

Shiqi Zhang, Ph.D.

Assistant Professor
Department of Computer Science
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Research Interests

Artificial Intelligence and Robotics.

In particular, I am interested in developing algorithms that integrate reasoning, planning, and learning formalisms for mobile service robots that work in human-inhabited, collaborative, everyday environments.

Research Experience

Assistant Professor, 09/2018 - present

Research Assistant Professor, 05/2018 - 08/2018

The State University of New York at Binghamton, Deptment of Computer Science (Binghamton, NY, USA)

Assistant Professor, 08/2016 - 05/2018

Cleveland State University, Dept. of Electrical Engineering and Computer Science (Cleveland, OH, USA)

Postdoctoral Fellow, with Professor Peter Stone, 02/2014 - 08/2016

The University of Texas at Austin, Dept. of Computer Science (Austin, TX, USA)

Postdoctoral Research Associate, with Professor Mohan Sridharan, 09/2013 - 02/2014

Research Assistant, 09/2009 - 08/2013

Texas Tech University, Dept. of Computer Science (Lubbock, TX, USA)

Intern, 06/2012 - 09/2012

Microsoft Research Asia, Mobile and Sensing Systems Group (Beijing, China)

Software Development Intern, 02/2009 - 05/2009

Shenzhen Wayto Technology (Shenzhen, China)

Research Assistant, 03/2007 - 12/2008

Tsinghua University, Tsinghua-CUHK Joint Research Center for Media Sciences and Systems (Shenzhen, China)

Education

- **Ph.D. in Computer Science** (GPA: 3.918/4.0), Texas Tech University, Lubbock TX, USA. 08/2013
Dissertation topic: "Integrating Answer Set Programming and POMDPs for Knowledge Representation and Reasoning in Robotics".
Dissertation Committee: Mohan Sridharan (Chair), Micheal Gelfond, Hamed Sari-Sarraf, and Jeremy Wyatt
- **M.S. in Microelectronics**, Harbin Institute of Technology, Harbin, China. 12/2008
Outstanding Graduate Award, Higher Education Office of Heilongjiang Province (2% in HIT received)
- **B.S. in Microelectronics**, Harbin Institute of Technology, Harbin, China. 07/2006

Publications

Journal Articles

- Saeid Amiri, Mohammad Shokrolah-Shirazi, and Shiqi Zhang, **Learning, Reasoning, and Planning for Robot Sequential Decision Making**, *Journal of Artificial Intelligence Research (JAIR)*, Submitted in May 2020 (Under review)
- Mohammad Shokrolah Shirazi, Brendan Tran Morris, Ahmad Patooghy, and Shiqi Zhang, **Intersection Analysis Using A Deep Visual Tracking Framework**, *IEEE Sensors Journal, Special Issue on Advanced Sensing and Sensor Fusion for Intelligent Transportation Systems*, Submitted in 2020 (Under review)
- Yuqian Jiang, Fangkai Yang, Shiqi Zhang and Peter Stone, **Task-Motion Planning with Learning for Adaptable Mobile Robots**, *Frontiers in Robotics and AI, Section on Computational Intelligence in Robotics*, Submitted in May 2020 (Under review)
- Shiqi Zhang and Peter Stone, **iCORPP: Interleaved Commonsense Reasoning and Probabilistic Planning on Robots**, *Artificial Intelligence Journal (AIJ)*, Submitted in April 2020 (Under review)
- Shih-Yun Lo, Shiqi Zhang, and Peter Stone, **The PETLON Algorithm to Plan Efficiently for Task-Level-Optimal Navigation**, *Journal of Artificial Intelligence Research (JAIR)*, Conference Award Track, 2020 (Accepted, to appear)
- Yuqian Jiang, Harel Yedidsion, Shiqi Zhang, Guni Sharon, and Peter Stone, **Multi-Robot Planning with Conflicts and Synergies**, *Autonomous Robots*, Volume 43, Issue 8, pp 2011-2032, 2019
- Mohan Sridharan, Michael Gelfond, Shiqi Zhang, and Jeremy Wyatt, **REBA: a Refinement-Based Architecture for Knowledge Representation and Reasoning in Robotics**, *Journal of Artificial Intelligence Research (JAIR)*, Volume 65, pp 87-180, 2019
- Yuqian Jiang, Shiqi Zhang, Piyush Khandelwal, and Peter Stone, **Task Planning in Robotics: an Empirical Comparison of PDDL-based and ASP-based Systems**, *Frontiers of Information Technology and Electronic Engineering, Special Issue on Intelligent Robots*, Volume 20, Issue 3, pp 363-373, 2019
- Piyush Khandelwal, Shiqi Zhang, Jivko Sinapov, Matteo Leonetti, Jesse Thomason, Fangkai Yang, Ilaria Gori, Maxwell Svetlik, Priyanka Khante, Vladimir Lifschitz, J.K. Aggarwal, Raymond Mooney, and Peter Stone, **BWIBots: A Platform for Bridging the Gap Between AI and Human-Robot Interaction Research**, *International Journal on Robotics Research (IJRR)*, Volume 36, Issue 5-7, pp 635-659, 2017
- Shiqi Zhang, Mohan Sridharan and Jeremy Wyatt, **Mixed Logical Inference and Probabilistic Planning for Robots in Unreliable Worlds**, *IEEE Transactions on Robotics (T-RO)*, Volume 31, Issue 3, pp 699-713, 2015
- Shiqi Zhang, Mohan Sridharan and Christian Washington, **Active Visual Planning for Mobile Robot Teams using Hierarchical POMDPs**, *IEEE Transactions on Robotics (T-RO)*, Volume 29, Issue 4, pp 975-985, 2013

