Ali Agha (full name: Ali-akbar Agha-mohammadi) - CV

NASA-Jet Propulsion Laboratory, Caltech
198-221, 4800 Oak Grove Dr, Pasadena, CA, 91109
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Education and Research Experience

California Institute of Technology (Caltech), NASA-Jet Propulsion Laboratory, 2016-present

Robotics Research Technologist
Task manager, Principle investigator
Focus: Robotic autonomy, robotic mobility, vision-based high-speed navigation
Selected as a NASA NIAC Fellow in 2018

Qualcomm Research, 2015-2016

Research Staff Engineer, Roboticist
Started Qualcomm's efforts on robotic autonomy; led autonomous motion planning and 3D mapping efforts
Focus: Vision-based SPLAM (simultaneous planning, mapping, and localization) and obstacle avoidance for autonomous aerial vehicles
Selected twice as a recipient of Qualcomm's Outstanding Contribution Award

Dept. of Aeronautics and Astronautics, Massachusetts Institute of Technology (MIT), 2013-2015

Postdoctoral researcher
Laboratory for Information and Decision Systems (LIDS)
Aerospace Controls Laboratory (ACL)
Research Focus: Planning under uncertainty for autonomous quad-copters

Dept. of Computer Science and Engineering, Texas A&M University (TAMU), 2009-2013

PhD in Computer Engineering (Robotics), GPA: 4/4
Graduate Research Assistant in both *Aerospace Eng. Dept.* and *Computer Science and Eng. Dept.*
Thesis: "***Sampling-based State Estimation and Stochastic Control for Robot Motion Planning under Motion Uncertainty and Noisy Sensor Measurements***"
Thesis committee: Suman Chakravorty (Aero Dept.), Nancy Amato (CSE Dept.), P.R. Kumar (ECE), John Junkins (Aero), Dylan Shell (CSE), Ricardo Gutierrez (CSE)

Dept. of Electrical and Computer Engineering, Khaje Nasir Toosi University of Technology, 2005-2008

M.S. in Electrical Engineering (Control Systems and Robotics)
Graduate Research Assistant in *ECE Dept.*
Awarded for the highest GPA in class (out of 23)
Thesis: "***Design and Implementation of Multi-sensor Fusion methods for Solving Simultaneous Localization And Mapping (SLAM) Problem***"
Advisor: Hamid D. Taghirad (ECE Dept.)

Dept. of Electrical and Computer Engineering, Tabriz University, 2001-2005

B.S. in Electrical Engineering (Control Systems and Robotics)
Awarded for the highest GPA in class (out of 30)
Thesis: "***Robosoccer: Small-size Soccer Robots for Robocup Competitions***".

Research Interests

Robot Motion Planning and Navigation, Robotic Mobility, Robotic Autonomy, Artificial Intelligence, Robot Localization and Mapping, Stochastic Control, Estimation and Filtering Theory, Machine Learning

Research Grants (2016-present: ~$9.8M)

Principal Investigator, and Task Manager

[1] **CoSTAR: Collaborative Subterranean Autonomous Resilient Robots to Explore Subsurface Voids,** DARPA Subterranean Challenge.

[2] **Failure-resistant Visual Odometry for Prototype Mars Sample Return Robot,** Caltech Jet Propulsion Laboratory, Mars Program Office.

[3] **Adaptive Autonomy for Coordinate Navigation of Prototype Mars Helicopter and Mars Rover** NASA, President's and Director's Fund Program.

[4] **Cross-domain Autonomy/Mobility: Self-assembling Robots to Explore Titan from Rugged Cliffs to Deep Subsurface Voids,** NASA Innovative Advanced Concepts (NIAC).

[5] **Forest Fire Management using UAV Swarms**, Caltech Jet Propulsion Laboratory, BlueSky studies.

[6] **Hybrid Ground-Aerial Mobility: Design and Control,** Caltech Jet Propulsion Laboratory, National Space Technology Applications Office.

[7] **Verifiable and Coordinated Autonomy for Mars Helicopter and Rover Navigation,** NASA, President's and Director's Fund Program, 17AW0044-105275.

[8] **Adaptive Autonomy: Domain Knowledge-Assisted Machine Learning for Model and Policy Adaptation,** Caltech Jet Propulsion Laboratory, Data Science LMC Investment Program, S8NDSS 81.18.05.07.

[9] **Resilient Autonomy via Perception-aware Planning for Agile Autonomous Navigation**, Caltech Jet Propulsion Laboratory, Center of Academic Partnership, 01STCA C.15.1.100.128.

[10] **AI vs. Human: Demonstration of AI-based Drone Navigation vs. Expert Human Pilots at Drone Racing League (DRL)**, Caltech Jet Propulsion Laboratory, Raise The Bar funds, H3X003 30.2.001.

[11] **Impact Resilient Hybrid Ground-Aerial Robots,** Caltech Jet Propulsion Laboratory, HBCU Award.

[12] **Fast Traversing Autonomous Rover for Mars Sample Collection,** Caltech Jet Propulsion Laboratory, Mars Program Formulation Office, S60001-17.01.04.

[13] **Look Before You Leap: Machine learning for Predicting Perception Failures,** Caltech Jet Propulsion Laboratory, Data Science LMC Investment Program, S8NDSS-81.17.05.

[14] **Rollocopter Fabrication: A Hybrid Aerial and Ground Mobility System,** Caltech Jet Propulsion Laboratory, Commercial Program Office, SMCOPS 81.01.10.11029.

[15] **Integrated Perception and Planning Under Uncertainty (IP2U2) for Robust Autonomy,** Caltech Jet Propulsion Laboratory, Research and Technology Development Program, R.17.021.088-01STCR.

Co-I

[1] **An Ultra-Light-Weight Perching System for Sloped or Vertical Rough Surfaces on Mars,** Caltech Jet Propulsion Laboratory, Research and Technology Development Program.

[2] **Autonomous Approach of Small Unknown Bodies,** Caltech Jet Propulsion Laboratory, Research and Technology Development Program.

[3] **Fast Traversing Autonomous Rover for Mars Sample Collection,** Experimental Program to Stimulate Competitive Research (EPSCoR).

