Golnaz Habibi

Contact Information	73940 Benton Ln NE, University of Washington, Department of AA Seattle, WA 98105 Email: golnazh@uw.edu, golnaz@mit.edu Cell number: 8324615599 Immigration Status: Work authorized in USA (green card)

EDUCATION BACKGROUND

Ph.D., Computer science and artificial intelligence, Rice University, 2015
Supervisor: Dr. James McLurkin
Thesis title: Collective transport of an Unknown Object with a Group of Robots with Limiting Sensing

M.S., Control Engineering, Tarbiat Modares University , Iran, 2007
Supervisor: Dr. Ellips Masehian and Dr. Mohammad Taghi Beheshti
Thesis title: Motion Planing and Control of Mobile Robots Using Linear Matrix Inequalities

B.S., Control Engineering, K. N. Toosi University of Tech., Iran, 2005

Supervisor: Dr. Hamid Reza Taghirad
Thesis title: Study of Mitsubishi Manipulator and design collision avoidance algorithm for Computer Integrated Manufacturing System

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EXPERIENCE BACKGROUND

Fall 2019	Part-time lecturer, Department of Aeronautics and Astronautics, University of Washington **Tasks:** instructor of course " Control Systems Sensors and Actuators " .This course overviews feedback control, dynamic models for control systems design in time/frequency domain techniques. Different sensors including accelerometers, potentiometers, shaft encoders are introduced during the class and are being test and experienced during lab sessions.
Fall 2019-present	Visiting Scientist, Aerospace Controls Lab, Department of Aeronautics and Astronautics, MIT **Tasks:** Leading and mentoring graduate and undergraduate student. My research focuses on pedestrian intention recognition and pedestrian tracking, distributed task allocation and multi agent reinforcement learning.
June 2019 -present	Visiting Scholar, Department of Electrical and Computer Engineering, University of Washington **Tasks:** engaging robotics projects in Sensor Systems Lab, under supervision of Prof. Joshua Smith, the current project is about human robot interactive Gameplay using competitive Reinforcement Learning frame work.
2/2017 - 9/30/2019	Postdoctoral Research Associate, Aerospace Controls Lab, MIT, Cambridge **Tasks:** leading and mentoring graduate and undergraduate students. My research focuses on pedestrian intention recognition and pedestrian tracking, distributed task allocation and multi agent reinforcement learning.
Fall 2019	Guest lecturer, course "The Self Driving Car: Introduction To AI For Mobile Robots", University of Washington, Seattle **Tasks:** co-organize and co-teach a professional course on autonomous-driving
9/2018 - 12/2018	Co-instructor of course Visual Navigation for Autonomous Vehicles, MIT, Cambridge **Tasks:** co-taught and co-organized a graduate level course "visual navigation of autonomous systems", taught and developed some of the lectures as well as related labs.
9/2016 - 2/2017	Robotic Engineer, Autel Robotics, San Ramon **Tasks:** my job was to design and implement a motion planning algorithm with obstacle avoidance for autonomous drones
4/2016-5/2016	Machine Learning and Robotic Software Engineer and Researcher, Kiba
5/2015 -5/2016	Research Associate, Department of Computer Science, Rice University
8/2010-5/2015	Project Mentor and Research Assistant, MRSL, Rice University, under supervisory of Prof. James McLurkin **Tasks:** I have designed and implemented distributed algorithms for multi agent system. My thesis focused on collectively transport an known object by a group of robots

5/2008-8/2010	Control and Instrumentation Engineer, NARGAN Engineer and Constructor Company in Oil and Gas
2007-2008	Instructor, Azad University, Tehran, Iran **Tasks:** taught two college courses in control and computer and two electronics labs.
9/2007-9/2008	Project Mentor, ARAS Robotic Lab, K.N. Toosi University of Technology
5/2005-8/2005	Intern, HMI and PLC Group, Farine Sanat Co.
2002-2003	Project Researcher, Power Research Center, Iran

TEACHING EXPERIENCE

- **University of Washington:** lecturer of the course "AA 448: Control Systems, sensors and actuators", Fall 2019.

- **University of Washington:** co-instructor (guest lecturer) of the course "The Self Driving Car: Introduction To AI For Mobile Robots", Fall 2019.

- **Massachusetts Institute of Technology:** co-instructor and co-developer of the course 16.S398 "Visual Navigation for Autonomous Vehicles", Fall 2018.

