# WEIYU LIU

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## RESEARCH INTEREST

My research focuses on semantic reasoning for robotics, including leveraging knowledge extraction, representation, and reasoning to facilitate robotic operations in diverse real-world environments.

## EDUCATION

Georgia Institute of Technology, Atlanta, GA                                            2017 – Present
*Ph.D. in Robotics*
Advisor: Sonia Chernova

Georgia Institute of Technology, Atlanta, GA                                            2012 – 2017
*Bachelor of Science*, Electrical Engineering with Distinction
GPA: 3.96

## RESEARCH EXPERIENCE

Georgia Institute of Technology, Atlanta, GA                                            2017 – Present
*Graduate Research Assistant*

Georgia Institute of Technology, Atlanta, GA                                            2016 – 2017
*Undergraduate research with Prof. Sonia Chernova*

Georgia Institute of Technology, Atlanta, GA                                            2014 – 2016
*Undergraduate research with Prof. Fumin Zhang*

## PUBLICATIONS

### Preprints

- A Survey of Semantic Reasoning Frameworks for Robotic Systems
  **Weiyu Liu**, Angel Daruna, and Sonia Chernova.
  *Under review, Robotics and Autonomous Systems (RAS)*, 2020

- Leveraging Semantics for Incremental Learning in Multi-Relational Embeddings
  Angel Daruna, **Weiyu Liu**, Zsolt Kira, and Sonia Chernova.
  *arXiv*, 2019

### Conference and Journal Papers

- Towards Robust One-shot Task Execution using Knowledge Graph Embeddings
  Angel Daruna, Lakshmi Nair, **Weiyu Liu**, and Sonia Chernova.
  *International Conference on Robotics and Automation (ICRA)*, 2021

- An Affordance Keypoint Detection Network for Robot Manipulation
  Ruinian Xu, Fu-Jen Chu, Chao Tang, **Weiyu Liu**, and Patricio Vela.
  *Robotics and Automation Letters (ICRA)*, 2021

- Same Object, Different Grasps: Data and Semantic Knowledge for Task-Oriented Grasping
  Adithya Murali, **Weiyu Liu**, Kenneth Marino, Sonia Chernova, and Abhinav Gupta.
  *Conference on Robot Learning (CoRL)*, 2020

- CAGE: Context-Aware Grasping Engine
  **Weiyu Liu**, Angel Daruna, and Sonia Chernova.
  *International Conference on Robotics and Automation (ICRA)*, 2020.

- Path Ranking with Attention to Type Hierarchies
  **Weiyu Liu**, Angel Daruna, Zsolt Kira, and Sonia Chernova.
  *Conference on Artificial Intelligence (AAAI)*, 2020.

- Taking Recoveries to Task: Recovery-Driven Development for Recipe-based Robot Tasks
  Siddhartha Banerjee, Angel Daruna, David Kent, **Weiyu Liu**, Jonathan Balloch, Abhinav Jain, Akshay Krishnan, Muhammad Asif Rana, Harish Ravichandar, Binit Shah, Nithin Shrivatsav, and Sonia Chernova.
  *International Symposium on Robotics Research (ISRR)*, 2019.

- Autonomous flying blimp interaction with human in an indoor space
  Ningshi Yao, Qiuyang Tao, **Weiyu Liu**, Zhen Liu, Ye Tian, Peiyu Wang, Timothy Li, and Fumin Zhang.
  *Frontiers of Information Technology & Electronic Engineering*, 20, 2019.

- RoboCSE: Robot Common Sense Embedding
  Angel Daruna, **Weiyu Liu**, Zsolt Kira, and Sonia Chernova.
  *International Conference on Robotics and Automation (ICRA)*, 2018.

- SiRoK: Situated Robot Knowledge - Understanding the Balance Between Situated Knowledge and Variability
  Sonia Chernova, Vivian Chu, Angel Daruna, Haley Garrison, Meera Hahn, Priyanka Khante, **Weiyu Liu**, and Andrea Thomaz.
  *AAAI Spring Symposium Series (AAAI-SSS)*, 2018.

- Situated Bayesian Reasoning Framework for Robots Operating in Diverse Everyday Environments
  Sonia Chernova, Vivian Chu, Angel Daruna, Haley Garrison, Meera Hahn, Priyanka Khante, **Weiyu Liu**, and Andrea Thomaz.
  *International Symposium on Robotics Research (ISRR)*, 2017.


**Teaching Experience**

Georgia Institute of Technology, Atlanta, GA                                            Spring 2018
*Graduate Teaching Assistant*
CS 3630 Introduction to Robotics and Perception, Instructor: Prof. Sonia Chernova

Georgia Institute of Technology, Atlanta, GA                                                Fall 2014
*Peer Tutor*
Learning Assistance Program, Best Tutor Award


**LEADERSHIP and PROFESSIONAL SERVICE**

Georgia Institute of Technology, *Vice President Academic, RoboGrads*            2019 – 2020
Reviewer: ICRA, RA-L, RSS                                                          2019 – 2021

## AWARDS and HONORS

Fetch it! The Mobile Manipulation Challenge, *First Place*                                    2019
Georgia Institute of Technology, *Dean's List*                                    2012 – 2017