Publications and patents

Selected Papers

[S1] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy Amato, "**FIRM: Sampling-based Feedback Motion Planning Under Motion Uncertainty and Imperfect Measurements**", *International Journal of Robotics Research (IJRR)*, 33(2):268-304, February 2014.

[S2] Ali-akbar Agha-mohammadi et al., "**Confidence-rich 3D Grid Mapping: Toward High-speed Vision-based UAV Navigation**", *International Journal of Robotics Research (IJRR)*, 2019, accepted.

[S3] Beipeng Mu, Liam Paull, Ali-akbar Agha-mohammadi, Jonathan P. How, John J. Leonard, "**Two-Stage Focused Inference for Resource-Constrained Collision-Free Navigation**", *IEEE Transactions on Robotics (T-RO)*, 99 (1), 1-17, 2017.

[S4] Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Shih–Yuan Liu, Jonathan P. How, John Vian, "**Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions**", *International Journal of Robotics Research (IJRR),* vol. 36, no. 2, pp. 231-258, 2017.

Journal Papers and Book Chapters

[J1] [under review] Ali-akbar Agha-mohammadi et al., "**Bi-directional Value Learning for Risk-aware Planning Under Uncertainty**," 2019.

[J2] [under review] Ali-akbar Agha-mohammadi et al., "**Perception-aware Mast Motion Planning for Planetary Exploration Rovers**," 2019.

[J3] [under review] Daniel Gaines, Gary Doran, Michael Paton, Brandon Rothrock, Joseph Russino, Ryan Mackey, Robert Anderson, Raymond Francis, Chet Joswig, Heather Justice, Ksenia Kolcio, Gregg Rabideau, Steve Schaffer, Jacek Sawoniewicz, Ashwin Vasavada, Vincent Wong, Kathryn Yu and Ali-akbar Agha-mohammadi, "**Self-reliant Rover Design For Increasing Mission Productivity**," 2019.

[J4] Ali-akbar Agha-mohammadi, Eric Heiden, Karol Hausman and Gaurav S. Sukhatme, "**Confidence-rich 3D Grid Mapping: Toward High-speed Vision-based UAV Navigation**," *International Journal of Robotics Research (IJRR)*, 2019, accepted.

[J5] Max Pflueger, Ali-akbar Agha-mohammadi et al. and Gaurav S. Sukhatme, "**Autonomous Long-range Planning for Planetary Rovers using Value Iteration Networks**," *IEEE Robotics and Automation Society (RA-L)*, 2018, accepted.

[J6] Ali-akbar Agha-mohammadi et al., Gaurav S. Sukhatme, Sung-Kyun Kim, Suman Chakravorty and Nancy M. Amato, "**SLAP: Simultaneous Localization and Planning for Physical Mobile Robots via Enabling Dynamic Replanning in Belief Space**," *IEEE Transactions on Robotics (TRO)*, vol.34, no.5, pp.1195-1214, 2018.

[J7] Kyohei Otsu, Ali-akbar Agha-mohammadi, and Michael Paton, "**Where to Look? Predictive Perception with Applications to Planetary Exploration**", *IEEE Robotics and Automation Letters (RAL)*, 3 (2), 635-642, 2018.

[J8] Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Shih–Yuan Liu, Jonathan P. How, John Vian, "**Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions**", *International Journal of Robotics Research (IJRR),* 36 (2), 231-258, 2017.

[J9] Beipeng Mu, Liam Paull, Ali-akbar Agha-mohammadi, Jonathan P. How, John J. Leonard, "**Two-Stage Focused Inference for Resource-Constrained Collision-Free Navigation**", *IEEE Transactions on Robotics (T-RO)*, 99 (1), 1-17, 2017.

[J10] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy Amato, "**FIRM: Sampling-based Feedback Motion Planning Under Motion Uncertainty and Imperfect Measurements**", *International Journal of Robotics Research (IJRR)*, 33 (2), 268-304, 2014.

[J11] Bernard Michini, Thomas Walsh, Ali-akbar Agha-mohammadi, Jonathan How, "**Bayesian Nonparametric Reward Learning from Demonstration**", *IEEE Transactions on Robotics (T-RO)*, 31 (2), 369-386, 2015.

[J12] Ali-akbar Agha-mohammadi, Saurav Agarwal, Suman Chakravorty, "**Periodic-node Graph-based Framework for Stochastic Control of Small Aerial Vehicles**", The *ASME Journal of Dynamic Systems, Measurement & Control*, Special Issue on Stochastic Models, Control and Algorithms in Robotics, 137 (3), 031005, 2015.

[J13] Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Yufan Chen, Nazim Kemal Ure, Shih-Yuan Liu, Brett Lopez, Rajeev Surati, Jonathan P. How, John L. Vian, "**Measurable Augmented Reality for Prototyping Cyberphysical Systems: A Robotics Platform to Aid the Hardware Prototyping and Performance Testing of Algorithms**", *IEEE Control Systems Magazine (CSM)*, 36 (6), 65-87, 2016.

[J14] Ali-akbar Agha-mohammadi, Sandip Kumar, Suman Chakravorty, "**Motion Planning under Uncertainty**", Book Chapter, J. Valasek (Ed.), Advances in Intelligent and Autonomous Aerospace Systems, Progress in Astronautics and Aeronautics, *American Institute of Aeronautics and Astronautics (AIAA)*, Reston, VA, 2012.

Refereed Conference Papers

[C1][under review] Ali-akbar Agha-mohammadi et al., "**Bi-directional Value Learning for Risk-aware Planning Under Uncertainty**," 2019.

[C2][under review] Max Pflueger, Ali-akbar Agha-mohammadi and Gaurav S. Sukhatme, "**Soft Value Iteration Networks for Planetary Rover Path Planning**," 2019.

[C3]Sahand Sabet, Ali-akbar Agha-mohammadi, Andrea Tagliabue, David Elliott and Parviz E. Nikravesh, "**Rollocopter: An Energy-Aware Hybrid Aerial-Ground Mobility for Extreme Terrains**," *IEEE Aerospace Conference*, Big Sky, Montana, March 2019.

