

# Hamid Osooli

## CURRICULUM VITAE

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### Education

- 2021–2026 **Ph. D**, *Computer Science*, Robotics, Reinforcement Learning, University of Massachusetts Lowell  
Courses: **Introduction to Algorithms, Reinforcement Learning, Fundamentals of Robotics, Human Robot Interaction**
- 2017–2019 **M. Sc.**, *Aerospace Engineering*, Flight Dynamics and Control, K. N. Toosi University of Technology  
Thesis: **An integrated control algorithm for camera and flying object movement on the basis of Game Theory**, Advisor: Prof. J. Roshanian  
Courses: **Advanced Control, Optimal Control, Nonlinear Control, Game theory, Dynamic systems modeling**
- 2013–2016 **B. Sc.**, *Mechanical Engineering*, Solid Mechanics, University of Kashan  
Thesis: **Making a Robot Inspired by the Human Eye**, Advisor: Dr. M. Irani rahaghi  
Courses: **Automatic Control and lab, Robotics and lab, Dynamic systems simulation and control**
- 2011–2013 **B. Sc.**, *Information Technology Engineering*, Isfahan University of Technology  
After four semesters I changed my major and university (no degrees earned)  
Courses: **Computer programming and lab, Advanced programming and lab, Digital design and lab**

### Experience

#### Research

- Aug 2021 **Graduate Research Assistant**, Dr. R. Ahmadzadeh, Computer Science Department,  
Present University of Massachusetts Lowell, Lowell, MA, United States  
**DEVCOM Army Research Lab: Strengthening Teamwork for Robust Operations in Novel Groups (STRONG)**  
Tasks: *Work in the "Trust-NEARCHAT: Trust Network Emergence Amongst Resource-Constrained Human-Agent Teams, Conducting research related to the main subject of the project; Collaborating with other groups of students and faculty in the project; Performing experiments analyzing data, and reporting results; Preparing weekly progress report; Reading and writing papers; Assisting with other lab tasks as needed*  
**Implemented the following Reinforcement learning algorithms:** Sample-Average Algorithm, Gradient Bandit algorithm, Value Iteration Algorithm, First-visit Monte Carlo prediction, off-policy Monte Carlo control with weighted importance sampling, Episodic Semi-gradient SARSA, Episodic Semi-gradient, n-step SARSA, Q-Learning, Double Q-Learning, REINFORCE, REINFORCE with Baseline, One-step Actor Critic, Actor Critic with Eligibility Traces, Distributed Q-learning

- Dec 2019 **Senior Research Fellow**, Dr. M. Ravandi, Mechanical Engineering Department, K. N. Toosi University of Technology, Tehran, Iran
- Mar 2020 **A feasibility study on methods regarding inspection of subsea assets, in order to make a Remotely Operated Vehicle (ROV) similar to Halfwave ARTEMIS**  
Tasks: *Doing research on relevant methods, Writing technical reports, Designing a CAD model for concrete coated pipes, Making a test specimen of the pipes*
- Nov 2018 **Researcher**, Dr. A. H. Nikoofard, Electrical Engineering Department, K. N. Toosi University of Technology, Tehran, Iran
- Dec 2019 **Hardware implementation of Game theory on Eye Robot movements**  
Tasks: *Devising Game theoretical control algorithms for Eye Robot, Coding the methods in MATLAB, Implementation of algorithms on Eye Robot, Presentation of the work in scientific papers*
- Sep 2018 **M. Sc. Thesis**, Prof. J. Roshanian, Aerospace Engineering Department, K. N. Toosi University of Technology, Tehran, Iran
- Jul 2019 **An integrated control algorithm for camera and flying object movement on the basis of Game theory**  
Tasks: *Devising Game theoretical control algorithms to control flying object and the mounted camera simultaneously, Simulating the methods in MATLAB, Presentation of the work in scientific papers, Providing a defence presentation*
- Jan 2018 **M. Sc. Seminar**, Prof. J. Roshanian, Aerospace Engineering Department, K. N. Toosi University of Technology, Tehran, Iran
- Jul 2018 **Applications of Game theory in Aerospace Problems**  
Tasks: *Doing research on relevant methods, Writing a report, Providing a defence presentation*
- Jun 2016 **Researcher**, Dr. M. Irani rahaghi, Robotics Laboratory, Mechanical Engineering Department, University of Kashan, Kashan, Isfahan, Iran
- Sep 2017 **Programming and control of Eye Robot**  
Tasks: *Coding the control methods in MATLAB, Presentation of the work in scientific papers*
- Sep 2015 **B.Sc. Final Project**, Dr. M. Irani rahaghi, Mechanical Engineering Department, University of Kashan, Kashan, Isfahan, Iran
- Jun 2016 **Making a robot inspired by the human eye**  
Tasks: *Computer aided design of the robot body inspired by the human eye and extra-ocular muscles, 3D printing of the robot, Developing a MATLAB toolbox (XL\_320 Toolbox) for the servomotors to communicate with the controller board via MATLAB, Writing a technical report*
- [Work](#)
- Jul 2020 **Data scientist**, Dr. F. Vesali, PANTOhealth, Berlin, Germany
- Aug 2021 Tasks: *Accelerating simulation codes for the interaction of rail vehicle pantograph and catenary, Developing big data state-space model simulation in MATLAB, Python and C++ and speed comparison, Writing technical reports*
- Mar 2020 **Teaching Assistant (TA)**, Dr. M. Farrokh, Aerospace Engineering Department, K. N. Toosi University of Technology, Tehran, Iran
- Jul 2020 **& Algorithms and Computer Programming in Python**
- Feb 2021 Tasks: *Solving class assignment problems for students, Proof reading the students assignment codes and papers*
- Jul 2021

