Letian Chen

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Education

Georgia Institute of Technology, Atlanta GA Expected 2024
Doctor of Philosophy in Computer Science, School of Interactive Computing. GPA: 4.00/4.00

Georgia Institute of Technology, Atlanta GA May 2020
Master of Science in Computer Science, College of Computing. GPA: 4.00/4.00
- Thesis: "Robot Learning from Heterogeneous Demonstration"
- Concentration: Machine Learning

Peking University, Beijing China July 2018
Bachelor of Science in Psychology, School of Psychological and Cognitive Sciences. GPA: 3.78/4.00
Bachelor of Science in Computer Science, School of Electronics Engineering and Computer Science. GPA: 3.80/4.00

Industry Experience

iRobot Corporation, *Reinforcement Learning Intern* May 2021 – Aug 2021
- Identified real-world challenges of Offline Policy Evaluation (OPE) techniques
- Created a benchmark dataset for OPE where real-world challenges present
- Proposed ad-hoc OPE algorithm selection methods via validation mechanisms

Publications

CoRL' 22 — **L. Chen***, S. Jayanthi*, R. R. Paleja, D. Martin, V. Zakharov, and M. Gombolay, "Fast lifelong adaptive inverse reinforcement learning from crowdsourced demonstrations," in *Proceedings of Conference on Robot Learning (CoRL)*, 2022

AAAI' 22 IML Workshop — **L. Chen***, S. Jayanthi*, and M. Gombolay, "Strategy discovery and mixture in lifelong learning from heterogeneous demonstration," in *Proceedings of AAAI Interactive Machine Learning workshop*, 2022

T-RO — E. Seraj, **L. Chen**, and M. Gombolay, "A hierarchical coordination framework for joint perception-action tasks in composite robot teams," *IEEE Transactions on Robotics*, 2021

AAAI' 21 Fall Symposium — **L. Chen**, R. Paleja, and M. Gombolay, "Towards sample-efficient apprenticeship learning from suboptimal demonstration," in *Artificial Intelligence for Human-Robot Interaction (AI-HRI), AAAI Fall Symposium Series*, 2021

MICCAI' 21 — D. Dias, M. Zenati, R. Srey, D. Arney, **L. Chen**, R. Paleja, L. Kennedy-Metz, and M. Gombolay, "Using machine learning to predict perfusionists' critical decision-making during cardiac surgery," in *Augmented Environments for Computer Assisted Interventions (AE-CAI), Computer Assisted and Robotic Endoscopy (CARE), and Context-Aware Operating Theaters (OR 2.0) Joint MICCAI workshop*, 2021

AAMAS' 21 ARMS Workshop — R. Paleja, A. Silva, **L. Chen**, and M. Gombolay, "Interpretable and personalized apprenticeship scheduling: Learning interpretable scheduling policies from heterogeneous user demonstrations," in *AAMAS Autonomous Robots and Multirobot Systems (ARMS) Workshop*, 2021

CoRL' 20 — **[Best Paper Finalist][Plenary Talk] L. Chen**, R. Paleja, and M. Gombolay, "Learning from suboptimal demonstration via self-supervised reward regression," in *Proceedings of Conference on Robot Learning (CoRL)*, 2020

Master Thesis — **L. Chen**, "Robot learning from heterogeneous demonstration," *Master Thesis*, 2020

Neurips' 20 — R. Paleja, A. Silva, **L. Chen**, and G. Matthew, "Interpretable and personalized apprenticeship scheduling: Learning interpretable scheduling policies from heterogeneous user demonstrations," in *Proceedings of Advances in Neural Information Processing Systems (NeurIPS)*, 2020

HRI' 20 — **L. Chen**, R. Paleja, M. Ghuy, and M. Gombolay, "Joint goal and strategy inference across heterogeneous demonstrators via reward network distillation," in *Proceedings of International Conference on Human-Robot Interaction (HRI)*, 2020

