FARHAD HOSEYNI

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EDUCATION

- **Master's Degree: Robotics: Algorithms & Software AI** Sept. 2025
  UT. *University of Twente* *Enschede-Netherlands*
- **Bachelor's Degree: Electrical and Control Engineering** Sept. 2019 – Sept. 2024
  K. N. Toosi University of Technology *Tehran-IRAN*
  - Thesis: Developing AI-assisted Software for the Classification and Segmentation of intracerebral hemorrhage.
  - Advisor & Supervisor: Dr. Amirhossein Nikoofard & Dr. Mahdi Aliyari-Shoorehdeli
    GPA: 18.33/20
    Ranked 6th among 135 electrical engineering students in the Entrance
    Ranked 3rd among 33 control engineering students in the Entrance

- **Minor's Degree: Computer Engineering** Sept. 2019 – Sept. 2024
  K. N. Toosi University of Technology *Tehran-IRAN*

RESEARCH INTERESTS

- Artificial Intelligence
- Computer Vision
- Robotics
- Control Theory
- Embedded Systems
- Biomedical Engineering

EXPERIENCES

- **SmarTeeth Startup** | **Smartory Startup** Mar. 2023 – Sep. 2025
  AI & Computer Vision Engineer
  - A comprehensive dataset for dental diagnosis was created by gathering data and obtaining annotations from multiple dentists.
  - Collaboration was managed across cross-functional teams, including AI engineers, medical teams, DevOps, and marketing.
  - An AI-powered assistant for dentists was developed to perform classification, detection, and segmentation on diverse radiographic images, enabling the precise identification of features and abnormalities.
  - Interns were trained and mentored as part of the computer vision engineering team.
  - A novel framework for data augmentation was designed, implemented, and subsequently published.
  - Multi-stage deep learning algorithms with unique pre- and post-processing techniques were developed to enhance model accuracy and performance.
  - A large language model was integrated to automatically generate comprehensive reports based on analytical findings.
  - The project resulted in the delivery of a web-based AI-assistant application and two scientific publications.

- **APAC AI & Control** | **Rasul Akram Hospital** Jun. 2022 – Present
  Technical Manager & Computer Vision Engineer
  - Development was led for an AI-powered software designed to classify, detect, segment, and quantify hemorrhagic lesions in CT scan images.
  - A multi-disciplinary team of engineers and medical experts was managed, data was collected, and standardized approaches for medical annotation were established.
  - The medical team was supervised to ensure high-quality and accurate data labeling throughout the project.
  - Statistical data characteristics were analyzed to identify differences between existing datasets and provide insights influenced by the local population.
  - Explainable AI solutions are being developed to model a specialist's diagnostic approach and provide clinical insights.
  - Project outcomes included MVP models, a web application for annotation, multiple academic papers, and presentations at medical congresses.

- **Mechatronics and Biomechatronics Lab** Apr. 2022 – Oct. 2022

  - Internship in the mechatronics lab at K.N.Toosi.
  - Data gathering with EOG headband and pre-processing of signals for measuring the cognitive load of different visual tasks.

More information on My Personal Website (click here).

SELECTED PUBLICATIONS

"Hemorica: A Comprehensive CT Scan Dataset For Automated Brain Hemorrhage Classification, Segmentation, And Detection" Pre-print
"Benchmarking Class Activation Map Methods for Explainable Brain Hemorrhage Classification on Hemorica Dataset" Under Review
"Comprehensive Hyperparameter Tuning to Enhance Deep Learning Performance for Intracranial Hemorrhage Classification in Head CT Scans", Jan. 2025 9th International Iranian Conference on Biomedical Engineering (ICBME)
"AugmenTory: A Fast and Flexible Polygon Augmentation Library", May. 2024 arXiv
"Advanced Deep Learning-Based Approach for Tooth Detection, and Dental Cavity and Restoration Segmentation in X-Ray Images" , Dec. 2023 11th RSI International Conference on Robotics and Mechatronics (ICRoM)

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SELECTED PROJECTS

- Annual competition of artificial intelligence for classification of the abnormal brain in MRI radiography IAAA Organization

