

# Mohammad Javad Ahmadi





Ph.D. Candidate, AI & Software Engineer

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## HIGHLIGHTS

- Head of ARAS AI, VR, and Software Group, focusing on advancing surgical education, improving patient outcomes, analyzing surgeries, and medical image diagnosis.
- Chief Technology Officer (CTO) at MediversAI, leading AI development and managing end-to-end software solutions for advanced medical applications.
- AI and data engineer with 5+ years of experience in developing and deploying deep learning pipelines.
- Expertise in computer vision and data analysis with extensive research and practical experience.
- Led technical client engagements, presenting AI-based products and exploratory data analysis results.
- Team-player with strong communication and leadership skills.
- Mentor to AI Developers to help with their career goals with 4+ years of teaching experience in Python, Machine Learning, Deep Learning, Computer Vision, AI in Robotics, etc.

## EDUCATION

- **Ph.D. Candidate: Electrical and Control Engineering** Sep., 2022–Present  
 *K. N. Toosi University of Technology* GPA: 4/4 (20/20)
  - Thesis: Design and Implementation of an AI-Powered System for Phase Recognition and Skill Assessment in Cataract Surgery Videos.
  - Supervisor: Prof. Hamid D. Taghirad
- **Master's Degree: Electrical and Control Engineering** 2019–2022  
 *K. N. Toosi University of Technology* GPA: 4/4
  - Thesis: Development and implementation of eye surgery skill assessment techniques with emphasis on video data and its feedback.
  - Supervisor: Prof. Hamid D. Taghirad
- **Bachelor's Degree: Electrical and Control Engineering** 2015–2019  
 *Amirkabir University of Technology* GPA: 3.7/4
  - Thesis: Design and Implementation of an indoor positioning system for a four-wheeled robot.
  - Advisor & Supervisor: Dr. Mohammad A. Khosravi & Dr. Hajar Atrianfar
- **Diploma's Degree: Mathematics and Physics** 2011–2015  
 *National Organization for Development of Exceptional Talents (Sampad)* GPA: 4/4 (20/20)

## SKILLS

### Programming/Scripting

- Python/OpenCV
  - PyTorch/CUDA
  - Tensorflow/Sklearn
- C/C++/MATLAB
  - Django & SQL
  - Qt & Flutter

### Domain Knowledge




































- AI & Data Science
- Computer Vision & NLP
- Machine/Deep Learning
- Software Development
- Backend Frameworks
- Robotics & Control

 More information on My LinkedIn Page (click here).

## WORK EXPERIENCES








-  ARAS AI & VR |  Farabi Eye Hospital 2019–Present  
Head of ARAS AI, VR, and Software Group. 5+ years in development and deployment of AI & Robotics products (Computer Vision Engineer & Robotacist)
-  MediversAI 2023–Present  
Chief Technology Officer (CTO), AI Specialist & Software Development Manager.
-  SmarTeeth Startup |  Smartory Startup 2023–Present  
Technical Lead (AI, Computer Vision & Software Development)
-  Robotics Society of Iran (RSI) |  ICRoM & IEEE Conferences 2019–Present  
Information Technology Committee Chair, Publication, & Student Committee Member


## ACADEMIC EXPERIENCES

- Teaching Assistant:
  -  Machine Learning, Dr. Mahdi Aliyari-Shoorehdeli Spring 2025 ()
  -  AI, Dr. Mahdi Aliyari-Shoorehdeli Spring 2025 ()
  -  Linear Control, Prof. Hamid D. Taghirad Fall 2024 ()
  -  Deep Learning, Dr. Mahdi Aliyari-Shoorehdeli Fall 2024 ()
  -  Fundamental of Intellogent Systems, Dr. Mahdi Aliyari-Shoorehdeli Fall 2024 ()
  -  Modern Control, Prof. Hamid D. Taghirad Spring 2024 ()
  -  AI in Robotics, Dr. Iman Sharifi Spring 2024 ()
  -  Machine Learning, Dr. Mahdi Aliyari-Shoorehdeli Spring 2024 ()
  -  Machine Learning, Dr. Mahdi Aliyari-Shoorehdeli Fall 2023 ()
  -  Fundamental of Intellogent Systems, Dr. Mahdi Aliyari-Shoorehdeli Fall 2023 ()
  -  Fault Detection and Diagnosis, Dr. Mahdi Aliyari-Shoorehdeli Spring 2023 ()
  -  Industrial Control, Prof. Hamid D. Taghirad Spring 2023 ()
  -  Robotics, Prof. Hamid D. Taghirad Spring 2022 ()
- Reviewer:
  -  IEEE Transactions on Control Systems Technology 2023 – Present
  -  IEEE Transactions on Medical Robotics and Bionics 2023 – Present
  -  Journal of the American Medical Association (JAMA) 2024 – Present
  -  Journal Of Control 2023 – Present
  -  International Conference on Robotics and Mechatronics 2022 – Present
- Books:
  -  Contributing to the development of educational content related to the An Introduction to Robotics Book by Prof. Hamid D. Taghirad & Dr. MohammadAzam Khosravi. 2023
  -  Contributing to the development of educational content related to the Fundamentals of Robotics Book by Prof. Hamid D. Taghirad. 2024
- Research Grants:
  -  Joint grant of INSF (#4002766) and NIMAD (#4001190) funding agencies. 2022
    - Title: AI-based surgical skill assessment of capsulorhexis surgery by development of a comprehensive video dataset.
  -  Grant of the National Center for Strategic Research in Medical Education (#4010324). 2024
    - Title: Augmented reality surgical capsulorhexis simulator.

