score: 7.5
Persian Native

References

Professor Shadrokh Samavi	<i>Isfahan, Iran</i>
ISFAHAN UNIVERSITY OF TECHNOLOGY, SEATTLE AND MCMASTER UNIVERSITIES	<i>samavi96@iut.ac.ir</i>
Professor Mohammad Reza Ahmadzadeh	<i>Isfahan, Iran</i>
ISFAHAN UNIVERSITY OF TECHNOLOGY	<i>ahmadzadeh@iut.ac.ir</i>