Refereed Conference Papers

- Yan Ding, Xiaohan Zhang, Xingyue Zhan, and Shiqi Zhang, **Task-Motion Planning for Safe and Efficient Urban Driving**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, NV, October 25-29, 2020
- Keting Lu, Shiqi Zhang, Peter Stone, and Xiaoping Chen, **Learning and Reasoning for Robot Dialog and Navigation Tasks**, *The Annual Meeting of the Special Interest Group on Discourse and Dialogue (SIGDIAL)*, Special Session on Situated Dialogue with Virtual Agents and Robots, Boise, Idaho, July 1-3, 2020
- Yan Cao, Keting Lu, Xiaoping Chen, and Shiqi Zhang, **Adaptive Dialog Policy Learning with Hindsight and User Modeling**, *The Annual Meeting of the Special Interest Group on Discourse and Dialogue (SIGDIAL)*, Boise, Idaho, July 1-3, 2020

- Saeid Amiri, Mohammad S. Shirazi, and Shiqi Zhang, **Learning and Reasoning for Robot Sequential Decision Making under Uncertainty**, *The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, New York, New York, USA, February 2020 (Oral, 5.2% acceptance rate)
- Saeid Amiri, Sujay Bajracharya, Cihangir Goktolga, Jesse Thomason, and Shiqi Zhang, **Augmenting Knowledge through Statistical, Goal-oriented Human-Robot Dialog**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Macau, China, November 2019
- Yuqian Jiang, Fangkai Yang, Shiqi Zhang, and Peter Stone, **Task-Motion Planning with Reinforcement Learning for Adaptable Mobile Service Robots**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Macau, China, November 2019
- Yi Wang, Shiqi Zhang, and Joohyung Lee, **Bridging Commonsense Reasoning and Probabilistic Planning via a Probabilistic Action Language**, *The 35th International Conference on Logic Programming (ICLP)*, Special Issue of TPLP, Las Cruces, New Mexico, September 2019
- Keting Lu, Shiqi Zhang, and Xiaoping Chen, **Goal-oriented Dialogue Policy Learning from Failures**, *The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, Honolulu, Hawaii, 2019
- Saeid Amiri, Suhua Wei, Shiqi Zhang, Jivko Sinapov, Jesse Thomason, and Peter Stone, **Multi-modal Predicate Identification using Dynamically Learned Robot Controllers**, *International Joint Conference on Artificial Intelligence (IJCAI)*, Stockholm, Sweden, 2018
- Shih-Yun Lo, Shiqi Zhang, and Peter Stone, **PETLON: Planning Efficiently for Task-Level-Optimal Navigation**, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Stockholm, Sweden, 2018 [**Best Robotics Paper Award**]
- Dongcai Lu, Shiqi Zhang, Peter Stone, and Xiaoping Chen, **Leveraging Commonsense Reasoning and Multimodal Perception for Robot Spoken Dialog Systems**, *International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada, 2017
- Shiqi Zhang, Yuqian Jiang, Guni Sharon and Peter Stone, **Multirobot Symbolic Planning under Temporal Uncertainty**, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Sao Paulo, Brazil, 2017
- Shiqi Zhang, Piyush Khandelwal and Peter Stone, **Dynamically Constructed (PO)MDPs for Adaptive Robot Planning**, *The Thirty-First AAAI Conference on Artificial Intelligence (AAAI)*, San Francisco, California, 2017
- Shiqi Zhang, Dongcai Lu, Xiaoping Chen and Peter Stone, **Robot Scavenger Hunt: A Standardized Framework for Evaluating Intelligent Mobile Robots**, *International Joint Conference on Artificial Intelligence (IJCAI)*, Demonstrations Track (two pages), New York City, 2016
Full Day Demonstration of our robot running Scavenger Hunt tasks in Austin TX (with Pato Lankenau).
- Shiqi Zhang and Peter Stone, **CORPP: Commonsense Reasoning and Probabilistic Planning, as Applied to Dialog with a Mobile Robot**, *The Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI)*, Austin, TX, 2015
- Jesse Thomason, Shiqi Zhang, Raymond Mooney and Peter Stone, **Learning to Interpret Natural Language Commands through Human-Robot Dialog**, *International Joint Conference on Artificial Intelligence (IJCAI)*, Buenos Aires, Argentina, 2015
Highlighted in Press Conference (4/575); Covered by CXOToday, CIO and H+ in July 2015
- Shiqi Zhang, Fangkai Yang, Piyush Khandelwal and Peter Stone, **Mobile Robot Planning using Action Language BC with an Abstraction Hierarchy**, *International Conference on Logic Programming and Non-monotonic Reasoning (LPNMR)*, Lexington, KY, 2015
- Shiqi Zhang, Mohan Sridharan, Michael Gelfond and Jeremy Wyatt, **Towards an Architecture for Knowledge Representation and Reasoning in Robotics**, *International Conference on Social Robotics (ICSR)*, Sydney, Australia, 2014

- Shiqi Zhang, Mohan Sridharan and Forrest Bao, **ASP+POMDP: Integrating Non-monotonic Logic Programming and Probabilistic Planning on Robots**, *International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EPIROB)*, San Diego, CA, 2012 [**Paper of Excellence Award**]
- Shiqi Zhang and Mohan Sridharan, **Active Visual Sensing and Collaboration on Mobile Robots using Hierarchical POMDPs**, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Valencia, Spain, 2012
- Shiqi Zhang, Forrest Sheng Bao and Mohan Sridharan, **Combining Probabilistic Planning and Logic Programming on Mobile Robots**, *The Twenty-Sixth AAAI Conference on Artificial Intelligence (AAAI)*, Student Abstract Track (two pages), Toronto, Canada, 2012
- Xiang Li, Mohan Sridharan and Shiqi Zhang, **Autonomous Learning of Vision-based Layered Object Models on Mobile Robots**, *International Conference on Robotics and Automation (ICRA)*, Shanghai, China, 2011
- Shiqi Zhang, Mohan Sridharan and Xiang Li, **To Look or Not to Look: A Hierarchical Representation for Visual Planning on Mobile Robots**, *International Conference on Robotics and Automation (ICRA)*, Shanghai, China, 2011
- Chun Yuan, Shiqi Zhang and Zhao Wang, **A Handwritten Character Recognition System Based on Acceleration**, *International Conference on Digital Content, Multimedia Technology and its Applications*, Busan, South Korea, 2011
- Shiqi Zhang, Chun Yuan and Yan Zhang, **Self-defined Gesture Recognition on Keyless Handheld Devices Using MEMS 3D Accelerometer**, *International Conference on Natural Computation*, Jinan, China, 2008
- Zhao Liu, Zhijie Yuan, Weichang Xu, Xiang Song, Shiqi Zhang and Qibo Huang, **Design of Gesture Recognition, using Freescale 3D Micro-accelerometers**, Freescale Design Competition (Proceedings published in *Global Electronics China*, Issue 4, 2008), Shanghai, China, 2008