[C4]David Chan and Ali-akbar Agha-mohammadi, "**Autonomous Imaging and Mapping of Small Bodies Using Deep Reinforcement Learning**," *IEEE Aerospace Conference*, Big Sky, Montana, March 2019.

[C5]Petter Nilsson, Sofie Haesaert, Rohan Thakker, Kyohei Otsu, Cristian-Ioan Vasile, Ali-akbar Agha-mohammadi, Richard Murray and Aaron Ames, "**Toward Specification-Guided Active Mars Exploration for Cooperative Robot Teams**," *Robotics: Science and Systems (RSS)*, Pittsburgh, Pennsylvania, June 2018.

[C6]Kyohei Otsu, Ali-akbar Agha-mohammadi and Michael Paton, "**Where to Look? Predictive Perception with Applications to Planetary Exploration**," *IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, March 2018. **The Best Paper Award Finalist.**

[C7]Sofie Haesaert, Petter Nilsson, Cristian-Ioan Vasile, Rohan Thakker, Ali-akbar Agha-mohammadi, Aaron Ames and Richard Murray, "**Temporal Logic Control of POMDPs via Label-based Stochastic Simulation Relations**," *IFAC Conference on Analysis and Design of Hybrid Systems (ADHS)*, Oxford, UK, July 2018.

[C8]Daniel Gaines, Joseph Russino, Daniel Gaines, Joseph Russino, Gary Doran, Ryan Mackey, Michael Paton, Brandon Rothrock, Steve Schaffer, Ali-akbar Agha-mohammadi, Chet Joswig, Heather Justice, Ksenia Kolcio, Jacek Sawoniewicz, Vincent Wong, Kathryn Yu, Gregg Rabideau, Robert Anderson and Ashwin Vasavada, "**Self-reliant Rover Design For Increasing Mission Productivity**," *The International Symposium on Artificial Intelligence, Robotics and Automation in Space (i-SAIRAS)*, Madrid, Spain, June 2018.

[C9]Kamak Ebadi, Ali-akbar Agha-mohammadi and Kyohei Otsu, "**Localization of A Mars Rover in Mars Helicopter-Generated Maps: Preliminary Results**," *The International Symposium on Artificial Intelligence, Robotics and Automation in Space (i-SAIRAS)*, Madrid, Spain, June 2018.

[C10] Daniel Gaines, Joseph Russino, Ali-akbar Agha-mohammadi, Gary Doran, Chet Joswig, Heather Justice, Ksenia Kolcio, Ryan Mackey, Michael Paton, Gregg Rabideau, Brandon Rothrock, Jacek Sawoniewicz, Steve Schaffer, Vincent Wong, Kathryn Yu, Robert Anderson and Ashwin Vasavada, "**Self-reliant Rover Design For Increasing Mission Productivity**," *The International Conference on Automated Planning and Scheduling (ICAPS)*, Delft, Netherlands, June 2018.

[C11] Eric Heiden, Daniel Pastor, Pradyumna Vyshnav, and Ali-akbar Agha-mohammadi, "**Heterogeneous Sensor Fusion via Confidence-rich 3d Grid Mapping: Application to Physical Robots**," *International Symposium on Experimental Robotics (ISER)*, Buenos Aires, Argentina, November 2018.

[C12] Kamak Ebadi, Ali-akbar Agha-mohammadi and Kyohei Otsu, "**Aerial-to-Ground Localization for a Helicopter-Rover Team in Mars-like Environments**," *International Symposium on Experimental Robotics (ISER)*, Buenos Aires, Argentina, November 2018.

[C13] Ali-akbar Agha-mohammadi, Jason Hofgartner, Pradyumna Vyshnav, Jose Mendez, Daniel Tikhomirov, Fernando Chavez, Jonathan Lunine and Issa Nesnas, "**Exploring Icy Worlds: Accessing the Subsurface Voids of Titan through Autonomous Collaborative Hybrid Robots**," *International Planetary Probe Workshop (IPPW)*, Boulder, CO, June 2018.

[C14] Vincenzo Pesce, Ali-akbar Agha-mohammadi and Michèle Lavagna, "**Autonomous Navigation for Small bodies Mapping**," *IEEE Aerospace Conference*, Big Sky, MT, March 2018.

[C15] Ali-akbar Agha-mohammadi, Eric Heiden, Karol Hausman, Gaurav S. Sukhatme, "**Confidence-rich 3D Grid Mapping**", in *International Symposium on Robotics Research (ISRR),* Puerto Varas, Chile, December 2017.

[C16] Eric Heiden, Karol Hausman, Gaurav S. Sukhatme, Ali-akbar Agha-mohammadi, "**Planning High-speed Safe Trajectories in Confidence-rich Map**", in *International Conference on Intelligent Robots and Systems (IROS),* Vancouver, Canada, September 2017.

[C17] Brian Ichter, Edward Schmerling, Ali-akbar Agha-mohammadi, Marco Pavone, "**Real-Time Stochastic Kinodynamic Motion Planning via Multiobjective Search on GPUs**", in *IEEE International Conference on Robotics and Automation (ICRA)*, Singapore, May 2017.

[C18] Beipeng Mu, Matthew Giamou, Liam Paull, Ali-akbar Agha-mohammadi, John J. Leonard, Jonathan P. How, "**Information-Based Active SLAM Via Topological Feature Graphs**," in IEEE Conference on Decision and Control (CDC), Las Vegas, NV, December 2016.

[C19] Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Shih-Yuan Liu, Jonathan P How, John Vian, "**Graph-based Cross Entropy Method for Solving Multi-Robot Decentralized POMDPs**", in *IEEE International Conference on Robotics and Automation (ICRA)*, Stockholm, Sweden, May 2016.

[C20] Beipeng Mu, Ali-akbar Agha-mohammadi, Liam Paull, Matthew Graham, Jonathan How, John Leonard, "**Two-Stage Focused Inference for Resource-Constrained Collision-Free Navigation**", in *Robotics: Science and Systems (RSS)*, Rome, Italy, July 2015.

[C21] Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Jonathan P How, "**Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions**", in *IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, Washington, May 2015.

[C22] N. Kemal Ure, Shayegan Omidshafiei, Brett Thomas Lopez, Ali-akbar Agha-mohammadi, Jonathan P. How, John Vian, "**Heterogeneous Multiagent Learning with Applications to Forest Fire Management**", in *International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, September 2015.