- **Rice University:** Teaching Assistant for the courses in robotics, AI and computer science: Advanced Robotics lab (Spring 2014), Algorithmic Thinking (2012), Introduction to database (2012), Introduction to engineering systems (Fall 2013, Fall 2014)

- **Azad university, Tehran, Iran:** instructor of three courses of "instrumentations", "logic circuits" and "electronics labs", 2007-2008

PROFESSIONAL CERTIFICATE

- "MIT xPRO Data Science and Big Data Analytics: Making Data-Driven Decisions" certificate -2018

- Machine Learning (coursera) certificate -2016

- Engineering School Workshop for Teaching Assistants, Rice University, Sept 2013

- Foundations of Programming: Data structure (Lynda.com) -2016

AWARDS AND HONORS

- ICRA 2015 travel grant, 2015

- Chevron Graduate fellowship, 2013

- Anita Borg IXL Learning scholarship, Grace Hopper Conference , 2013

- 3rd Best Graduate Poster Award, ECE affiliates, Rice University, 2013

- Nominated for Best Student Paper, Distributed Autonomous Robotic Systems(DARS), 2012

- Awarded 3rd Best Design, Engineering Design Competition, Rice University, 2011

STUDENT MENTORING

I have mentored several students and lead them on their research projects:

- **University of Washington:** Bolling Wang (PhD student)

- **MIT:** Sharan Raja (Master's student), Nikita Jaipuria (Master's student), Dong Ki Kim (Master's and PhD student), Macheng Shen (PhD student), Noam Buckman (Master's student), Luke Qi (undergraduate student), Anthony C Colangeli (undergraduate student), Rohan B Banerjee (undergraduate student), Felipe Radovitzky (undergraduate student)

- **Rice University:** Zachary Kingston (undergraduate student), Matthew Jellins (undergraduate student), William Xie (undergraduate student), Lauren Schmidt (undergraduate), Valerie Baretsky (undergraduate student)

AREA OF INTERESTS

- Robotics, Control Systems and Automation

- Autonomous Driving

- Multi-Agents Systems

- Machine Learning and Deep Learning

- Motion Planning

- Reinforcement Learning and Game Theory

- Computer Vision

- Computational Geometry

SELECTED PUBLICATIONS

Google Scholar statistics total of 418 citations as of Jan 15, 2020, with hindex = 10, 10-index=10

1. G.Habibi, N. Jaipuria, J.P. How, "Lifelong Learning of motion prediction: theory and application", Transactions on Robotics (T-RO)- ready to submit

2. D. Kim, M. Liu, S. Omidshafiei, S. Lopez-Cot, G.Habibi, M. Riemer, G. Tesauro, S. Mourad, M. Campbell, J.P. How, "A Policy Gradient Theorem for Learning to Learn in Multiagent Reinforcement Learning", COMARL 2020

3. G.Habibi, N. Jaipuria, J.P. How, "Incremental Learning of Motion Primitives for Pedestrian Trajectory Prediction at Intersections", ICRA 2020 (under review)

4. S.Raja, G.Habibi, J.P. How, "Learning Communication Policies to Perform Decentralized Task Allocation over Wireless Ad Hoc Networks", ICRA 2020 (under review)

5. D. Kim, M. Liu, S. Omidshafiei, S. Lopez-Cot, M. Riemer, G.Habibi, G. Tesauro, S. Mourad, M. Campbell, J. P. How, "Learning Hierarchical Teaching in Cooperative Multiagent Reinforcement Learning", AAMAS 2020

6. N. Jaipuria, G.Habibi, J.P. How, "Learning in the Curbside Coordinate Frame for a Transferable Pedestrian Trajectory Prediction Model", ITSC 2018

7. N. Jaipuria, G.Habibi, J.P. How, "Context-based Pedestrian Intention Recognition", NIPS workshop 2017

8. M. Giamou, Y.Babic, G.Habibi, J.P. How, "Stable Laser Interest Point Selection for Place Recognition in a Forest", IROS 2017

9. G.Habibi, S. Fekete, Z. Kingston, J. McLurkin, , "Distributed Object Characterization with Local Sensing by a Multi-Robot System", DARS 2016

10. G.Habibi, Z. Kingston, Z. Wang, M. Schwager, J. McLurkin, "Pipeline Consensus for State Estimation on Multi-Robot Systems", AAMAS 2015

11. G.Habibi, Z. Kingston, W. Xie, M. Jellins, J. McLurkin, "Distributed Centroid Estimation and Motion Controllers for Collective Transport", ICRA 2015

12. G.Habibi, W. Xie, M. Jellins, J. McLurkin, "Distributed Path Planning for Collective Transport Using Homogeneous Multi-Robot Systems", DARS 2014

13. J. McLurkin, A. McMullen, N. Robbins, G. Habibi, A. Becker, A. Chou, H. Li, M. John, N. Okeke, J. Rykowski, S. Kim, W. Xie, T. Vaughn, Y. Zhou, J. Shen, N. Chen, Q. Kaseman, L. Langford, J. Hunt, A. Boone, K. Koch, "A Robot System Design for Low-Cost Multi-Robot Manipulation ", IROS 2014

14. G. Habibi, L. Schmidt, M. Jellins, J. McLurkin, "K-redundant Trees for Safe and Efficient Multi-robot Recovery in Complex Environments", ISRR 2013

15. A. Becker, E. Demaine, S.Feketez, G.Habibi, J. McLurkin, "Reconfiguring Massive Particle Swarms with Limited Global Control", ALGOSENSORS 2013

