Chih-Yuan Chiu

Academic Employment

Georgia Institute of Technology Aug 2024 - now
Research Engineer II,
School of Electrical and Computer Engineering.
Supervisor: Professor Justin Romberg

Education

University of California, Berkeley Sept 2018 - Dec 2023
Ph.D., Department of Electrical Engineering and Computer Sciences
Advisor: Professor Shankar Sastry

National Taiwan University Sept 2014 - June 2018
B.S., Department of Electrical Engineering

Contact Information

Emails: cyc@gatech.edu, chihyuanfrankchiu@gmail.com.
Website: `https://chihyuanchiu.github.io/`
Google Scholar: `https://scholar.google.com/citations?hl=en&user=cl9ModoAAAAJ`

Preprints

Shuyu Zhan, **Chih-Yuan Chiu**, Antoine Leeman, Glen Chou. "Robustly Constrained Dynamic Games for Uncertain Nonlinear Dynamics," ArXiv preprint 2509.16826, September 2025. URL: `https://arxiv.org/abs/2509.16826`. (Submitted to *2026 IEEE International Conference on Robotics and Automation (ICRA)*)

Sundhar Vinodh Sangeetha, **Chih-Yuan Chiu**, Sarah H.Q. Li, Shreyas Kousik "Language Conditioning Improves Accuracy of Aircraft Goal Prediction in Untowered Airspace," ArXiv preprint 2509.14063, September 2025. URL: `https://arxiv.org/abs/2509.14063`. (Submitted to *2026 IEEE International Conference on Robotics and Automation (ICRA)*)

Chih-Yuan Chiu*, Zhouyu Zhang*, Glen Chou. "Learning Constraints from Stochastic Partially-Observed Closed-Loop Demonstrations," ArXiv preprint 2509.15109, September 2025. URL: `https://arxiv.org/abs/2509.15109`. (Submitted to: *IEEE Control Systems Letters (L-CSS).*)

Zhouyu Zhang$^{\star 1}$, **Chih-Yuan Chiu***, Glen Chou. "Constraint Learning in Multi-Agent Dynamic Games from Demonstrations of Local Nash Interactions," ArXiv preprint 2508.19945, August 2025. URL: `https://arxiv.org/abs/2508.19945`. (Submitted to: *IEEE Robotics and Automation Letters (RA-L).*)

Journal Publications

Chih-Yuan Chiu, Bryce Ferguson. "Robustness of Incentive Mechanisms Against System Misspecification in Congestion Games," in *IEEE Control Systems Letters*, vol. 9, pp. 276-281, May 2025.

Chih-Yuan Chiu*, Jingqi Li*, Maulik Bhatt, Negar Mehr. "To What Extent Do Open-Loop and Feedback Nash Equilibria Diverge in General-Sum Linear Quadratic Dynamic Games?" *IEEE Control Systems Letters (L-CSS)*, vol. 8, pp. 2583-2588, November 2024.

Lasse Peters, Andrea Bajcsy, **Chih-Yuan Chiu**, David Fridovich-Keil, Forrest Laine, Laura Ferranti, Javier Alonso-Mora. "Contingency Games for Multi-Agent Interaction," *IEEE Robotics and Automation Letters (RA-L)*, vol. 9, pp. 2208-2215, January 2024.

Forrest Laine, David Fridovich-Keil, **Chih-Yuan Chiu**, and Claire Tomlin. "The Computation of Approximate Generalized Feedback Nash Equilibria", *SIAM Journal on Optimization*, vol. 33, no. 1, pp. 294-318, 2023.

[1] *indicates qual contribution.

Druv Pai, Michael Psenka, **Chih-Yuan Chiu**, Manxi Wu, Edgar Dobriban, Yi Ma. "Pursuit of a Discriminative Representation for Multiple Subspaces via Sequential Games", vol. 360, no. 6, *Journal of the Franklin Institute*, pp. 4135-4171, April 2023.

Amay Saxena*, **Chih-Yuan Chiu***, Ritika Shrivastava, Joseph Menke, Shankar Sastry. "Simultaneous Localization and Mapping: Through the Lens of Nonlinear Optimization," vol. 7, no. 3, *IEEE Robotics and Automation Letters (RA-L)*, July 2022.

