Shray Bansal

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Education

PhD, Computer Science August 2014 - May 2023
Georgia Institute of Technology
- Advisors: Dr. Charles Isbell and Dr. Ayanna Howard

MS, Computer Science August 2012 - May 2014
Georgia Institute of Technology
- Specialization: Perception and Robotics (Advisor: Dr. Aaron Bobick)

Bachelor of Engineering, Computer Engineering August 2006 - June 2010
Delhi College of Engineering

Experience

Postdoctoral Researcher June 2023 - Present
College of Computing, Georgia Institute of Technology
- Reinforcement learning and game theory for human-AI coordination.

Graduate Research Assistant August 2014 - May 2023
Institute for Robotics and Intelligent Machines, Georgia Institute of Technology, Atlanta
- Methods for shared workspace human-robot/ human-AI interaction.
- Modeling and prediction of human behavior.

Visiting Researcher May 2019 - August 2019
Electrical and Computer Systems Engineering, Monash University, Melbourne.
- Improving fluency in human-robot teams by introducing interaction-supporting actions (IROS 2020).

Research Intern May 2017 - August 2017
Honda Research Institute, Mountain View, CA.
- Collaborative search for autonomous lane merging with human drivers (IROS 2020).

Research Intern May 2015 - August 2015
Microsoft Research, Seattle.
- RGBD Gaze and attention tracking for unsupervised object-discovery in office environments.

Senior Tech Associate July 2010 - June 2012
Bank of America, India.
- Data warehousing solutions for enterprise banking.

Publications

Shray Bansal, Jin Xu, Miguel Morales, Jonathan Streater, Ayanna Howard, and Charles Isbell. Leveraging Cognitive Bias for Zero-Shot Human-AI Coordination. CoCoMARL Workshop at the Reinforcement Learning Conference, 2024.

Shray Bansal. Game Theoretic Methods for Human-Robot Parallel Play. PhD Thesis. Georgia Institute of Technology, 2023.

Shray Bansal, Jin Xu, Ayanna Howard, and Charles Isbell. BayesNash: Bayesian inference for Nash equilibrium selection in human-robot parallel play. Autonomous Robots, 2022. [Paper] [PDF]

Shray Bansal, Miguel Morales, Jin Xu, Ayanna Howard, and Charles Isbell. Nash Equilibria in Bayesian Games for Coordinating with Imperfect Humans. Workshop on Strategic multi-agent interactions: game theory for robot learning and decision making at CoRL, 2022.

Shray Bansal, Jin Xu, Ayanna Howard, and Charles Isbell. Bayesian Inference for Human-Robot Coordination in Parallel Play . Workshop on Cooperative AI at NeurIPS, 2021. [PDF]

Shray Bansal, Rhys Newbury, Wesley Chan, Akansel Cosgun, Aimee Allen, Dana Kulić, Tom Drummond, and Charles Isbell. Supportive Actions for Manipulation in Human-Robot Coworker Teams. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2020. [PDF]

Shray Bansal, Jin Xu, Ayanna Howard, and Charles Isbell. Planning for Human-Robot Parallel Play via Bayesian Nash Equilibrium Inference. Robotics: Science and Systems (RSS), 2020. [PDF]

Himanshu Sahni, **Shray Bansal**, and Charles Isbell. Attention Driven Dynamic Memory Maps. Workshop on Bridging AI and Cognitive Science in ICLR 2020. [PDF]

A. Shaban, A. Rahimi, **S. Bansal**, S. Gould, B. Boots, and R. Hartley. Learning to Find Common Objects Across Few Image Collections. IEEE International Conference on Computer Vision (ICCV), 2019. [PDF]

Shray Bansal, Mustafa Mukadam, and Charles Isbell. Interaction-Aware Planning via Nash Equilibria for Manipulation in a Shared Workspace. Workshop on Human Movement Science for Physical Human-Robot Collaboration at ICRA, 2019. [PDF]

Shray Bansal, Akansel Cosgun, Alireza Nakhaei, and Kikuo Fujimura. Collaborative Planning for Autonomous Lane Merging. IEEE International Conference on Intelligent Robots and Systems, 2018. [PDF]

Shray Bansal, Akansel Cosgun, Alireza Nakhaei, and Kikuo Fujimura. Cooperative Planning for Autonomous Lane Merging. Workshop on Shared Autonomy in IROS, 2017. [PDF]

Amirreza Shaban, **Shray Bansal**, Zhen Liu, Irfan Essa, and Byron Boots. One Shot Learning for Semantic Image Segmentation. British Machine Vision Conference (BMVC), 2017. [PDF]

K. Hawkins, **S. Bansal**, N. Vo, and A. Bobick. Anticipating human actions for collaboration in the presence of task and sensor uncertainty. International Conference on Robotics and Automation (ICRA) 2014. [PDF]

Kelsey P. Hawkins, **Shray Bansal**, Nam Vo, and Aaron F. Bobick. Modeling structured activity to support human-robot collaboration in the presence of task and sensor uncertainty. Workshop on Cognitive Robotics Systems in IROS, 2013. [PDF]

Kelsey P. Hawkins, Nam Vo, **Shray Bansal**, and Aaron Bobick. Probabilistic human action prediction and wait-sensitive planning for responsive human-robot collaboration. Humanoid Robots, 2013. [PDF]

Teaching Experience

CS 7641 Machine Learning — Fall 2017 - Spring 2019
CS 4495, 6476 Computer Vision — Fall 2013, 2016

Skills

Programming languages: Python, C++, MATLAB
Libraries: Numpy, Pytorch, Tensorflow, ROS, JAX, OpenCV