Zohre Karimi

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RESEARCH INTERESTS

- Robotics
- Surgical Robotics
- Reinforcement Learning
- Machine Learning

EDUCATION

- **University of Utah)**, Salt Lake City, Utah, US
  Ph.D. Computer science, Robotics, *Sep. 2022 _ Sep.2027*
  Thesis: Learning from Suboptimal Demonstrations for Surgical Robot from Partial-View Point Clouds
  Supervisor: Dr.Daniel Brown
  GPA: **4** / 4

- **Amirkabir University of Technology (Tehran Polytechnic)**, Tehran, Iran
  B.Sc., Mechanical Engineering Engineering, Manufacturing and Production, *Sep. 2014 _ Sep.2018*
  Thesis: Modeling and optimization of linear dynamics of energy extraction by piezoelectric sensor
  Supervisor: Dr.Hamed Ghafarirad
  GPA: **15.72** / 20 (last year: **16.72**/20)

- **NODET**(National Organization for Development of Excepetional Talents) High School, Kermanshah, Iran
  Diploma in Mathematics and Physics, *Sep. 2010 _ Sep. 2014*
  GPA: **19.35** / 20

PUBLICATIONS

- *"Reward Learning from Suboptimal Demonstrations with Application in Surgical Electrocautry"*. (Submitted)

RESEARCH EXPERIENCES

- **Research Assistant**, Aligned, Robust, Interactive, Autonomy (ARIA) Lab *2022-now*
  Supervisor: Dr. Daniel S. Brown
- **Research Assistant**, Sensors and Actuators Lab *2019-2022*
  Supervisor: Dr. Reza Askari Moghadam
- **Research Assistant**, Instrumental Analysis Laboratory, *2016-2018*
  Supervisor: Dr. Amirreza Azadmehr

TEACHING EXPERIENCES

- **Teaching Assistant** , **Computer-based Problem Solving For Engineering Systems**, *(Fall 2022)*
  Lecturer: Dr. Debra Mascaro

- **Teaching Assistant** , **Thermodynamics I**, *(Fall 2016, Spring 2016, Fall 2017, Spring 2017)*
  Lecturer: Dr. Amirreza Azadmehr

SELECTED ACADEMIC PROJECTS

- Steerable Needle Motion Planning:
  Motion Planning (*Spring 2023*)
  In this project, we developed a motion planning framework for magnetically steerable needles, achieving high accuracy in directing needle tips to target locations within the body.
- Learning from Suboptimal Demonstrations for Surgical Robot from Partial-View Point Clouds:
  Human-AI interaction and align (*Fall 2022*)
  In this project, We introduced a method for automating robotic surgery that learns from suboptimal demonstrations, effectively handling complex surgical tasks and improving performance in real-world scenarios.
- Designing An Automatic Dreding Robot For Dredging Storage Tanks:
  Mechatronics II (*Spring 2020*)
  In this project, I designed a robot using Fluidsim software for hydraulic circuits of the robot's arms, Solidworks, and Simatic Manager for PLC programming.
- Implementation of Group Learning Method:
  Machine learning (*Fall 2020*)
  Using Stacking method to implement group learning using three algorithms the Ka2, the FDA and the design tree, and the final algorithm of this method is neural network.
- Cell Segmentation Using U-Net Convolutional Neural Network:
  Machine Vision (*Fall 2020*)
  In this project the U-NET convolutional neural network was implemented to distinguish between cells in a data set of medical images.
- Design, Analysis, Simulation and implementation of an In-pipe Inspection Robot:
  Mechatronics I (*Fall 2019*)
  In this project I designed a robot that can travel through various pipe configurations. The simulation and analyzing of this design has been carried out in solidworks.
- Furuta Pendulum Control:
  Advanced Control (*Fall 2019*)
  In this project, I investigated and designed a suitable controller for a rotating reverse pendulum or furuta pendulum and simulated its performance under different conditions such as known and unknown disturbance and the presence of noise on the sensors.

SELECTED COURSEWORK

- Computer Vision (*Fall 2023*)
- Motion Planing (*Spring 2023*)
- Artificial Intelligence(*Spring 2023*)
- Human-AI Interaction and Align (*Fall2022*)
- Introduction to Robotics (*Fall 2022*)
- Machine Learning (*Fall 2020*)
- Advanced Automatic Control (*Fall 2019*)
- Computer Aided Design (*Fall 2016*)

TECHNICAL SKILLS

- **Programming Languages:**,
  Python, C++, Pascal, C#
- **Modeling and Simulation:**,
  Catia, Solidworks, MATLAB, Simulink, Proteus
- **Typestting:**,
  Microsoft Word, LATEX
- **Other Skills:**,
  PLC and HMI with S7, MikroC

LANGUAGES

- **Persian**: *Native*
- **English**: *Proficient*
- **French**: Basic knowledge

REFERENCES

- **Dr. Daniel Brown, Assistant professor**
  School of Computing, University of Utah, Salt Lake City, Utah, US
  Email: daniel.s.brown@utah.edu
- **Dr. A.Azadmehr, Associate Professor**
  Department of Mining Engineering, Amirkabir University of Technology, Tehran, Iran
  Email: a_azadmehr@aut.ac.ir
- **Dr. H.Ghafarifad, Assistant professor**
  Department of Mechanical Engineering, Amirkabir University of Technology, Tehran, Iran
  Email: ghafarirad@aut.ac.ir

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