Armin Ghanbarzadeh

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Tehran, Iran

Education

M.Sc. in Mechatronics Engineering (1st GPA in program) *GPA: 19.29/20 (4/4)*
K.N. Toosi University of Technology, Tehran, Iran Oct 2020 – Oct 2023
Implementation of an intelligent control method for safe human and industrial robot collaboration
Supervisor: Dr. E. Najafi (email)

B.Sc. in Mechanical Engineering *GPA: 16.12/20 (3.23/4)*
K.N. Toosi University of Technology, Tehran, Iran Oct 2015 – Jan 2020
Design and simulation of an in-wheel hydraulic motor
Supervisor: Dr. M. Ravandi

Research Projects and Publications

Journal Articles

2023 **A. Ghanbarzadeh** and E. Najafi, "Deep Reinforcement Learning Graphs: Feedback Motion Planning via Neural Lyapunov Verification," [pdf]

2023 **A. Ghanbarzadeh** and E. Najafi, "Safe Physical Human-Robot Interaction through Variable Impedance Control based on ISO/TS 15066," *Under Review in IJIDeM* [pdf]

Conference Proceedings

2023 A. Golshani, A. Kouhkord, **A. Ghanbarzadeh** and E. Najafi, "Control Design for Safe Human-Robot Collaboration based on ISO/TS 15066 with Power and Force Limit," *2023 11th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran, Islamic Republic of, 2023

2022 R. B. Nejad, J. Khoramdel, **A. Ghanbarzadeh**, M. Sharbatdar and E. Najafi, "A Multiclass Retinal Diseases Classification Algorithm using Deep Learning Methods," *2022 10th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran, Islamic Republic of, 2022, pp. 365-370, doi: 10.1109/ICRoM57054.2022.10025206 [pdf]

2022 A. Kouhkord, **A. Ghanbarzadeh**, P. Ebrahimi and E. Najafi, "Design of a Genetic based Optimized Fuzzy Logic Controller for Enhanced Trajectory Tracking Accuracy of a 3P Robot," *2022 10th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran, Islamic Republic of, 2022, pp. 497-502, doi: 10.1109/ICRoM57054.2022.10025249. [pdf]

2021 A. Aeini, E. Droudian, **A. Ghanbarzadeh** and E. Najafi, "Design of an Intelligent Control System for Safe Collaboration between Human and a Robotic Manipulator," *2021 9th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran, Islamic Republic of, 2021, pp. 335-340, doi: 10.1109/ICRoM54204.2021.9663503. [pdf]

2021 **A. Ghanbarzadeh** and E. Najafi, "Design of an Optimized Fuzzy Controller for a 3R Non-planar Robotic Manipulator," *2021 9th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran, Islamic Republic of, 2021, pp. 287-292, doi: 10.1109/ICRoM54204.2021.9663441. [pdf]

Under Preparation

- **Dynamic obstacle avoidance for mobile robots using probabilistic deep recurrent neural networks**
  Armin Ghanbarzadeh, Esmaeil Najafi
  Propose an AI based method for obstacle avoidance in environments with many dynamic obstacles. This method proposes the utilization of deep neural networks featuring Long Short-Term Memory (LSTM) neurons for the purpose of forecasting the probability distribution function of the future positions of recognized obstacles using historical position data.

Teaching Assistance

Graduate Courses

Machine Vision: Prepared analytical and computer homework, quizes and assisted in evaluating final exams. Under the supervision of Dr. H. Abrishami Moghaddam (Faculty of electrical engineering)

Artificial Intelligence and Expert Systems: Lectured on the topics Fuzzy logic (MATLAB), Artificial Neural Networks and Reinforcement learning (Python). Assisted with homework and final project evaluation. Under the supervision of Dr. E. Najafi (Faculty of mechatronics engineering)

Statics and Strength of Materials: Prerequisite course for mechatronics students coming from an electrical background. Under the supervision of Dr. E. Najafi (Faculty of mechatronics engineering)

Mechanical Engineering Design: Prerequisite course for mechatronics students coming from an electrical bachelors degree

Undergraduate Courses

Neural Networks: Lectured on the topics Linear regression, MLP, CNN, RNN and Object detection in Python. Assisted with homework and final project evaluation. Under the supervision of Dr. E. Najafi (Faculty of mechanical engineering)

Test Scores

TOEFL: 111/120 *Jan 2020*

Reading: 30/30, Listening: 30/30, Speaking: 27/30, Writing, 24/30

GRE: 319/340 *Jan 2020*

Quant: 166/170, Verbal: 153/170, Analytical Writing: 4/6

Skills

Programming: Python, MATLAB, Java, C++

Technologies: Arduino, MATLAB & Simulink, Raspberry Pi, Git, ROS, Solidworks, ANSYS Workbench

Applications: LaTeX, Adobe Photoshop, Adobe Illustrator, Microsoft Office, Prezi

Languages: Farsi (Native), English (Native, Lived in the UK for 7 years)