Conference Publications

Chih-Yuan Chiu. "Approximately Optimal Toll Design for Efficiency and Equity in Arc-Based Traffic Assignment Models," *accepted at 60th Annual Allerton Conference on Communication, Control, and Computing*, September 2025.

Chih-Yuan Chiu, Devansh Jalota, Marco Pavone. "Credit vs. Discount-Based Congestion Pricing: A Comparison Study," in *IEEE Conference on Decision and Control (CDC)*, pp. 2331-2336, December 2024.

Chih-Yuan Chiu, Shankar Sastry. "Parameter Estimation in Optimal Tolling for Traffic Networks Under the Markovian Traffic Equilibrium," in *American Control Conference (ACC)*, pp. 1461-1467, July 2024.

Chih-Yuan Chiu, Chinmay Maheshwari, Pan-Yang Su, Shankar Sastry. "Dynamic Tolling in Arc-based Traffic Assignment Models," in *59th Annual Allerton Conference on Communication, Control, and Computing*, pp. 1-8, September 2023.

Chih-Yuan Chiu*, Chinmay Maheshwari*, Pan-Yang Su, Shankar Sastry. "Arc-based Traffic Assignment: Equilibrium Characterization and Learning," in *IEEE Conference on Decision and Control (CDC)*, pp. 7751-7758, December 2023.

Jingqi Li, **Chih-Yuan Chiu**, Lasse Peters, Fernando Palafox, Mustafa Karabag, Javier Alonso-Mora, Somayeh Sojoudi, Claire Tomlin, David Fridovich-Keil. "Scenario-Game ADMM: A Parallelized Scenario-Based Solver for Stochastic Noncooperative Games," in *IEEE Conference on Decision and Control (CDC)*, pp. 8093-8099, December 2023.

Chih-Yuan Chiu. "SLAM Backends with Objects in Motion: A Unifying Framework and Tutorial," in *American Control Conference (ACC)*, pp. 1635-1642, May 2023.

Jingqi Li, **Chih-Yuan Chiu**, Lasse Peters, Somayeh Sojoudi, Claire Tomlin, David Fridovich-Keil. "Cost Inference for Feedback Dynamic Games from Noisy Partial State Observations and Incomplete Trajectories," in *International Conference on Autonomous Agents and Multiagent Systems*, pp. 1062-1070, June 2023.

Chih-Yuan Chiu, David Fridovich-Keil. "GTP-SLAM: Game-Theoretic Priors for Simultaneous Localization and Mapping in Multi-Agent Scenarios," in *IEEE Conference on Decision and Control (CDC)*, pp. 247-252, December 2022.

Chinmay Maheshwari*, **Chih-Yuan Chiu***, Eric Mazumdar, Shankar Sastry and Lillian J. Ratliff. "Zeroth-Order Methods for Convex-Concave Minmax Problems: Applications to Decision-Dependent Risk Minimization", in *25th International Conference on Artificial Intelligence and Statistics* (AISTATS), vol. 51, pp. 6702-6734, 2022.

Chih-Yuan Chiu*, David Fridovich-Keil*, and Claire Tomlin. "Encoding Defensive Driving as a Dynamic Nash Game," in *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 10749-10756, 2021.

Forrest Laine, David Fridovich-Keil, **Chih-Yuan Chiu**, and Claire Tomlin. "Multi-Hypothesis Interactions in Game-Theoretic Motion Planning", in *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 8016-8023, June 2021.

Forrest Laine, **Chih-Yuan Chiu**, Claire Tomlin, "Eyes-Closed Safety Kernels: Safety for Autonomous Systems Under Loss of Observability", in *Robotics: Science and Systems (RSS)*, July 2020.

Theses

(*Ph.D. Thesis*) **Chih-Yuan Chiu**. "Algorithm Design for Safe and Efficient Societal-Scale Navigation," 2023. (`https://www2.eecs.berkeley.edu/Pubs/TechRpts/2023/EECS-2023-267.pdf`).