[C23] Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Yu Fan Chen, N. Kemal Ure, Jonathan P. How, John Vian, Rajeev Surati, "**Measurable Augmented Reality for Prototyping Cyber-Physical Systems (MAR-CPS)**", in *AIAA Infotech*, Kissimmee, FL, January 2016.

[C24] Ali-akbar Agha-mohammadi, Nazim Kemal Ure, Jonathan P. How, John Vian, "**Health-aware Stochastic Planning for Persistent Package Delivery Missions using Quadrotors**", in *International Conference on Intelligent Robots and Systems (IROS)*, Chicago, Illinois, September 2014.

[C25] Ali-akbar Agha-mohammadi, Saurav Agarwal, Aditya Mahadevan, Suman Chakravorty, Daniel Tomkins, Jory Denny, Nancy Amato, "**Robust Online Belief Space Planning in Changing Environments: Application to Physical Mobile Robots**", in *IEEE International Conference on Robotics and Automation*

(ICRA), Hong Kong, China, May 2014.

[C26] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy Amato, "**Graph-based Stochastic Control with Constraints: A Unified Approach with Perfect and Imperfect Measurements**", in *American Control Conference (ACC)*, Washington, DC, June 2013.

[C27] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**Sampling-based Nonholonomic Motion Planning in Belief Space via Dynamic Feedback Linearization-based FIRM**", in *International Conference on Intelligent Robots and Systems (IROS)*, Vilamoura, Portugal, October 2012.

[C28] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**On the Probabilistic Completeness of the Sampling-based Feedback Motion Planners in Belief Space**", in *IEEE International Conference on Robotics and Automation (ICRA)*, Saint Paul, Minnesota, May 2012.

[C29] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**FIRM: Feedback Controller-Based Information-State Roadmap, A Framework for Motion Planning under Uncertainty**", in *International Conference on Intelligent Robots and Systems (IROS)*, pp.4284-4291, San Francisco, CA, Sep 2011.

[C30] Ali-akbar Agha-mohammadi, Dezhen Song, "**Robust Recognition of Planar Mirrored Walls Using a Single View**", in *IEEE International Conference on Robotics and Automation (ICRA)*, pp.1186-1191, Shanghai, China, May 2011.

[C31] A. Tamjidi, Hamid D. Taghirad, Ali-akbar Agha-mohammadi, "**On the Consistency of EKF-SLAM: Focusing on the Observation Models**", in *International Conference on Intelligent Robots and Systems (IROS)*, pp.2083-2088, St. Louis, US, Oct. 2009.

[C32] Ali-akbar Agha-mohammadi, A. Tamjidi, Hamid D. Taghirad, "**A Solution for SLAM through Augmenting Vision and Range Information**", in *International Conference on Intelligent Robots and Systems (IROS)*, pp.1037-1042, Nice, France, Oct. 2008.

[C33] Ali-akbar Agha-mohammadi, A. Tamjidi, Hamid D. Taghirad, "**SLAM Based on the LRF Information as the Only Data Source**", in *International Federation of Automatic Control, (IFAC),* pp.14657-14662, Seoul, Korea, July 2008.

[C34] Ali-akbar Agha-mohammadi, Hamid D. Taghirad, A. Tamjidi, Ehsan Mihankhah, "**Feature-Based Range Scan Matching for Accurate and High Speed Mobile Robot Localization",** in *European Conference on Mobile Robots (ECMR)*, Freiburg, Germany, pp.253-258, 2007.

Workshop Papers/Posters

[W1]Max Pflueger, Ali Agha, Gaurav Sukhatme, "**Soft Value Iteration Networks for Planetary Rover Path Planning,**" NIPS workshop on Acting and Interacting in the Real World: Challenges in Robot Learning, Long Beach, CA, December 2017.

[W2]Max Pflueger, Ali-akbar Agha-mohammadi, Gaurav S. Sukhatme, "**Long-Range Path Planning for Planetary Rovers via Imitation Learning and Value Iteration Networks**" in *Southern California Machine Learning Symposium*, Los Angeles, CA, October 2017. **Honorable Mention for the Best Paper Award.**

[W3]Ali-akbar Agha-mohammadi, Eric Heiden, Karol Hausman, Gaurav S. Sukhatme, "**Confidence-aware Occupancy Grids**", in International Conference on Intelligent Robots and Systems (IROS), Workshop on Vision-based Agile Autonomous Navigation of UAVs, Vancouver, Canada, September 2017.

[W4]Eric Heiden, Karol Hausman, Gaurav S. Sukhatme, Ali-akbar Agha-mohammadi, "**High-speed Safe Trajectory Planning in Confidence-rich Maps**", in International Conference on Intelligent Robots and Systems (IROS), Workshop on Vision-based Agile Autonomous Navigation of UAVs, Vancouver, Canada, September 2017.

[W5]Eric Heiden, Karol Hausman, Guarav Sukhatme, Ali-akbar Agha-mohammadi, "**Safe Trajectory Generation using Confidence-rich Maps**," in *Southern California Robotics Symposium (SCR)*, Los Angeles, CA, April 2017.

[W6] Ali-akbar Agha-mohammadi, "**SMAP: Simultaneous Mapping and Planning on Occupancy Grids**," in International Conference on Intelligent Robots and Systems (IROS), Workshop on Vision-based High Speed Autonomous Navigation of UAVs, Daejeon, South Korea, October 2016.

[W7] Christopher Amato, George Konidaris, Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Jonathan P. How, Leslie P. Kaelbling, "**Probabilistic Planning for Decentralized Multi-Robot Systems**", in *Sequential Decision Making for Intelligent Agents, AAAI fall symposium*, Arlington, VA, November 2015.

[W8] Ali-akbar Agha-mohammadi, Shayegan Omidshafiei, Christopher Amato, Jonathan P. How, "**Graph-based Planning to Solve Multi-agent POMDPs**", In *Robotics: Science and Systems 2014 Workshop on Distributed Control and Estimation for Robotic Vehicle Networks*, Berkeley, CA, July 2014.