- Jul 2017 **English Language Teacher**, BSCL, Beinolmelal Specialized Centre of Language,  
 Sep 2017 Kashan, Isfahan, Iran  
 Tasks: *Teaching English language to pre-intermediate and intermediate level students*
- Jul 2016 **Mechanical Engineering Intern**, Prof. A. Ghorbanpour Arani, Copper World  
 Aug 2016 Company, Kashan, Isfahan, Iran  
 Tasks: *Collaboration with staff, Computer aided design of the broken parts, Writing technical reports*
- Jan 2014 **Website Administrator**, Parsa Language School, Kashan, Isfahan, Iran  
 Jan 2016 Tasks: *Design of website by Drupal and students information system by PHP, Customizing the website for the school, Management of the students database*

## Publications

### Journal Articles

- Osooli, H., Nikoofard, A. H., Shirmohammadi, Z., **Releaf: Design and implementation of a humanoid occlusion handling method for Eye robot**, Journal of Ambient Intelligence and Humanized Computing (JAIHC) (Under review)
- Osooli, H., Roshanian, J., Nikoofard, A. H., **Autonomous UAV cinematography by Game theory**, (Under Revision)
- Osooli, H., Irani rahaghi, M., **A Low Cost 3D Printed Humanoid Eye Robot**, (Under Revision)

### Conference Proceedings

- Osooli, H., Nikoofard, A. H., Shirmohammadi, Z., (2019) **Game Theory for Eye Robot Movement: Approach and Hardware Implementation**. In 2019 27th Iranian Conference on Electrical Engineering (ICEE). Yazd: IEEE. <https://doi.org/10.1109/IranianCEE.2019.8786637>
- Osooli, H., Irani rahaghi, M., (2017) **Making a Robot Inspired by the Human Eye (in Persian)** In 2017 25th Annual International Conference on Mechanical Engineering (ISME). Tehran. <https://en.civilica.com/doc/634843/>

## Service

### Peer Review

- **The Journal of Supercomputing**, Springer
- **Mathematical Problems in Engineering**, Hindawi
- **2023 IEEE International Conference on Robotics and Automation**, ICRA 2023
- **The 19th International Conference on Ubiquitous Robots**, UR 2022

## Awards, Honors

- **Robotic Ophtalmotrope (Eye Robot)** was appreciated as a *Praiseworthy Initiative* in Khayyam International Invention and Innovation Festival, May, 2021
- **Ranked 4'th in M.Sc. studies**, 2020
- **XL\_320 Toolbox** earned the Personal Best Downloads Level 1 badge in MATLAB File Exchange, Nov 1, 2019

- **On-time MSc Thesis Defence and Graduation** The first and only defence after 4 semesters, among all 50 Aerospace Engineering students who were admitted in Fall 2017, Aug 1, 2019
- **Graduate Scholarship** Ministry of Science, Research and Technology, Iran, 2017-2019
- **Undergraduate Scholarship** Ministry of Science, Research and Technology, Iran, 2011-2016
- **Khwarizmi award** in the local section, 2008, for the Magnetic Bicycle Idea
- **Ranked 2'nd in the city**, 2006, in Computer Olympia
- **14 medallions** in Taekwondo Kiu-rogi
- **2 medallions** in Taekwondo Poomsae
- **Membership** in Kashan selected Taekwondo players team, 2005-2010