Refereed Workshop Papers

- Yan Ding, Xiaohan Zhang, Xingyue Zhan, and Shiqi Zhang, **Task-Motion Planning for Safe and Efficient Urban Driving**, *The RSS-2020 Workshop on Interaction and Decision-Making in Autonomous Driving*, Virtual Event, July 13, 2020
- Kishan Chandan, Xiaohan Zhang, Jack Albertson, Xiaoyang Zhang, Yao Liu and Shiqi Zhang, **Guided 360-Degree Visual Perception for Mobile Telepresence Robots**, *The RSS-2020 Workshop on Closing the Academia to Real-World Gap in Service Robotics*, Virtual Event, July 13, 2020
- Kishan Chandan, Xiang Li, and Shiqi Zhang, **Negotiation-based Human-Robot Collaboration via Augmented Reality**, *The 2019 AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction (AI-HRI)*, Arlington, Virginia USA, November 7-9, 2019
- Yi Wang, Shiqi Zhang, and Joohyung Lee, **Bridging Commonsense Reasoning and Probabilistic Planning via a Probabilistic Action Language**, *The Sixth Workshop on Probabilistic Logic Programming (PLP)*, co-located with ICLP, Las Cruces, New Mexico, USA, September 20-25, 2019
- Yuqian Jiang, Fangkai Yang, Shiqi Zhang, and Peter Stone, **Task-Motion Planning with Reinforcement Learning for Adaptable Mobile Service Robots**, *The 7th ICAPS Workshop on Planning and Robotics (PlanRob)*, co-located with ICAPS, Berkeley CA, USA, July 11, 2019
- Shiqi Zhang, **Reasoning about Actions for Planning in Robotics**, *Workshop on Reasoning about Actions and Processes: Highlights of Recent Advances*, co-located with International Conference on Principles of Knowledge Representation and Reasoning (KR), Tempe, AZ, 2018 (one-page position paper)
- Saeid Amiri, Mohammad S. Shirazi, and Shiqi Zhang, **Leveraging Supervised Learning and Automated Reasoning for Robot Sequential Decision-Making**, *Workshop on Integrating learning of Representations and models with deductive Reasoning*, co-located with KR, Tempe, AZ, 2018

- Sujay Bajracharya, Saeid Amiri, Jesse Thomason, and Shiqi Zhang, **Simultaneous Intention Estimation and Knowledge Augmentation via Human-Robot Dialog**, *Workshop on Models and Representations for Natural Human-Robot Communication*, co-located with RSS, Pittsburgh, PA, 2018
- Saeid Amiri, Suhua Wei, Shiqi Zhang, Jivko Sinapov, Jesse Thomason, and Peter Stone, **Robot Behavioral Exploration and Multi-modal Perception using Dynamically Constructed Controllers**, *The 2018 AAAI Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy*, Stanford University, CA, Mar. 26-28, 2018.
- Shiqi Zhang and Peter Stone, **Integrated Commonsense Reasoning and Probabilistic Planning**, *Workshop on Planning and Robotics (PlanRob)*, co-located with ICAPS, Pittsburgh, PA, 2017
- Shiqi Zhang, Jivko Sinapov, Suhua Wei and Peter Stone, **Robot Behavioral Exploration and Multi-modal Perception using POMDPs**, *The AAAI Spring Symposium on Interactive Multi-Sensory Perception for Embodied Agents*, Stanford University, 2017
- Shiqi Zhang, Piyush Khandelwal and Peter Stone, **Dynamically Constructed (PO)MDPs for Adaptive Robot Planning**, *Workshop on Autonomous Mobile Service Robots*, co-located with IJCAI, New York City, USA, 2016
- Shiqi Zhang, Yuqian Jiang, Guni Sharon and Peter Stone, **Multirobot Symbolic Planning under Temporal Uncertainty**, *Workshop on Autonomous Mobile Service Robots*, co-located with IJCAI, New York City, USA, 2016
- Shih-Yun Lo, Shiqi Zhang and Peter Stone, **Integrated Task and Motion Planning for Mobile Service Robots**, *Workshop on Task and Motion Planning*, co-located with RSS, Ann Arbor, Michigan, 2016
- Mohan Sridharan, Michael Gelfond, Shiqi Zhang and Jeremy Wyatt, **Mixing Non-monotonic Logical Reasoning and Probabilistic Planning for Robots**, *Hybrid Reasoning Workshop*, co-located with IJCAI, Buenos Aires, Argentina, 2015
- Shiqi Zhang and Peter Stone, **CORPP: Commonsense Reasoning and Probabilistic Planning, as Applied to Dialog with a Mobile Robot**, *The AAAI Spring Symposium on Knowledge Representation and Reasoning*, Stanford, CA, 2015
- Shiqi Zhang, Mohan Sridharan, Michael Gelfond and Jeremy Wyatt, **Integrating Probabilistic Graphical Models and Declarative Programming for Knowledge Representation and Reasoning in Robotics**, *Planning and Robotics Workshop (PlanRob)*, co-located with ICAPS, Portsmouth, NH, 2014
- Shiqi Zhang, Fangkai Yang, Piyush Khandelwal and Peter Stone, **Mobile Robot Planning using Action Language BC with Hierarchical Domain Abstractions**, *The Workshop on Answer Set Programming and Other Computing Paradigms (ASPOCP)*, co-located with ICLP, Vienna, Austria, 2014
- Shiqi Zhang, Mohan Sridharan, Michael Gelfond and Jeremy Wyatt, **KR³: An Architecture for Knowledge Representation and Reasoning in Robotics**, *The 15th International Workshop on Non-Monotonic Reasoning (NMR)*, co-located with ICLP, Vienna, Austria, 2014
- Shiqi Zhang and Mohan Sridharan, **Integrating Declarative Programming and Probabilistic Planning for Robots**, *AAAI Fall Symposium Series*, Arlington, VA, 2013
- Shiqi Zhang and Mohan Sridharan, **Combining Answer Set Programming and POMDPs for Knowledge Representation and Reasoning on Mobile Robots**, *Workshop on Knowledge Representation and Reasoning in Robotics (KRR)*, co-located with ICLP, Istanbul, Turkey, 2013
- Shiqi Zhang, Forrest Bao and Mohan Sridharan, **ASP-POMDP: Integrating Non-monotonic Logical Reasoning and Probabilistic Planning on Mobile Robots**, *Workshop on Autonomous Robots and Multirobot Systems (ARMS)*, co-located with AAMAS, Valencia, Spain, 2012
- Shiqi Zhang and Mohan Sridharan, **Visual Search and Multirobot Collaboration on Mobile Robots**, *Workshop on Automated Action Planning for Autonomous Mobile Robots (PAMR)*, co-located with AAAI, San Francisco, CA, 2011