- programming Kolmogorov-Arnold Networks (KAN) and perform a comprehensive grid search on Mnist, Cifar10 and Physionet-ICH datasets K. N. Toosi University of Technology

- Fault Detection in an Industrial Valve Using the DAMADICS Dataset and Machine Learning-Based Methods K. N. Toosi University of Technology

- Fault Detection in Industrial Motor Bearings Using the CWRU Bearing Dataset and Machine Learning Methods K. N. Toosi University of Technology

- Detection of Iranian Traditional Music Styles Using Machine Learning-Based Methods K. N. Toosi University of Technology
- Programming an Arduino and max-30100 pulse-oximeter module to measure blood oxygen and heart rate K. N. Toosi University of Technology
- Simulation of a suspension system and control it with a PID K. N. Toosi University of Technology
- Program a communication protocol to perform synchronized data transmission between two microcontroller K. N. Toosi University of Technology
- Designing an analog small signal amplifier K. N. Toosi University of Technology

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ACADEMIC EXPERIENCES

Teaching Assistant:

- Linear Control theory, Dr. Amirhossein Nikoofard — Winter - 2025
- Head TA of Advanced Programming with Python, Dr. Hossein Yektamoghadam — Fall - 2024
- Instrumentation Lab, Dr. Hossein Yektamoghadam — Fall - 2024
- Design and Analyse Digital Systems 1, Dr. Mehdi Delrobaei — Winter - 2023
- Numerical Calculations, Dr. Amirhossein Nikoofard — Winter - 2023
- Linear Control theory, Dr. Amirhossein Nikoofard — Fall - 2023

Workshop:

- Revolutionizing Engineering and Robotics with YOLO, IEEE workshop series — Feb. - 2025
- AI-Driven Vision Transforming Telecoms and Autonomous Systems, 11th International Symposium on Telecommunication — Oct - 2024
- Explanation and elaboration of the achievements and applications of artificial intelligence in diagnosing intracranial hemorrhage at the seminar on applications of artificial intelligence and robotics in medicine, Tehran University of Medical Sciences — Aug. - 2024
- Presentation About Advancements and Applications of Artificial Intelligence in Dental Diagnosis: Innovations in Radiographic Analysis and Clinical Decision Support, EXCIDA International Congress of Dental Association — May. - 2024

SKILLS

Programming/Scripting

- Python
  - PyTorch/CUDA
  - Tensorflow
  - Sklearn
  - OpenCV
  - Pandas
  - NumPy
  - Seaborn
- C/C++
- Java/MATLAB
- SQL
- LaTeX
- Linux

Domain Knowledge

- AI & Computer Vision
- Deep Learning
- Machine Learning
- Data Science
- Natural Language Processing (NLP)
- Mechatronics
- Instrumentation
- Control Engineering

More information on My LinkedIn Page (click here).

Certificates

- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization Coursera
- Neural Networks and Deep Learning Coursera
- SQL Intermediate SoloLearn
- Participation in the First IEEE Student Ethics Competition (SEC) IEEE

Language Certificate

- **overall score of 104**
  - Reading: 25
  - Listening: 29
  - Speaking: 24
  - Writing: 26

Voluntary

- Active Member of Iranian Scientific Association of Electrical Engineering K. N. Toosi
- Active Member of Scientific Association of Literature K. N. Toosi
- Executive Committee in The 6th International Conference on Millimeter-Wave and Terahertz Technologies (MMWaTT) IEEE

SELECTED COURSE

Graduate

- Machine Learning
- Biomechatronic Systems

Undergraduate

- Artificial Intelligence
- Fundamental of Mechatronics
- Advance Computer Programming
- Linear Algebra
- Linear Control Systems
- Modern Control

References

- Dr. Amirhossein Nikoofard
  Google Scholar | LinkedIn | Email | Gmail | Personal Webpage
- Dr. Mahdi Aliyari-Shoorehdeli
  Google Scholar | LinkedIn | Email | Gmail | Personal Webpage
- Dr. Mehdi Delrobaei
  Google Scholar | LinkedIn | Email | Gmail | Personal Webpage
- Dr. Mohammad Javad Ahmadi
  Google Scholar | LinkedIn | Email | Gmail | Personal Webpage

References, Further information, and Proofs are available upon Request.