[W9] Ali-akbar Agha-mohammadi, Saurav Agarwal, Suman Chakravorty, Nancy M. Amato, "**Dynamic Closed-loop Replanning in Belief Space: Toward Handling Dynamically Changing Environments**", in *Robotics: Science and Systems 2014 Workshop on Information-based Grasp and Manipulation Planning*, Berkeley, CA, July 2014.

[W10] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**Online Replanning in Belief Space for Dynamical Systems: Towards Handling Discrete Changes of Goal Location**", in *IEEE International Conference On Robotics and Automation (ICRA), Workshop on Combining Task and Motion Planning,* Karlsruhe, Germany, May 2013.

[W11] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**Medical Needle Steering under Motion and Sensor Noise using Feedback-based Information Roadmaps**", in *IEEE International Conference On Robotics and Automation (ICRA), Workshop on Medical Needle Steering*, Saint Paul, Minnesota, May 2012.

[W12] Arash Kalantari, Ehsan Mihankhah, Ali-akbar Agha-mohammadi, "**Resquake, A Tracked Mobile Rescue Robot**", in *Rescue Robotics Camp, IEEE International Workshop on Safety Security and Rescue Robotics (SSRR)*, Rome, Italy, September 2007.

Patents (submitted)

[P1] Ali-akbar Agha-mohammadi, "**Rollocopter: Novel Hybrid Aerial-Ground Vehicle for Failure-Resilient, Energy-Efficient, and Agile Mobility**," *Submitted to The United States Patent and Trademark Office*.

[P2] Ali-akbar Agha-mohammadi, "**Cobots: Autonomous Cooperatives Robots for Resilient Mobility on Titan and Beyond,**" *Submitted to The United States Patent and Trademark Office*.

[P3] Zhaoyang Lv, Ali-akbar Agha-mohammadi, "**Holistic Planning with Multiple Intentions for Self-driving Cars**," Submitted to The United States Patent and Trademark Office.

[P4] Zhaoyang Lv, Ali-akbar Agha-mohammadi, Amirhossein Tamjidi, "**Motion Planning and Intention Prediction for Autonomous Driving in Highway Scenarios via Factor Graph Representation**," Submitted to The United States Patent and Trademark Office.

[P5] Ali-akbar Agha-mohammadi, Kiran Somasundaram, Saurav Agarwal, "**Measurement Fusion for 3D grid Mapping using cause-dependent inverse cause models**," Submitted to The United States Patent and Trademark Office.

[P6] Ali-akbar Agha-mohammadi et al., "**Vision-based Autonomous Navigation System for Quadcopters**," Submitted to The United States Patent and Trademark Office.

[P7] Ali-akbar Agha-mohammadi, et al., "**RRF: Rapidly Exploring Randomized Feedback Trees for Robot Motion Planning**" 2015. Submitted to The United States Patent and Trademark Office.

[P8] Ali-akbar Agha-mohammadi, et al., "**Certainty-aware 3D Grid Map and Bayesian Update based on Stereo Vision**" 2015. Submitted to The United States Patent and Trademark Office.

[P9] Ali-akbar Agha-mohammadi, et al., "**Most Likely Map Computation based on Raw Stereo Vision Measurements**" 2015. Submitted to The United States Patent and Trademark Office.

[P10] Ali-akbar Agha-mohammadi, et al., "**Stochastic Map-aware Stereo-vision Sensor Model for Robot Navigation in Unknown Environments**" 2015. Submitted to The United States Patent and Trademark Office.

[P11] Ali-akbar Agha-mohammadi, et al., "**Robot Motion Planning and Exploration using Certainty-aware Stochastic Grid Maps**" 2015. Submitted to The United States Patent and Trademark Office.

[P12] Ali-akbar Agha-mohammadi, et al., "**Object-focused Active 3D Reconstruction using Monocular Camera: Application to Precision Robotic Grasping**" 2015. Submitted to The United States Patent and Trademark Office.

[P13] Ali-akbar Agha-mohammadi, et al., "**Active Camera Movement Determination for Object Position and Extent in Three-Dimensional Space**" 2015. Submitted to The United States Patent and Trademark Office.

[P14] Ali-akbar Agha-mohammadi, "**Parallel Robot Motion Planning Under Uncertainty**" 2015. Submitted to The United States Patent and Trademark Office.

Refereed non-English Papers

[N1] A. Tamjidi, Ali-akbar Agha-mohammadi, Hamid D. Taghirad, "**Augmenting Vision and LRF Information: Towards Encoder-free SLAM in Unstructured Environments**", in Proc. *Fifth Machine Vision and Image Processing Conference*, Tabriz, Iran, 2008.

[N2] Ali-akbar Agha-mohammadi, Majid Nili Ahmadabadi, Taher S. Mirzahasanloo, "**Behavior Learning in Behavior-Based Architectures Using Reinforcement Learning**", in Proc. *12th International CSI Computer Conference (CSICC'07)*, Tehran, Iran, pp.171-174, 2007.

[N3] Ali-akbar Agha-mohammadi, "**Mobile Robot Localization Using Single Camera**", in Proc. *10th Iranian Student Conference on Electrical Engineering, (ISCEE'07)*, Esfahan, Iran, 2007.

[N4] Ali-akbar Agha-mohammadi, Taher S. Mirzahasanloo**, "Path Planning Using Recurrent Hopfield Neural Network**", in Proc. of *10th Iranian Student Conference on Electrical Engineering, (ISCEE'07)*, Esfahan, Iran, 2007.

[N5] Ali-akbar Agha-mohammadi, A. Tamjidi, "**An Introduction to Modified Methods in Ant Colony Systems Optimization and Proposing a New Local Optimizer**", in Proc. *10th Intelligent Systems Conference*, Tehran, Iran, pp.460-463, 2005.

Technical Reports

[T1] Ali-akbar Agha-mohammadi, Nazim Kemal Ure, Jonathan P. How, John Vian, "**Health-aware Stochastic Planning for Persistent Package Delivery Missions using Quadrotors**", Technical Report, Aerospace Controls Laboratory, Department of Aero/Astro, MIT, Dec 2013.