- Shiqi Zhang and Mohan Sridharan, **Vision-based Scene Analysis On a Mobile Robot Using Layered POMDPs**, *Workshop on POMDP Practitioners*, co-located with ICAPS, Toronto, Canada, 2010
- Xiang Li, Shiqi Zhang and Mohan Sridharan, **Vision-based Safe Local Motion On a Humanoid Robot**, *Workshop on Humanoid Soccer Robots*, co-located with Humanoids, Paris, France, 2009
- Shiqi Zhang, Chun Yuan and Yan Zhang, **Handwritten Character Recognition Using Orientation Quantization Based on 3D Accelerometer**, *Workshop on Human Control of Ubiquitous Systems*, co-located with MobiQuitous, Dublin, Ireland, 2008

Tutorial Proposals (Peer Reviewed, Accepted)

- Shiqi Zhang, and Mohan Sridharan, **Knowledge-based Sequential Decision-Making under Uncertainty**, *The AAAI 2019 Tutorial Program (0.25 day)*, Honolulu, Hawaii, USA, 2019

Workshop Proposals (Peer Reviewed, Accepted)

- Abdelghani Chibani, Craig Schlenoff, Yacine Amirat, Shiqi Zhang, Jong-Hwan Kim, and Ferhat Attal, **Trends and advances in machine learning and automated reasoning for intelligent robots and systems**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2020)*, Las Vegas, NY, USA, October 25th or 29th, 2020
- Karinne Ramirez Amaro, Yezhou Yang, Eren Erdal Aksoy, and Shiqi Zhang, **Semantic Policy and Action Representations for Autonomous Robots**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2019)*, Macau, China, November 4th or 8th, 2019
- Shiqi Zhang, Matteo Leonetti, Mohan Sridharan, and Jeremy Wyatt, **Integrated Representation, Reasoning, and Learning Formalisms for Extended Autonomy in Robotic Systems**, *AAAI 2018 Spring Symposium Series*, Stanford, CA, March 26–28 2018
- Shiqi Zhang and Fangkai Yang, **Knowledge Representation and Planning for Robotics and Autonomous Systems**, *In the 14th International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR)*, Espoo, Finland, July 3–6, 2017 (Workshop Canceled)

Unrefereed Publications

- Christopher Amato, Haitham Bou Ammar, Elizabeth Churchill, Erez Karpas, Takashi Kido, Mike Kuniavsky, WF Lawless, Francesca Rossi, Frans A Oliehoek, Stephen Russell, Keiki Takadama, Siddharth Srivastava, Karl Tuyls, Philip Van Allen, K Brent Venable, Peter Vrancx, and Shiqi Zhang, **Reports on the 2018 AAAI Spring Symposium Series**, *AI Magazine*. 39(4):29-35, 2018

Patents

- Shiqi Zhang, and Kishan Chandan, **Negotiation-based Human-Robot Collaboration via Augmented Reality**, *Application Number 62902830*, Provisional Patent, filed in 9/19/2019

Student Mentoring

Ph.D. Students (Starting Semester)

- Xiaohan Zhang (Fall 2020)
- Vidisha Kudalkar (Fall 2019)
- Yan Ding (Fall 2019)
- Kishan Chandan (Fall 2019)
- Saeid Amiri (Fall 2018)

Ph.D. Dissertation Committee (Internal)

- Xiang Zhang, “3D Face Reconstruction from 2D images and Video”, Ph.D. student in Computer Science, SUNY Binghamton (Chair: Lijun Yin), RPE on 8/16/2019
- Xilin Li, “Control and Motion Planning of Autonomous Vehicles with Aggressive Maneuvers”, Ph.D. student in Mechanical Engineering, SUNY Binghamton (Chair: Kaiyan Yu), RPE on 8/6/2019
- Elliot Way, “Behavior Abstraction in Reinforcement Learning”, Ph.D. student in Computer Science, SUNY Binghamton (Chair: Lei Yu), RPE in 12/2018
- Dr. Andrew E Cohen, “Diverse Exploration in Reinforcement Learning”, Department of Computer Science, SUNY Binghamton (Chair: Lei Yu), Defended on 11/26/2019

