Andrew Silva

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RESEARCH OBJECTIVES

My research interests are at the intersection of **multimodal data** and **interactive learning**, particularly in **low-data** domains and with an eye towards interpretability. Robotic systems and digital agents must be able to adapt quickly to new and challenging domains, leveraging multiple sensory inputs and expert heuristics while being able to explain their decision making process.

EDUCATION

Georgia Institute of Technology, Atlanta, GA - *Ph. D Student*

August 2019 - Present

I am a Ph. D. student in the Computer Science program and the School of Interactive Computing, working in the Cognitive Optimization and Relational Robotics lab under Dr. Matthew Gombolay.

Georgia Institute of Technology, Atlanta, GA - *Bachelor's / Master's*

August 2010 - May 2014 / January 2015 - May 2017

I completed my Bachelor's of Science in Computational Media with a certificate in Business and Entrepreneurship, and my Master's in Computer Science at Georgia Tech with a specialization in Computational Perception and Robotics.

RESEARCH EXPERIENCE

Research Scientist I - *Georgia Institute of Technology*

May 2019 - August 2019

- Robot Autonomy and Interactive Learning lab (PI: Dr. Sonia Chernova)
- Cognitive Optimization and Relational Robotics lab (PI: Dr. Matthew Gombolay)
- Published ROS packages for real time face and object detection with deep networks
- Conducted three user studies to evaluate the performance of experimental algorithms

Research Areas: artificial intelligence, interactive learning, robotics, interpretability

Graduate Research Assistant - *Georgia Institute of Technology*

January 2017 - May 2017

- Developed a computer vision pipeline for a mobile-robot to estimate human workloads
- Applied deep networks to creating video embeddings for zero-shot learning

Research Areas: supervised learning, deep learning, computer vision, robotics

TEACHING EXPERIENCE

Introduction to Computer Vision - *Graduate Teaching Assistant*

August 2016 - September 2017 || **Enrollment**: 240/Semester

Hosted office hours, graded assignments, and responded to students in an online forum

INDUSTRY EXPERIENCE

Applications Developer - *AT&T*

June 2014 - December 2015

- Author on Patent US10189479B2 for monitoring vehicle driver status
- Pitched and developed various web and Android projects
- Oversaw the Atlanta internship program, helping to manage 40 Summer interns

Skills: Android development, web development, leadership, management, product-pitching

PUBLICATIONS

Journal Papers

- Banerjee, Siddhartha, **Andrew Silva**, and Sonia Chernova. "Robot Classification of Human Interruptibility and a Study of Its Effects." ACM Transactions on Human-Robot Interaction (THRI) 7.2 (2018): 14.

Conference Papers

- **Silva, Andrew**, and Sonia Chernova. "Unsupervised Role Discovery Using Temporal Observations of Agents." Proceedings of the 18th International Conference on Autonomous Agents and MultiAgent Systems. International Foundation for Autonomous Agents and Multiagent Systems, 2019.
- **Silva, Andrew**, and Matthew Gombolay. "Neural-encoding Human Experts' Domain Knowledge to Warm Start Reinforcement Learning." Under Review
- **Silva, Andrew,** Rodriguez, I. D. J., Killian, T., Son, S. H., & Gombolay, M. “Interpretable Reinforcement Learning via Differentiable Decision Trees.” Under Review
- Paleja, Rohan, **Andrew Silva**, and Matthew Gombolay. "Personalized Apprenticeship Learning from Heterogeneous Decision-Makers." Under Review
- Seraj, Esmaeil, **Andrew Silva**, and Matthew Gombolay. "Safe Coordination of Human-Robot Firefighting Teams." Under Review.
- Hahn, Meera, **Andrew Silva**, and James M. Rehg. "Action2Vec: A Crossmodal Embedding Approach to Action Learning." arXiv preprint arXiv:1901.00484 (2019).
- Banerjee, Siddhartha*, **Silva, Andrew***, Feigh, Karen, & Chernova, Sonia. “Effects of interruptibility-aware robot behavior.” arXiv preprint arXiv:1804.06383 (2018).

Workshop Papers

- **Silva, Andrew***, Banerjee, Siddhartha*, Chernova, Sonia (2018) “Excuse Me, Could You Please Assemble These Blocks For Me?” Presented at the What Could Go Wrong? Workshop at Human-Robot Interaction (HRI 2018)

Reviewer

ACM/IEEE International Conference on Human-Robot Interaction (HRI)	2019
International Conference on Machine Learning (ICML)	2019
International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)	2019
Robotics: Science and Systems (RSS)	2019