## SELECTED PROJECTS













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-  Surgicise AI-Powered Software for Surgical Video Analysis and Skill Assessment
-  SmarTeeth AI-Powered Software
-  ARAS Surgical Analysis Software & Video-Guided Surgery System
-  Video Understanding: Surgical Analysis, Skill Assessment and Transfer
-  Computer-Aided Detection and Diagnosis in Medical Imaging
-  Smart Surgical Training: Phantom, Gamification, and VR/MR approaches
-  Selected Deep Learning Projects  
Image Captioning, Estimating Cryptocurrency Prices, Extractive Question Answering System, Intent Classification, Object Detection and Counting, Medical Imaging, Analysis of Satellite Images.

 [More information on My GitHub Page \(click here\).](#)

## SELECTED PUBLICATIONS

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-  Resilient Consensus in Double-Integrator Systems with Switching Networks Facing Smart Attacks, 2019.
-  ARAS-Farabi Experimental Framework for Skill Assessment in Capsulorhexis Surgery, 2021.
-  Adaptive Robust Impedance Control of Haptic Systems for Skill Transfer, 2021.
-  Closed-form Inverse kinematics Equations of a Robotic Finger Mechanism, 2021.
-  An Observer-Based Responsive Variable Impedance Control for Dual-User Haptic Training System, 2022.
-  Surgical Instrument Tracking for Capsulorhexis Eye Surgery Based on Siamese Networks, 2022.
-  Video-based Surgical Skill Assessment using Tree-based Gaussian Process Classifier, 2023.
-  Advanced Deep Learning-Based Approach for Tooth Detection, and Dental Cavity and Restoration Segmentation in X-Ray Images, 2023.
-  AI-Driven Keratoconus Detection: Integrating Medical Insights for Enhanced Diagnosis, 2023.
-  Toward Keratoconus Diagnosis: Dataset Creation and AI Network Examination, 2023.
-  Image Processing and Machine Vision in Surgery and Its Training, 2023.
-  AugmenTory: A Fast and Flexible Polygon Augmentation Library, 2024.

 [More information on Google Scholar \(click here\).](#)

## HONORS

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- Recognized as a Top 5% Peer Reviewer for JAMA Network Open in 2024 [Winter 2024].
- First-Place Selection by the Faculty of Electrical and Computer Engineering for PhD Project [Winter 2024].
- Ranked 9<sup>th</sup> (National (IRAN) Rank) in the Entrance Exam for PhD Admission in Control Engineering [Summer 2022].
- Ranked 1<sup>st</sup> in The 6th festival of selected seminars in electrical and computer engineering [Feb. 2021].
- Among the top 10 projects in the Bachelor's degree program at Amirkabir University of Technology [Summer 2019].
- Ranked among Top 0.1% in Iran's National University Entrance Exam (over 180,000 participants) [Summer 2015].

## LANGUAGE SKILLS

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- Persian Native
- English Fluent
  - MSRT Score: 80/100

## Certificates

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-  Structuring Machine Learning Projects
-  Neural Networks and Deep Learning

 [More information on My Personal Website \(click here\).](#)












## SELECTED COURSE GRADES

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### Graduate

-  Deep Learning: 20.0/20
-  Soft Computing: 20.0/20
-  Model Predictive Control: 20.0/20
-  Bio-Mechatronic Systems: 20.0/20
-  Parallel Robots: 19.5/20
-  Advanced Robotics: 18.0/20
-  Optimal Control: 19.5/20
-  Large-Scale Systems: 19.0/20
-  Nonlinear Control Systems: 18.5/20
-  Fault Detection and Diagnosis: 18.5/20
-  Industrial Internet of Things (IIoT): 18.5/20

### Undergraduate

-  Instrumentation: 20.0/20
-  Linear Algebra: 20.0/20
-  Modern Control: 19.5/20
-  Numerical Analysis: 19.5/20
-  Computational Intelligence: 19.0/20
-  Industrial Control: 18.0/20
-  Linear Control Systems: 18.0/20
-  Electronic (III): 20.0/20
-  Logic Circuits: 18.5/20
-  Power Systems Analysis: 19.0/20
-  Electrical Machines: 18.0/20

## SHORT BIOGRAPHY

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Mohammad Javad Ahmadi was born in 1996 in Sari near the Caspian Sea in northern Iran. He graduated from NODET in 2015 with a Diploma GPA of 4/4 (20/20). He received his B.Sc. in Electrical & Control Engineering from Amirkabir University of Technology (Tehran Polytechnic) in 2019 with a GPA of 3.7/4. Since 2019, he has been part of ARAS under the supervision of Prof. Hamid D. Taghirad and completed his M.Sc. with a GPA of 4/4. He is currently pursuing his Ph.D. in this group with a GPA of 4/4 (20/20). In parallel with his academic work, he serves as CTO at MediversAI & SmarTeeth, focusing on AI applications in medical imaging and videos, and also leads the ARAS AI, VR, and Software Group. Robotics, Artificial Intelligence, and Computer Vision are his principal research interests.

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