Ph.D. Dissertation Committee (External)

- Daoming Lyu, “Towards Interpretability and Human-in-the-Loop in Sequential Decision-Making”, Ph.D. student in Computer Science, Auburn University (Chair: Bo Liu), proposal planned for Spring 2020
- Xuyang Shi, “An ultrasensitive bacterial detection platform for culture free diagnosis of infections”, Ph.D. student in Electrical Engineering, Cleveland State U. (Chair: Siu-Tung Yau), Proposal in May 2018

Master’s Students, Thesis Committee

- Lei Wang, “Advanced Line-Follower Robot”, Master’s in Electrical Engineering, CSU, December 2017 (Committee Chair: Zhiqiang Gao)

Master’s Students, Others

- Xiaohan Zhang (2019 -), Nick Abate (2019 -), Vidisha Kudalkar (2019), Kishan Chandan (2018), Keting Lu (USTC, 2018-2019), Danye Luo (2017-2018), Suhua Wei (2016-2017)

Undergraduate Students, Freshman Research Immersion (FRI)

- Jack Albertson, and Isaiah Farrell, “*Controlling a robot using Eye Gaze for Human-Robot Interaction*”, Spring and Fall 2019

Undergraduate Students, Research Experiences for Undergraduates (REU)

- Derrick Lam, Topic TBD, Summer 2020
- Jack J Albertson, Topic TBD, Summer 2020
- Patricia Andrews, REU Undergrad Student in Colorado College, “*Integrating ASP-based Planning and Diagnosis with POMDPs for Knowledge Representation and Reasoning on Mobile Robots*”, Summer 2013
- Olatide Omojaro, REU Undergraduate Student in Georgia Tech, *Integrating ASP-based Planning and Diagnosis with POMDPs for Knowledge Representation and Reasoning on Mobile Robots*, Summer 2013
- Christian Washington, REU Undergraduate Student in Louisiana State University, *Decision-Making on Robots using POMDPs and Answer Set Programming*, Summer 2012
- Sabyne Peeler, REU Undergraduate Student in Florida A&M University, *Creating a Stimulating 3D Programming Environment by Integrating Complex Robot Types*, Summer 2012
- David Kari, REU Undergraduate Student in California Baptist University, *Multi-Agent Collaboration on the Nao Platform*, Summer 2011
- Jesse Kawell, REU Undergraduate Student in Samford University, *Multi-Agent Collaboration on the Nao Platform*, Summer 2011
- David R. Seibert, REU Undergraduate Student in Emory University, *Designing Motion Patterns to Increase Effectiveness of the Goal Keeper in Robot Soccer*, Summer 2011

Undergraduate Students, Senior Design

- 2017-2018: UAV-UGV-Human Interaction and Collaboration
Austin Cassill (Leader), Sujay Bajracharya, William Heeter, and Lakiel Wade
Nominated for the Best Project Award of CSU by the Department of EECS in 2018
- 2016-2017: Indoor Navigation using Turtlebots
James Doherty (Leader), Steven Eucker, Nickolas Kramer, Matthew Macias, and Adam Thoenness
Nominated for the Best Project Award of CSU by the Department of EECS in 2017
- 2016-2017: Phone-based Campus Navigation
Dawid Lenard (Leader), Abdinajibi Abdi, Ledis Kodra, Tian Lu, and William Pierce

Undergraduate Students, Choose Ohio First Project

- Honor Fournier, Zoey Pincelli, Alec Wiggins, and Jack Winterich, "Robots, Computers, and Convenience: a Literature Review of Human-Robot Interaction and Its Practical Applications", 2018

Undergraduate Students, Others

- Michael J Schutzman (Fall 2019), Cihangir Goktolga (2018-2019), Ezgi Durmazpınar (2018), Sujay Man Bajracharya (2017-2018), James Doherty (2017-2018), Lakiel Wade (2017-2018)

Visiting Students

- Yohei Hayamizu, Master's Student, The University of Electro-Communications (UEC), Tokyo, Japan, March 2019 - January 2020

High School Students

- Jaron Cui, "Mobile Robot Navigation in Human-inhabited Indoor Environments", Summer Intern, Vestal High School, Vestal, New York, July 2019
- Gopal (Barry) Shukla, "Robot Estimating Human Intentions via Analyzing Motion Trajectories", Senior Project Student, Solon High School, Solon Ohio, May 2018

Teaching

Lecturer

SUNY Binghamton

- Fall 2020: CS 465, CS 565: Introduction to Artificial Intelligence (Planned)
- Spring 2020: CS 465, CS 565: Introduction to Artificial Intelligence
- Fall 2019: CS 480, CS 580: Intelligent Mobile Robotics
- Summer 2019: Introduction to Artificial Intelligence (Shenzhen University)
- Spring 2019: CS 465, CS 565: Introduction to Artificial Intelligence
- Fall 2018: CS 480, CS 580: Intelligent Mobile Robotics

Cleveland State University

- Spring 2018 (CSU): CIS 693, EEC 693, EEC 793: Autonomous Intelligent Robotics
- Fall 2017 (CSU): CIS 490, CIS 590: Foundations of Computing
- Spring 2017 (CSU): CIS 493, EEC 492, EEC 592: Autonomous Intelligent Robotics
- Fall 2016 (CSU): CIS 490, CIS 590: Foundations of Computing