## Certifications

- **Khayyam International Invention/Innovation Festival, May 15, 2021, Certificate of Appreciation and Participation**
- **Responsible Conduct of Research Course**, CITI Program, Dec 2021
- **Social and Behavioral Research**, CITI Program, Dec 2021
- **Computer Vision Basics**, Coursera, taught by Dr. Junsong Yuan, Radhakrishna Dasari, University at Buffalo & The State University of New York, Dec 2020
- **"The Complete Python 3 Course: Beginner to Advanced"**, Udemy, taught by Joseph Delgadillo, Nick Germaine, May 2020
- **"27'th Iranian Conference on Electrical Engineering"**, (ICEE 2019), Yazd University, Paper Presentation
- **25'th Annual International Conference on Mechanical Engineering**, (ISME 2017), Iranian Society of Mechanical Engineers, Paper Presentation
- **Taekwondo Kiu-rogi Referee**, 2014
- **Taekwondo 3'rd Dan Black Belt**, 2011, Iran Taekwondo Federation

## Online Courses

- **Machine Learning**, By Dr. Andrew Ng, Stanford University, coursera.org (100 / 100)
- **Hello (Real) World with ROS – Robot Operating System**, By Dr. Mukunda Bharatheesha, Gijs van der Hoorn, Dr. Carlos Hernandez Corbato, Prof. Martijn Wisse, Mohamed Baioumy, Delft University of Technology, edx.org
- **Writing in the Sciences**, By Dr. Kristin Sainani, Stanford University, coursera.org (100 / 100)
- **Game Theory**, By Prof. Matthew O. Jackson, Prof. Kevin Leyton-Brown, Prof. Yoav Shoham, Stanford University, The University of British Columbia, coursera.org (100 / 100)
- **Control of Mobile Robots**, By Prof. Magnus Egerstedt, Georgia Institute of Technology, coursera.org (100 / 100)

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## Skills

- **Mechanical Design:** Autodesk Inventor, CATIA
- **Programming:** MATLAB, C, C++, Python, JAVA,  $\text{\LaTeX}$
- **Simulation:** Simulink, 20-sim, Adams, Ansys Gambit & Fluent
- **Web developing:** HTML, PHP, Drupal CMS, Joomla CMS
- **Image/Video Editing:** Adobe Photoshop, Adobe Premiere
- **Others:** Linux (Ubuntu), Git, Robot Operating System (ROS)

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## Languages

- **English:** Highly Proficient
- **Persian:** Highly Proficient (Native)
- **Arabic:** Intermediate
- **German:** Beginner

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## Workshops

- **Toward Intelligent Remotely Assisted Manipulation Tasks**, Dr. Long Wang, Stevens Institute of Technology, Aug 13, 2020
- **Robot-Clinician Collaboration for Semi-Autonomous Computer-Integrated Medicine**, Prof. M. Tavakoli, ICEE 2020, Aug 4, 2020
- **Brain Computer Interface: The Future of Human Machine Interaction**, Dr. F. Goodarzy, K. N. Toosi University of Technology, September 30, 2019
- **Movement Planning and Control for Advanced Robotic Systems**, Dr. M. Biglarbegian, K. N. Toosi University of Technology, April 21, 2018
- **Passivity-based Control of Robotic Systems**, Prof. Romeo Ortega, Sharif University of Technology, April 15 and 16, 2018

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## Teaching Experience

- **Algorithms and Computer Programming in Python**, Teaching Assistance (TA), Spring 2020 and 2021
- **English Language**, Language school teacher, Private lecturing, 2017-2018
- **Computational Fluid Dynamics (CFD)**, Private lecturing, 2015
- **Automatic Control**, Private lecturing, 2015
- **Mechanical Vibrations**, Private lecturing, 2014
- **Computer Programming in C**, Private lecturing, 2013
- **Taekwondo**, Senior instructor, 2008-2009 and 2014

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## Standardized Tests

TOEFL Jan 5, 2019

◦ Reading	◦ 24
◦ Listening	◦ 22
◦ Speaking	◦ 23
◦ Writing	◦ 25
◦ Overall	◦ 94

Duolingo Feb 12, 2021

◦ Literacy	◦ 135
◦ Conversation	◦ 110
◦ Comprehension	◦ 130
◦ Production	◦ 120
◦ Overall	◦ 125

GRE Jun 26, 2020

◦ Verbal Reasoning	◦ 152
◦ Quantitative Reasoning	◦ 158
◦ Analytical Writing	◦ 3.5

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## Research Interests

**Robotics, Reinforcement learning, Game theory, Control theory**