16. A.Becker, G.Habibi, J. Werfel, M. Rubenstein, J. McLurkin , "Massive Uniform Manipulation: Controlling Large Populations of Simple Robots", IROS 2013

17. M Rubenstein, A.Cabrera, J.Werfel, G.Habibi, J.McLurkin, R.Nagpal, "Collective Transport of Complex Objects by Simple Robots: theory and experiments", AAMAS 2013

18. G.Habibi and J. McLurkin, "Maximum-Leaf Spanning Trees for Efficient Multi-Robot Recovery with Connectivity Guarantees", International Symposium of Distributed Autonomous Robotic Systems (DARS), Nov 2012

19. G.Habibi and Ellips Masehian, "Novel Fuzzy Control of Bi-wheeled Mobile Robot on Reference Path", ICABB 2010

20. G.Habibi and E.Masehian, "Robot Path Planning in 3D Space Using Binary Integer Programming", International Journal of Mechanical Systems Science and Engineering, Volume 29, pp. 26-31, May 2007

21. G.Habibi, Ellips Masehian and Mohammad Taghi Beheshti, "Binary Integer Programming Model of Path planning for Point Robots", IECON 2007

22. E.Masehian and G.Habibi, "Motion Planning and Control of Mobile Robot using Linear Matrix Inequalities", IROS 2007

23. G.Habibi and Mohammad Taghi Beheshti, "Applied H infinity controller design for Flexible Transmission System", IECON 2007

SELECTED WORKSHOP PAPERS

1. D. Kim, M. Liu, S. Omidshafiei, S. Lopez-Cot, M. Riemer, G.Habibi, G. Tesauro, S. Mourad, M. Campbell, J. P. How "Heterogeneous Knowledge Transfer via Hierarchical Teaching in Cooperative Multiagent Reinforcement Learning", AAAI 2019 workshop in RL and Game Theory

2. N. Japuria, G.Habibi , J. P. How, "CASNSC: A context-based approach for accurate pedestrian motion prediction at intersections", Neurips 2017 workshop on Machine Learning for intelligent Transportation System

3. N. Japuria, G.Habibi , J. P. How, "Context-Aware Algorithm for Pedestrian Motion Prediction", Women in Data Science (WiDS) Conference 2018

INVITED TALKS

Feb 2019	"Collaborative thinking and motion: from collective transport to autonomous driving cars", Robotics Curriculum, University of Washington, Seattle.
March 2016	"Collective Transport of an Unknown Object by a Team of Robots with limited Sensing", University of California Berkeley.

ACADEMIC SERVICES AND APPOINTMENTS

- Serves as Program Committee of AAAI 2020
- Reviewer of Robotics and Control and AI Conferences and Journal: ITSC, ICRA, IROS, AAAI,SWARM, ICML, DARS, Robotics and Automation Letters (RA-L)
- Aerospace Controls Laboratory, MIT Feb 2017-present
- MIT Laboratory for Information and Decision Systems, MIT Feb 2017-present
- Sensor Systems Laboratory, University of Washington, June 2019-present
- Multi Robot Systems Lab, Rice University, Sept 2010 - June 2015

SOFTWARE SKILL HIGHLIGHTS

- Programming Language: C++, C, MATLAB, Python, R, Java, Acumen
- Software Packages: ROS, OpenGL, Box2D, eclipse, CodeSourcery, AprilTag, Mathematica, WinCC
- Robotic Softwares and system control: ROS, OMPL, MELFA-BASIC IV, COSIROP, PLC S7

SELECTED RESEARCH PROJECTS

June 2019 -present	Multi-agent reinforcement learning for physical human robot competitive game
Sept 2018-present	Learning to communicate for decentralized task allocation under communication constraints
Feb 2017 -present	Self driving cars: pedestrian intention recognition and risk assessment algorithms
2016-2017	Motion Planning of autonomous drone while avoiding obstacles, design and implementation
2016	Study and Implement deep learning algorithms for emotion and behavior detection.
2013-2015	Collective Transport a Large Unknown Object by a Group of Robots
2013	K-redundant Trees for Safe and Efficient Multi-robot Recovery
2012	Dynamical Patterns of Human Motion Using Deep Belief Nets,Rice University
2011	Collision Detection for a large number of robots in a Dynamic Environment, Rice University
2010	Centralized Multi-robot Motion Planning, Rice University

LANGUAGE SKILL

- **English:** Fluent
- **Farsi:** Native
- **French:** Basic

REFERENCES

Name: Professor Jonathan P. How
Title: Richard Cockburn Maclaurin Professor
Affiliation: Department of Aeronautics and Astronautics, MIT
E-mail: jhow@mit.edu

Name: Professor Luca Carlone
Title: Charles Stark Draper Assistant Professor
Affiliation: Department of Aeronautics and Astronautics, MIT
E-mail: carlone@mit.edu

Name: Professor Joshua R. Smith
Title: Milton and Delia Zeutschel Professor
Affiliation: ECE and CSE departments, University of Washington
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Title: Noah Harding Professor of Computer Science
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