Guest Lecturer

- CS 101: Professional Skills, Ethics and Computer Science Trends, Fall 2020
My topic: TO BE DETERMINED, 9/29/2020
- CS 115: FRI Image and Acoustic Signal Research Stream, Spring 2019
My topic: Programming in Intelligent Robotics in 03/2019
- EEC 601: EECS Graduate Seminar, Cleveland State University, Fall 2017
My topic: Robot Planning in Everyday Environments in 10/2017
- EEC 581: Computer Architecture, Cleveland State University, Spring 2017
My topic: Robot Operating System (ROS) in 04/2017.
- CIS 345: Operating System Principles, Cleveland State University, Fall 2016
My topic: Robot Operating System (ROS) in 10/2016.
- UGS 303: Foundations of Logical Thought, UT Austin, Fall 2015
My topic: Building-Wide Intelligence (BWI) research to 100 undergraduate students, 10/2015
- CS 378: Autonomous Intelligent Robotics, UT Austin, Fall 2015
My topic: Robot Scavenger Hunt Game, 10/2015
- CS 378: Autonomous Intelligent Robotics, UT Austin, Spring 2014
My topic: SLAM algorithms, 01/2014, and RGB-D sensing, 03/2014

Guest Course Project Supervisor

- CS378: Freshman Research Initiative (FRI) on Autonomous Intelligent Robotics, University of Texas at Austin, Spring 2014
Supervised 10 undergraduate students for one semester on projects including robot patrolling in an office environment and human-robot interaction through RGB-D-based gesture recognition

Teaching Assistant

- CS3364: Design and Analysis of Algorithms, Texas Tech University, Spring 2013
- CS3383: Theory of Automatas, Texas Tech University, Spring 2013
- CS4395: Computer Graphics, Texas Tech University, Spring 2012

Robot Outreach

Lab Tours and Demonstrations:

- 02/03/2020: Children's Home of Wyoming Conference (Binghamton NY). My students demonstrated our robot arm doing pick-and-place tasks, and our AR/VR interface for human-robot collaboration.
- 04/07/2018: "CSU Spring Open House", the largest visit day of Cleveland State University. My students offered demonstrations using the Segway-based robot.
- 02/17/2018: 80 students (and parents) in the great Cleveland area visited my lab in CSU, in the "Engineer for a Day" event. My students offered demonstrations using the Segway-based robot.
- 01/23/2018: 26 students from Horizon Science Academy Cleveland Middle School (Cleveland OH) visited my lab in CSU. My students demonstrated our Segway-based robot and Bebop 2 Quad-copter.
- 10/15/2017: 45 students from Berea-Midpark High School (Cleveland OH) visited my lab in CSU. My students and myself introduced our research and demonstrated our robots.
- 02/01/2016: 25 students from Martin Middle School (Austin TX) visited the Building Wide Intelligence (BWI) lab at UT Austin. I introduced research and robots in the lab.

- 2014-2016: Demonstrated Segway-based mobile robots to thousands of visitors from Texas and other states at ExploreUT: “The Biggest Open House in Texas”, Austin TX
- 01/25/2015-01/30/2015: AAAI-15 Robotics Exhibition, Austin TX

Judge/Mentor/Volunteer:

- Mentor, The First Annual Junior Robotics Challenge, SUNY Broome, Broome NY, 3/30/2019
- Judge, Poster Competition of the College of Engineering, Cleveland State University, 10/2017
- Judge, Choose Ohio – Northeast Ohio Consortium Poster Conference, Cleveland OH 04/2017
- Judge, Hub City Regional, FIRST Robotics Competition, Lubbock TX, 2013
- Student Volunteer, IEEE International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EPIROB), San Diego, CA, 2012
- Judge, GEAR Robotics Competition, Lubbock TX, 2011
- Museum Guide, Museum of Astronautics, Harbin Institute of Technology, China, 2005–2006

Research Awards and Recognition (External)

- **Faculty Research Award**
OPPO, 2020
- **National Robotics Initiative 2.0 Award**
National Science Foundation, 2019
- **University Research Program Award**
Ford Motor Company, 2019
- **Best Robotics Paper Award**
International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2018
- **Excellent Paper Award**
International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EPIROB), 2012
- **Outstanding Graduate Award** for Master’s students, (2% in Harbin Institute of Technology)
Education Department of Heilongjiang Province, China. 2008
- **Best Project Runner Up** (out of >200 teams)
The Sixth Freescale Design Competition in China, 2007

Research Awards and Recognition (Internal)

- **Seed Grant**
Organized Research Center for Imaging, Acoustics, and Perception Science (CIAPS), Binghamton University, PI (with Yao Liu, co-PI), 2020
- **Undergraduate Summer Research Award (USRA)**
Office of Research, Cleveland State Univ, co-PI (with Thijs Heus, PI, and Shawn Ryan, co-PI), 2018
- **Research Scholarship** (\$4,000)
President’s Office, Texas Tech University, 2013
- **First Place Winner (Engineering)**
The Graduate Student Research Poster Competition, Texas Tech University, 2012
- **Dean’s Fellowship**
Edward E. Whitacre Jr. College of Engineering, Texas Tech University, 2009-2014

- **Outstanding Graduate Award** for Master's students, (7% in Harbin Institute of Technology) Harbin Institute of Technology, 2008
- **Outstanding Graduate Award** for Undergraduate students, (7% in Harbin Institute of Technology) Harbin Institute of Technology, 2006

Professional Activities

Organizing Committee Member:

- Workshop on Trends and Advances in Machine Learning and Automated Reasoning for Intelligent Robots and Systems, co-located with IROS-20, Las Vegas, NV, October ??, 2020
- The Fourth Workshop on Semantic Policy and Action Representations for Autonomous Robots (SPAR), co-located with IROS-19, Macau, China, November 8, 2019
- The First Eldercare Robot Challenges, a competition co-located with the 28th International Joint Conference on Artificial Intelligence (IJCAI), Macau, China, August 13-16, 2019
- The AAAI-19 Tutorial on Knowledge-based Sequential Decision-Making under Uncertainty, Honolulu, Hawaii, January 2019 (co-offered with Mohan Sridharan, and 70+ registrants)
- The AAAI-18 Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy, Stanford, CA, March 2018 (25 papers accepted, and 50+ attendees)

Area Chair:

- International Joint Conference on Artificial Intelligence (IJCAI), 2021

Senior Program Committee Member:

- The AAAI Conference on Artificial Intelligence (AAAI), 2020
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2019