[T2] Ali-akbar Agha-mohammadi, Saurav Agarwal, Suman Chakravorty, "**Periodic-node Graph-based Framework for Stochastic Control of Small Aerial Vehicles**", Technical Report, TAMU-EDPL-TR-2014-001, Department of Aerospace Engineering, Texas A&M University, 2014.

[T3] Ali-akbar Agha-mohammadi, Saurav Agarwal, Aditya Mahadevan, Suman Chakravorty, Daniel Tomkins, Jory Denny, Nancy M. Amato, "**Dynamic Real-time Replanning in Belief Space: An Experimental Study on Physical Mobile Robots**", Technical Report, TR13-007, Department of Computer Science, Texas A&M University, Jul 2013.

[T4] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**Sampling-based Nonholonomic Motion Planning in Belief Space via Dynamic Feedback Linearization-based FIRM**", Technical Report, TR12-004, Department of Computer Science and Engineering, Texas A&M University, Mar 2012.

[T5] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**Periodic-Feedback Motion**

Planning in Belief Space for Nonholonomic and/or Nonstoppable Robots", Technical Report, TR12-003, Department of Computer Science and Engineering, Texas A&M University, Feb 2012.

[T6] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy M. Amato, "**Sampling-based Feedback Motion Planning under Motion Uncertainty and Imperfect Measurements**", Technical Report, TR11-007, Department of Computer Science and Engineering, Texas A&M University, Dec 2011.

[T7] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy Amato, "**Probabilistic Completeness of the Belief Space Motion Planners**", Technical Report, TR11-006, Department of Computer Science and Engineering, Texas A&M University, Nov 2011.

[T8] Ali-akbar Agha-mohammadi, Suman Chakravorty, Nancy Amato, "**FIRM: Feedback Controller-Based Information-State Roadmap, A Framework for Motion Planning Under Uncertainty**", Technical Report, TR11-001, Department of Computer Science and Engineering, Texas A&M University, Jan 2011

Dissertations

[D1] "**Sampling-based State Estimation and Stochastic Control for Robot Motion Planning under Motion Uncertainty and Noisy Sensor Measurements**", PhD Dissertation, Department of Computer Science and Engineering, Texas A&M University, Oct 2013.

[D2] "**Design and Implementation of Multi-sensor Fusion methods for Solving Simultaneous Localization And Mapping (SLAM) Problem**", M.Sc. Thesis, Department of Electrical and Computer Engineering, Khaje Nasir Toosi University of Technology, July 2008.

[D3] "**Robosoccer: Small-size Soccer Robots for Robocup Competitions**", B.Sc. Thesis, Department of Electrical and Computer Engineering, Tabriz University, June 2005

Research Mentoring/ Management Experience

Postdocs

[1] Dr. Jeffrey Edlund, JPL, 2018-2019
[2] Dr. Benjamin Morrell, JPL, 2018-2019
[3] Dr. Matthew Anderson, JPL, 2018-2019

Graduate Students

[1] David Fan (PhD, Georgia Tech), JPL visiting researcher, 2018
[2] Brett Lopez (PhD, MIT), JPL summer Intern, 2018
[3] Abhishek Cauligi (PhD, Stanford), NASA Mentor for NASA NSTRF fellow, 2018
[4] David Chan (PhD, Berkeley), JPL summer Intern, 2018
[5] Project: Autonomous mapping and spacecraft planning: Application to small body mapping
[6] SooJean Han (PhD, Caltech), JPL summer Intern, 2018
[7] Giulio Autelitano (MS, Università di Pisa), JPL visiting researcher, 2018
[8] Xianmei Lei (MS, Cal Poly Pomona), JPL Intern, 2018
[9] Meriem Ben Miled (MS, ETH), JPL visiting researcher, 2018
[10] Sandro Berchier (MS, ETH), JPL visiting researcher, 2018
[11] Jacopo Villa (MS, KTH), JPL visiting researcher, 2018
[12] Jared Strader (PhD, West Virginia University), JPL visiting researcher, 2018
[13] Eric Heiden (PhD, USC), JPL Intern, 2018
[14] Scott Harper (Master, West Virginia University), JPL Intern, 2018
[15] Andrea Tagliabue (Master, ETH), JPL Intern, 2018
[16] Gabrielle Hetrick (PhD, West Virginia University), JPL Intern, 2018
[17] Sahand Sabet (PhD, University of Arizona), JPL Intern, 2018
[18] Kamak Ebadi (PhD, Santa Clara University), JPL Intern, 2018
[19] Pradyumna Vyshnav (Master, Aalto University), JPL Intern, 2018
[20] Takahiro Sasaki (PhD, Kyoto University), JPL Intern, 2017
[21] Sung Kim (PhD, CMU), JPL Intern, 2017
[22] Max Pflueger (PhD, USC), JPL Intern, 2017

[23] Vincezno Pesce (PhD, Politecnico di Milano), JPL Intern, 2017
[24] Zhaoyang Lv (PhD, GeorgiaTech), Qualcomm Research Intern, 2016
[25] Amir Tamjidi (Masters, Texas A&M), Qualcomm Research Intern, 2016
[26] Lucas Janson, (PhD, Stanford), Qualcomm innovation fellowship program, 2016
[27] Edward Schmerling, (PhD., Stanford), Qualcomm innovation fellowship program, 2016
[28] Beipeng Mu, (PhD, MIT), Research Mentoring, 2014-2015
[29] Shayegan Omidshafiei, (PhD, MIT), Research Mentoring, 2013-2015
[30] Brett Lopez, (PhD, MIT), MIT-Boeing alliance on multi-robot systems, 2014
[31] Yu Fan/Steven Chen, (PhD, MIT), MIT-Boeing alliance on multi-robot systems, 2014
[32] Saurav Agarwal, (PhD, Texas A&M), Research Mentoring, 2013
[33] Mohammad Rafiei, (PhD, Texas A&M), Research Mentoring. 2013
[34] Amir Tamjidi, (Master's, Texas A&M), Research Mentoring, 2013