Undergrad Thesis — **L. Chen**, "Model-free vs model-based algorithms in human sequential decision making," *Undergraduate Thesis*, 2018

Research Experience

Fast Lifelong Personalized Learning from Demonstrations — 2021-2022

Graduate Research Assistant, Advisor: Matthew Gombolay
Georgia Institute of Technology

- Analyzed the personalization problem in lifelong learning-from-demonstration setting where large number of heterogeneous demonstrations arrive sequentially by federation among users
- Proposed a novel IRL framework, FLAIR, to provide efficient personalization and scalability by constructing *policy mixtures* with a concise set of prototypical strategy policies
- Applied FLAIR on three virtual robotic control tasks and a real robot table-tennis task; achieved better personalization with significantly higher sample efficiency

Learning from Suboptimal Demonstration — 2020

Graduate Research Assistant, Advisor: Matthew Gombolay
Georgia Institute of Technology

- Characterized policy performance degradation from noise injection with a sigmoid function
- Proposed a novel IRL framework, SSRR, to learn policies that are better than suboptimal demonstrations by inferring the idealized reward function (i.e., the latent intent of the demonstrator)
- Applied algorithm on three virtual robotic tasks and a real robot table-tennis task; achieved accurate recovery of the demonstrator intention and a better-than-best-demonstration policy

Joint Inference of Task Reward and Strategy Reward — 2019

Graduate Research Assistant, Advisor: Matthew Gombolay
Georgia Institute of Technology

- Modeled humans' latent objective via shared task reward and individual strategy reward
- Proposed a novel IRL framework, MSRD, to jointly infer task reward and strategy reward to gain a better estimation of both
- Applied algorithm on two virtual robotic control tasks and one real robot table-tennis task; achieved better learning of task reward than SOTA AIRL, extracted precise strategic rewards, and optimized versatile policies that resemble the heterogeneous demonstrations

Awards & Honors

- Amazon Science Scholarship for AAAI 2022 — Feb 2022
- Best paper finalist in Conference on Robot Learning (CoRL 2020) — Nov 2020
- First place in Brainhack ATL 2019 Track 2 — Nov 2019
- Graduate of merit in Beijing — Jul 2018
- Excellent Graduate in Peking University — Jul 2018
- Zhang Wenjin Scholarship — Dec 2017
- Scholarship for undergraduate research — Sep 2017

Teaching & Leadership Experience

Advising & Mentorship

- Yue Yang, M.Sc. Student at Georgia Tech
- Sravan Jayanthi, B.Sc. Student at Georgia Tech, now M.Sc. Student at Georgia Tech
- Daniel Martin, M.Sc. Student at Georgia Tech, now at Amazon Robotics
- Steve Zakharov, M.Sc. Student at Georgia Tech, now at Blue River Technology
- Sumedh Naik, M.Sc. Student at Georgia Tech, now at Intel
- Van Duong, M.Sc. Student at Georgia Tech, now at Jet Propulsion Laboratory

Teaching Assistantship

- *Interactive Robot Learning* (CS 7648) (Graduate), Georgia Tech (Spring 2021), with Prof. Matthew Gombolay
- *Machine Learning* (OMSCS 7641) (Graduate), Georgia Tech (Fall 2020, Spring 2019), with Prof. Charles Isbell
- *Introduction to Computation* - Undergraduate Section, Peking University (Fall 2016), with Prof. Jun Sun

Minister of Academic Department

Students' Union, School of Psychological and Cognitive Sciences, Peking University (2015 - 2016)

Academic Service

Technical Manuscript Reviewer for

- Conference on Robot Learning (CoRL)
- International Symposium of Robotic Research (ISRR)
- IEEE Robotics and Automation Letters (RA-L)
- International Conference on Intelligent Robots and Systems (IROS)
- International Conference on Robotics and Automation (ICRA)
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
- AAAI Fall Symposium Series on AI for HRI
- Robotics: Science and Systems (RSS)
- International Conference on Machine Learning (ICML)