Program Committee Member:

Conferences

- The AAAI Conference on Artificial Intelligence (AAAI), 2014, 2015, 2018, 2019
- International Joint Conference on Artificial Intelligence (IJCAI), 2015, 2016, 2017, 2019, 2020
- Annual Conference Neural Information Processing Systems (NIPS/NeurIPS), 2017, 2018, 2019, 2020
- International Conference on Machine Learning (ICML), 2016, 2018, 2019
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2016, 2020 (Main and Demo Tracks)
- International Conference of the Florida Artificial Intelligence Research Society (FLAIRS), 2019, 2020
- International Conference on Logic Programming (ICLP), Applications Track, 2019, 2020
- International Conference on Robot Learning (CoRL), 2018, 2019

Workshops

- AAAI Fall Sym. on Reasoning and Learning in Real-world Systems for Long-term Autonomy, 2018
- AAAI Fall Symposium on Knowledge, Skill, and Behavior Transfer in Autonomous Robots, 2014
- AAAI Spring Symposium on Knowledge Representation and Reasoning in Robotics, 2014
- Workshop on Spatial Language Understanding (SpLU) and Grounded Communication for Robotics (RoboNLP), with NAACL-HLT, 2019
- Workshop on Cognitive Robotics (CogRob), 2016, 2018
- Workshop on Machine Learning in Planning and Control of Robot Motion (MLPC), with ICRA, 2018

- Workshop on Computer Vision and Ontology Applied Cross-Disciplinary Technologies, 2014, 2016
- Workshop on Combining AI Reasoning and Cognitive Science with Robotics, with RSS, 2015
- Workshop on Knowledge, Skill, and Behavior Transfer in Autonomous Robots, with AAAI, 2015
- Workshop on Knowledge Representation and Reasoning in Robotics, 2013

Reviewer:

Conferences

- IEEE International Conference on Robot & Human Interactive Communication (RO-MAN), 2019
- International Conference on Robotics and Automation (ICRA), 2012, 2014-2020
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2015, 2017
- International Conference on Intelligent Robots and Systems (IROS), 2011, 2016, 2018, 2019, 2020
- The AAAI Conference on Artificial Intelligence (AAAI), 2016
- International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EPIROB), 2014
- European Conference on Artificial Intelligence (ECAI), 2014
- International Joint Conference on Artificial Intelligence (IJCAI), 2013

Workshops:

- The AAAI 2017 Fall Symposium on Human-Agent Groups: Studies, Algorithms and Challenges, 2017
- Workshop on Mathematical Models, Algorithms, and Human-Robot Interaction (with RSS), 2017
- Workshop on Autonomous Mobile Service Robots (with IJCAI), 2016

Journals:

- ACM Transactions on Intelligent Systems and Technology (TIST), 2018
- Elsevier Cognitive Systems Research, 2016, 2018
- Elsevier Engineering Applications of Artificial Intelligence, 2017
- Elsevier Robotics and Autonomous Systems (RAS), 2018
- Hindawi Mathematical Problems in Engineering, 2016
- IEEE Access, 2014
- IEEE Transactions on Automation Science and Engineering (T-ASE), 2017, 2018
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2020
- IEEE Transactions on Robotics (T-RO), 2013
- IEEE Transactions on Systems, Man and Cybernetics, Part A, 2014, 2015, 2016, 2017
- Springer Machine Learning (ML), 2020
- Taylor & Francis: Advanced Robotics, 2015
- Taylor & Francis: Journal of Experimental and Theoretical Artificial Intelligence, 2014

Proposal:

- National Science Foundation (NSF), USA
 - Panelist: 2017 (1 panel), 2018 (2 panels), 2019 (2 panels), 2020 (1 panel)
 - Ad-hoc reviewer: 2018
- Office of Naval Research (ONR), USA
 - Ad-hoc reviewer, 2017

University Service:

SUNY Binghamton

- IASA Stream Committee, Freshman Research Immersion (FRI), 2018-2020
- Ad Hoc Committee on AI Programs, Department of Computer Science, 2018-2020

- Lab and Infrastructure Committee, Department of Computer Science, 2018-2020
- Faculty Search Committee, Department of Computer Science, 2018-2020
- Graduate Application Review Committee, Department of Computer Science, 2019-2020

Cleveland State University

- Assessment Peer Reviewer, CSU, Summer 2017
- Program Director, Chinese American Faculty and Staff Association (CAFSA) of CSU, 2017-2018
- NAE Grand Challenge Committee, Engineering College, CSU, 2016-2017
- Faculty Secretary, EECS Department, College of Engineering, CSU, 2017-2018
- Faculty Search Committee, EECS Department, College of Engineering, CSU, 2017-2018