Undergraduate Students

[1] Xianmei Lei, JPL Intern, 2017-2018
[2] Fernando Chavez, JPL Intern, 2017-2018
[3] Daniel Tikhomirov, JPL Intern, 2017-2018
[4] Braddley Carey, JPL Intern, 2017
[5] Emilie Naples, JPL Intern, 2017
[6] Jose Mendez, JPL Intern, 2017-2018
[7] Roberto Mendez, JPL Intern, 2017
[8] Christopher Maynor, Research Mentoring at MIT, 2014
[9] Mycal Tucker, Research Mentoring at MIT, 2014
[10] Jesse Alder, Research Mentoring at MIT, 2014
[11] Ajinkya Jain, Research Mentoring at Texas A&M, 2013
[12] Fernando Pastor, Research Mentoring at Texas A&M, 2013
[13] Karan Bagadiya, Research Mentoring at Texas A&M, 2012-2013
[14] Ammar M. Abbas, Research Mentoring at Texas A&M, 2012
[15] Cole Jones, Research Mentoring at Texas A&M, 2010
[16] Kasra Khosousi, Research Mentoring at KN Toosi, 2008

Visiting faculty member

[17] Dr. Paul Akangah, JPL visiting faculty member, 2017

Teaching Experience

Texas A&M University

ECE & CSE Dept., **C++ Programming**, undergraduate course, Teaching Assistant (Spring 2010), Instructor: Dr. Stroustrup (Creator of the C++ programming language)
ECE & CSE Dept., **Introduction to Electrical and Computer Engineering (**Using **Lego Mindstorms Robots)**, undergraduate course, Teaching Assistant (Fall 2009)
CSE Dept., **Artificial Intelligence**, undergraduate course, Teaching Assistant. (Summer 2009 and Spring 2009)

K.N. Toosi University of Tech

ECE Dept., **Robotics**, graduate course, Teaching Assistant. (Spring 2008)
ECE Dept., **Introduction to Intelligent Systems**, graduate course, Teaching Assistant. (Spring 2008)
ECE Dept., **Fuzzy Control Systems**, graduate course, Teaching Assistant. (Spring 2007)

Adiban University of Garmsar

ECE Dept., **Programming Languages (C++)**, undergraduate course, Lecturer (Fall 2008)
ECE Dept., **Operating Systems**, undergraduate course, Lecturer (Fall 2008)
ECE Dept., **Data Structures**, undergraduate course, Lecturer (Fall 2008)
ECE Dept., **Programming Languages (C++)**, undergraduate course, Lecturer (Spring 2008)
ECE Dept., **Operating Systems**, undergraduate course, Lecturer (Spring 2008)
ECE Dept., **Data Structures**, undergraduate course, Lecturer (Spring 2008)

Azad University of Behbahan

EE Dept., **Electronic Circuits**, undergraduate course, Lecturer (Fall 2006)

EE Dept., **Electrical Circuits**, undergraduate course, Lecturer (Fall 2006)
EE Dept., **Electrical Machines**, undergraduate course, Lecturer (Fall 2006)

Idea Institute

Matlab Programming (+ Some Toolboxes, such as Neural Networks, Fuzzy Logic, and Genetics Algorithms, Math Symbolic, Image Processing, Image Acquisition and …), Instructor (Fall 2007)

Tabriz University

ECE Dept., **Microcontrollers Programming (8051 & AVR)**, Free classes for interested students (2002-2004)

Selected Research Highlighted in Media

- Article: "Helping robots handle uncertainty algorithm for planning multirobot collaborations makes complex models practical" by Larry Hardesty, MIT news, 2015.
- Article: "Augmented Reality Room Shows What Robots Are Thinking" By Evan Ackerman, IEEE spectrum, 2014.
- Article on our Measurable Augmented Reality system is featured on the cover page of MIT: http://news.mit.edu/2014/system-shows-robot-intentions-1029
- Article: "Projecting a robot's intentions: A new spin on virtual reality helps engineers read robots' minds" by Jennifer Chu, MIT news, 2014.
- Article on our planning method for package delivery under uncertainty is featured on the cover page of MIT: http://web.mit.edu/site/spotlight/4123
- Article: "Delivery by drone" by Jennifer Chu, MIT news, 2014
- Article: "MIT Researchers Are Now Able To Watch Robots Think", by Eric Hopton, RedOrbit, 2014.
- Article: "Delivery drones will monitor their own health" by Katie Collins, Wired, 2014
- Our "persistent package delivery using quadrotors" is featured in Boeing press release on announcing MIT as the recipient of the 2013 Boeing Supplier of the Year Award (April 22, 2014) for the Leader's Choice: Innovation category. (See this link and Boeing Press Release).
- Article: "Here's What Your Robot Is Thinking When It Slams into a Wall" by Jordan Pearson, Vice, 2014.
- Article: "MIT Visualizes What Robots Are Thinking", by Mark Wilson, Fast Company, 2014.
- Article: "Measurable virtual reality reveals robots' intentions", by Ben Coxworth, Gizmag, 2014.
- Article: "MIT Creates a Visualization System to Track the Way Robots Think", by Shannon Nargi, BostInno, 2014.
- Article: "MIT's robot VR rig lets them read the mind of a machine", by Graham Templeton, Geek, 2014.
- Article: "Self-charging stations, smarts, make for a more efficient delivery drone" by Nidhi Subbaraman, BetaBoston and Boston Globe, 2014
- Article: "How delivery drones could monitor their own health" by Tanya Lewis, Yahoo! news and LiveScience, 2014
- Article: "Delivery drones closer to reality with self-monitoring quadcopters", by Lucy Incgam, Factor Magazine, 2014
- Article: "Delivery drones will need to recognize when they are not fit to fly, and this algorithm could help", by Signe Brewster, GigaOM, 2014
- Article: "MIT students figure out how to make delivery-by-drone a reality", by Ruth Reader, VentureBeat news, 2014
- Article: "MIT breakthrough brings delivery drones closer to reality", by Eric Hopton, Red Orbit, 2014
- Article: "Novel way to monitor drone's parameters", by Ians, The economic times, 2014
- Article: "Drones could monitor their health during package delivery", by TechSwarm, 2014
- Article: "MIT's new algorithm could make drone delivery an actual reality", by Lauren Landry, BostInno
- Article: "MIT algorithm lets delivery drones monitor their health in real-time", by Nick Lavars, GizMagazin
- >>> For more media coverage, please visit: http://people.lids.mit.edu/aliagha/Web/media.htm

Professional Activities

Workshop organizing committee:

-- Robotics Science and Systems (RSS) workshop on "POMDPs in Robotics: State of The Art, Challenges, and Opportunities", MIT, Cambridge, MA, 15th Jul 2017.