(*Master's Thesis*) **Chih-Yuan Chiu**. "Simultaneous Localization and Mapping: A Rapprochement of Filtering and Optimization-Based Approaches," 2021. (`https://www2.eecs.berkeley.edu/Pubs/TechRpts/2021/EECS-2021-76.pdf`).

Invited Oral Presentations

Georgia Tech DCL Symposium Spotlight Talk Apr 2025
"Credit-based vs. Discount-based Congestion Pricing: A Study of Tolling and Toll Relief Mechanisms for Traffic Management."

UC Berkeley ME ICON Research Group Seminar Dec 2024
"Discussion of the Publication, A Survey of Opponent Modeling in Adversarial Domains, by and Dr. Samer Nashed and Dr. Shlomo Zilberstein."

Georgia Tech ECE Decision and Control Laboratory Student Seminar Oct 2024
"Interaction-aware Multi-Agent Control: The Role of Information."

UC Berkeley EECS C106B/206B Guest Lecture Apr 2022
"Simultaneous Localization and Mapping: A Unifying Optimization-Based Framework." (with Ritika Srivastava)

UC Berkeley Semiautonomous Seminar Feb 2022
"Towards a Rapprochement of Estimation, Prediction, and Planning for Autonomous Navigation."

UC Berkeley EE 221A Guest Lecture Dec 2021
"Simultaneous Localization and Mapping: Filtering and Optimization Approaches." (with Amay Saxena)

UC Berkeley Semiautonomous Seminar Sep 2021
"Gradient Free Optimistic Gradient Descent Ascent: Applications to Decision Dependent Risk Minimization." (with Chinmay Maheshwari)

UC Berkeley Semiautonomous Seminar Jun 2021
"Factor Graphs: A Tool for Optimization-Based Inference in Robotics."

UC Berkeley EECS C106B/206B Guest Lecture Feb 2021
"Simultaneous Localization and Mapping: A Unifying Optimization-Based Framework." (with Amay Saxena)

UC Berkeley Semiautonomous Seminar Jun 2020
"Adversarial-to-Cooperative Games."

Teaching Experience

EE 127 (Optimization Models in Engineering) Aug 2023 - Dec 2023
20-hour Graduate Student Instructor for a 16-week semester-long course

EE 221A (Linear Systems Theory) Aug 2021 - Dec 2021
20-hour Graduate Student Instructor for a 16-week semester-long course

EE 16B (Designing Information Devices and Systems II) Jul 2020 - Aug 2020
25-hour Graduate Student Instructor for an 8-week summer course

Journal and Conference Reviewing

Journals

- IEEE Transactions on Networked Control Systems, 2025.
- IEEE Transactions on Automatic Control, 2024.
- IEEE Control Systems Letters, 2024.
- IEEE Robotics and Automation Letters (RA-L), 2024.
- Journal of Machine Learning Research (JMLR), 2023.

Conferences

- IEEE International Conference on Intelligent Transportation Systems, 2024.
- IEEE Conference on Decision and Control (CDC), 2024.
- IFAC American Control Conference (ACC), 2024.
- IEEE International Conference on Robotics and Automation (ICRA), 2022.
- IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS), 2021.
- IEEE International Conference on Robotics and Automation (ICRA), 2021.
- IEEE Conference on Decision and Control (CDC), 2020.

Software Skills

Python, Matlab, C++, LaTeX

Organizations and Activities

ACC 2025: Workshop on Mixed-Autonomy Traffic, Co-Organzers July 2024
Workshop on Emerging Challenges and Opportunities in Mixed Autonomy Transportation Systems (`https://sites.google.com/view/acc2025workshoponmixedautonomy/home?authuser=0`)

Decision and Control Laboratory Student Seminar Co-Organizer Sep 2024 - now
Monthly seminar on emerging challenges in the control of robotic and cyber-physical systems, at Georgia Tech ECE

DREAM Seminar Co-Organizer Sep 2022 - Dec 2023
Weekly seminar on control theory, robotics, optimization, computer vision, and machine learning, at UC Berkeley EECS.

Semiautonomous Seminar Co-Organizer Jan 2020 - Dec 2021
Weekly seminar on control theory, robotics, optimization, computer vision, and machine learning, at UC Berkeley EECS.