Talks and Presentations

Research Talks

- TechBeat.net, “Knowledge-based Robot Sequential Decision-Making” (in Chinese), June 18th, 2020
<https://www.techbeat.net/talks/MTU5MzUzNjU0Nzc3MS00MDQtMTMwMTc=>
- IBM Thomas J. Watson Research Center, “Robot Decision Making in Human-Inhabited, Collaborative Environments”, Yorktown Heights, NY, November 20th, 2019
- University of Science and Technology of China, “Knowledge-based Robot Sequential Decision-Making under Uncertainty”, Hefei, China, July 29th, 2019
- Harbin Institute of Technology, “Knowledge-based Robot Sequential Decision-Making under Uncertainty”, Shenzhen, China, July 26th, 2019
- Tsinghua University, “Knowledge-based Robot Sequential Decision-Making under Uncertainty”, Tsinghua Shenzhen International Graduate School, Shenzhen, China, July 25th, 2019
- Shanghai Jiao Tong University, “Knowledge-based Robot Sequential Decision-Making under Uncertainty”, Institute of Medical Robotics, Shanghai, China, June 19th, 2019
- Massachusetts Institute of Technology, “Knowledge-based Robot Sequential Decision-Making under Uncertainty”, Learning in Intelligent Systems Group seminar, Cambridge, MA. March 8th, 2019
- Ford Motor Company, Smart Mobility Team, “Intelligent Mobile Service Robotics: Interaction and Navigation”, Dearborn, MI, March 1st, 2019
- Arizona State University, “Knowledge-based Robot Sequential Decision-Making under Uncertainty”, CSE Department seminar, Tempe, AZ. Oct 26th, 2018
- JD Group – Silicon Valley Research Center, “Intelligent Mobile Service Robotics: Interaction and Navigation”, Mountain View, CA. September, 2018
- Staples Inc. Corporate Headquarters, “Intelligent Mobile Service Robotics: Interaction and Navigation”, Framingham, MA. September, 2018
- URU Inc. (Acquired by Adobe in 2018), “Interaction and Collaboration in Mobile Service Robotics”, New York City, NY. December, 2017
- Northeast Ohio Computer Science and Information Systems Colloquium Series, “Planning for Intelligent Mobile Robots in Everyday Environments”, Kent State University, Kent, OH. March 2017
- Air Force Research Laboratory (AFRL), “Integrating Commonsense Reasoning and Probabilistic Planning in Robotics”, Dayton, OH. October 2016
- Texas State University, “Integrating Commonsense Reasoning and Probabilistic Planning in Robotics”, Department Seminar, San Marcos, TX. April 2016

- SUNY Albany, "Integrating Commonsense Reasoning and Probabilistic Planning in Robotics", Department Seminar, Albany, NY. April 2016
- Cleveland State University, "Integrating Commonsense Reasoning and Probabilistic Planning in Robotics", Department Seminar, Cleveland, OH. March 2016
- SUNY Binghamton, "Integrating Commonsense Reasoning and Probabilistic Planning in Robotics", Department Seminar, Binghamton, NY. March 2016
- University of Wyoming, "Integrating Commonsense Reasoning and Probabilistic Planning in Robotics", Department Seminar, Remote talk. February 2016
- Baidu Research, "Combining Answer Set Programming and POMDPs for Reasoning in Robotics", Research Seminar, Sunnyvale, CA. June 2015
- University of Texas at Austin, "Combining Answer Set Programming and POMDPs for Reasoning in Robotics", LARG Group Seminar, Austin, TX. November 2013
- Southeast University, "Automated Planning on Autonomous Robots", Artificial Intelligence Lab Seminar, Nanjing, China. August 2012
- Microsoft Research (Asia), "Automated Planning on Autonomous Robots", Mobile and Sensing Systems Group Seminar, Beijing, China. July 2012

Conference/Workshop Invited and Keynote Talks

- IJCAI 2019 Eldercare Robot Workshop, "Sequential Decision-Making for Mobile Service Robots", Macau, China, August 16, 2019
- AAAI 2017 Fall Symposium on Human-Agent Groups: Studies, Algorithms and Challenges, "Integrated Reasoning and Planning Algorithms for Human-Robot Groups", Arlington, VA. November 10, 2017
- ONR Science of Autonomy Workshop, "CORPP: Commonsense Reasoning and Probabilistic Planning, as Applied to Dialog with a Mobile Robot" (with Peter Stone), Arlington, VA. August 2015

Panel Discussions & Interviews

- Panelist of the Freshman Research Immersion (FRI) Faculty Panel Event, for students in Smart Energy and Signals Analysis Streams, SUNY Binghamton, November 11, 2019
- Interviewed by Seth Adler for the show of "Duality - Discussing The Real-Time Origins of AI", at Stanford University, March 27, 2018
- Panelist of Northeast Ohio (NEO) Chapter of ACM, "AI, We Come In Peace: a Practical Discussion on the Impact of Artificial Intelligence in our Communities", Hosted by Nikola Danaylov, Youngstown State University, Youngstown OH. September 14, 2017

Internal Talks and Poster Presentations

- SUNY Binghamton, Cognitive Lunch Seminar, Department of Psychology, "Robot Decision Making in Human-Inhabited Environments", January 29, 2020
- SUNY Binghamton, Research Center for Imaging, Acoustics, and Perception Science (CIAPS) seminar, "From Multi-Robot Systems to Human-Robot Interaction and Collaboration", December 5, 2019
- SUNY Binghamton, Faculty-Student Mixer, Freshman Research Immersion (FRI), "Negotiation-based Human-Robot Collaboration via Augmented Reality", October 31, 2019 (Poster Presentation)
- SUNY Binghamton, Center for Collective Dynamics of Complex Systems (CoCo) Seminar Series, "Robot Decision Making in Human-Inhabited, Collaborative Environments", February 13, 2019
<https://vimeo.com/317110194>
- SUNY Binghamton, Computer Science Department Seminar, "Knowledge-based Robot Sequential Decision-Making under Uncertainty", September 7, 2018

- Cleveland State University, Ignite Talk at College of Engineering Faculty Meeting, “Artificial Intelligence (AI) Planning for Real Robot Systems”, March 9, 2017
- Cleveland State University, Human Machine System Seminar, “Planning for Intelligent Mobile Robots in Everyday Environments”, October 12, 2016
- The University of Texas at Austin, Robotics Portfolio Seminar Series, “CORPP: Commonsense Reasoning and Probabilistic Planning, as Applied to Dialog with a Mobile Robot”, November 4, 2015
- Texas Tech University, UREASON Seminar, “CLIPP: Combining Logical Inference and Probabilistic Planning”, October 23, 2012
- Texas Tech University, UREASON Seminar, “Combining Probabilistic Planning and Logic Programming on Mobile Robots”, April 20, 2012
- Texas Tech University, Knowledge Representation (KR) Lab Seminar, “Combining Probabilistic Planning and Logic Programming on Mobile Robots”, February 15, 2012

Personal

Married, Male, Two children (2015 and 2017)

References

Available on request

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