-- Southern California Robotics Symposium (SCR), USC, Los Angeles, CA, 14th Apr 2017, http://socal-robotics.org/
-- Southern California Robotics Symposium (SCR), UCSD, San Diego, CA, 22nd Apr 2016, http://socal-robotics.org/
-- MURI (Multidisciplinary University Research Initiative) workshop on "Nonparametric Bayesian Models to Represent Knowledge and Uncertainty for Decentralized Planning", MIT, Cambridge, MA, 23rd Jan 2014.
-- MURI (Multidisciplinary University Research Initiative) workshop on "Nonparametric Bayesian Models to Represent Knowledge and Uncertainty for Decentralized Planning", MIT, Cambridge, MA, 30th Sep 2014.

Associate Editor/ Program Committee for the Following Conferences:

AE for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2015
PC for Robotics: Science and Systems (RSS), 2017
PC for Autonomous Agents and MultiAgent Systems (AAMAS), 2017

Reviewer for the Following Journals and Conferences:

[J1] International Journal of Robotics Research (IJRR)
[J2] IEEE Transaction on Robotics (TRO)
[J3] Autonomous Robots
[J4] IEEE Robotics and Automation Letters (RAL)
[J5] ASME Journal of Dynamic Systems, Measurement and Control
[J6] Journal of Aerospace Information Systems (JAIS)
[J7] Computer Animation and Virtual Worlds (CAVW)
[C1] Robotics: Science and Systems (RSS)
[C2] IEEE International Conference on Robotics and Automation (ICRA)
[C3] Workshop on the Algorithmic Foundations of Robotics (WAFR)
[C4] IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
[C5] American Control Conference (ACC)
[C6] International Federation of Automatic Control World Congress (IFAC)
[C7] AAAI Conference on Artificial Intelligence (AAAI)
[C8] IEEE International Symposium on Mixed and Augmented Reality (ISMAR)
[C9] Computer Animation and Virtual Worlds (CAVW)
[C10] International Conference on Motion in Games (MIG)
[C11] Conference on Computer Animation and Social Agents (CASA)
[C12] IEEE International Conference on Mechatronics and Automation (ICMA)
[C13] Advanced Intelligent Mechatronics (AIM)
[C14] International Conference on Intelligent Autonomous Systems (IAS)
[C15] International Symposium on Multi-Robot and Multi-Agent Systems (MRS)

Workshop committee member/ session chair/ student volunteer:

-- Workshop on "Robot Learning and Planning" at Robotics: Science and Systems (RSS) conference, University of Michigan, Ann Arbor, MI, June 18-22, 2016.
-- Session chair, Regular Session: "**Machine Learning and Probabilistic Reasoning for Intelligent UAS**", *AIAA Infotech @ Aerospace, AIAA Science and Technology*, San Diego, California, Jan 2016.
-- IROS (IEEE/RSJ International Conference on Intelligent Robots and Systems) 2011 organization team
-- Workshop on "Quality Software: A Festschrift for Bjarne Stroustrup", College Station, TX, April 27-28, 2012
-- Session chair, Regular Session MolVT16: "**SLAM: Theory**", IEEE/RSJ International Conference on Intelligent RObots and Systems (IROS'09), St. Louis, US, Oct 2009.

Serving as a Thesis Committee Member:

-- Reader member on PhD dissertation defense committee, Brandon Luders, Dept. of Aeronautics and Astronautics at MIT, May 2014
-- Reader member on PhD dissertation defense committee, Nazim Kemal Ure, Dept. of Aeronautics and Astronautics at MIT, Jan 2015

Member of the Following Societies and Groups:

-- IEEE Member (2008-present)
-- IEEE RAS Member (2012-present)
-- Member of LIDS (Laboratory for Information and Decision Systems) at MIT (2013-2015)

-- Member of ACL (Aerospace Controls Laboratory) at MIT (2013-2015)
-- Member of GTA (Graduate Teaching Academy) at Texas A&M University (2009-2013)
-- Member of Center for Mechanics and Control, Aero Dept., Texas A&M University (2010-2013)
-- Member of Parasol lab., CSE Dept., Texas A&M University (2010-2013)
-- Member of NetBot lab., CSE Dept., Texas A&M University (2009-2010)
-- Member of the Resquake team (A robotics team building rescue robots for Robocup competitions. My responsibility was designing SLAM algorithms in rescue environments for autonomous robots) – (2006-2007)
-- Member of Advanced Robotic & Automated Systems (ARAS), Dept. of ECE, K.N. Toosi Uni. of Tech. (2006-2007)
-- Founder of the Robosoccer team, Tabriz University. (2004-2005)
-- Founder of an educational team in Tabriz University, APEK8051. The team was conducting free classes for interested students in mobile robotics related topics and microcontroller (such as 8051, AVR, PIC) programming. (2004-2005)

Awards in Robotic Contests

-- Second Place - Advanced Autonomy, International Robotics Contest, Robocup 2007, Iran Open, Rescue Robots, real league. (2007)
-- First Place - Advanced Mobility, International Robotics Contest, Robocup 2007, Iran Open, Rescue Robots, real league. (2007)
-- Participated in International Robotics Contest, Robocup'07, Atlanta, Rescue real league. (2007)
-- Second Place in Intelligent Mice Robotics Contest, Tabriz University (2002)

Outreach and open robotics demos for public

-- MIT Aeronautics and Astronautics centennial symposium, Oct 22nd-24th 2014
-- Robotics demo for the students in the Discover Aerospace Freshman Pre-Orientation Program, Aug 22nd, 2014
-- Robotics demo for Boeing company after MIT received Boeing's Supplier of the Year" Award in the university/innovation category, May 6th 2014
-- Public open house for Aero/Astro 100-year anniversary (MIT), April 23rd-24th 2014
-- Open-house demo for prospective graduate students of the department of Aero-Astro at MIT, Mar 14th, 2014.