

Chih-Yuan Chiu

ACADEMIC EMPLOYMENT	Georgia Institute of Technology <i>Postdoctoral Fellow and Research Engineer II, School of Electrical and Computer Engineering. Supervisor: Professor Justin Romberg</i>	Aug 2024 - now
EDUCATION	University of California, Berkeley <i>Ph.D., Department of Electrical Engineering and Computer Sciences Advisor: Professor Shankar Sastry</i> National Taiwan University <i>B.S., Department of Electrical Engineering</i>	Sept 2018 - Dec 2023 Sept 2014 - June 2018
CONTACT INFORMATION	<i>Emails:</i> cyc@gatech.edu, chihyuanfrankchiu@gmail.com. <i>Website:</i> https://chihyuanchiu.github.io/ <i>Google Scholar:</i> https://scholar.google.com/citations?hl=en&user=cl9ModoAAAAJ	
JOURNAL PREPRINTS	<u>Chih-Yuan Chiu</u> , Bryce Ferguson. “Robustness of Incentive Mechanisms Against System Misspecification in Congestion Games,” (Revise and Resubmit at) <i>IEEE Control Systems Letters (L-CSS)</i> , 2025.	
JOURNAL PUBLICATIONS	<u>Chih-Yuan Chiu</u> ^{*1} , Jingqi Li [*] , Maulik Bhatt, Negar Mehr. “To What Extent Do Open-Loop and Feedback Nash Equilibria Diverge in General-Sum Linear Quadratic Dynamic Games?” <i>IEEE Control Systems Letters (L-CSS)</i> , 2024 (https://ieeexplore.ieee.org/abstract/document/10766403). Lasse Peters, Andrea Bajcsy, <u>Chih-Yuan Chiu</u> , David Fridovich-Keil, Forrest Laine, Laura Ferranti, Javier Alonso-Mora. “Contingency Games for Multi-Agent Interaction,” <i>IEEE Robotics and Automation Letters (RA-L)</i> , 2024 (https://ieeexplore.ieee.org/document/10400882). Forrest Laine, David Fridovich-Keil, <u>Chih-Yuan Chiu</u> , and Claire Tomlin. “The Computation of Approximate Generalized Feedback Nash Equilibria”, <i>SIAM Journal on Optimization</i> , 2023. (https://epubs.siam.org/doi/epdf/10.1137/21M142530X). Druv Pai, Michael Psenka, <u>Chih-Yuan Chiu</u> , Manxi Wu, Edgar Dobriban, Yi Ma. “Pursuit of a Discriminative Representation for Multiple Subspaces via Sequential Games”, <i>Journal of the Franklin Institute</i> , 2023 (https://www.sciencedirect.com/science/article/pii/S0016003223000960). Amay Saxena [*] , <u>Chih-Yuan Chiu</u> [*] , Ritika Shrivastava, Joseph Menke, Shankar Sastry. “Simultaneous Localization and Mapping: Through the Lens of Nonlinear Optimization,” <i>IEEE Robotics and Automation Letters (RA-L)</i> , 2022. (https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9793570). CONFERENCE PUBLICATIONS	
	<u>Chih-Yuan Chiu</u> , Devansh Jalota, Marco Pavone. “Credit vs. Discount-Based Congestion Pricing: A Comparison Study,” <i>IEEE Conference on Decision and Control (CDC)</i> , 2024. (https://arxiv.org/pdf/2403.13923.pdf) <u>Chih-Yuan Chiu</u> , Shankar Sastry. “Parameter Estimation in Optimal Tolling for Traffic Networks Under the Markovian Traffic Equilibrium,” <i>American Control Conference (ACC)</i> , 2024. (https://drive.google.com/file/d/1LM7BwxI4nt0py8J8TFy0yLXNHIBi4kL7/view?usp=sharing) <u>Chih-Yuan Chiu</u> , Chinmay Maheshwari, Pan-Yang Su, Shankar Sastry. “Dynamic Tolling in Arc-based Traffic Assignment Models,” <i>59th Annual Allerton Conference on Communication, Control,</i>	

¹*Equal contribution.

and Computing, 2023. (<https://arxiv.org/pdf/2307.05466.pdf>)

Chih-Yuan Chiu^{*}, Chinmay Maheshwari^{*}, Pan-Yang Su, Shankar Sastry. “Arc-based Traffic Assignment: Equilibrium Characterization and Learning,” *IEEE Conference on Decision and Control (CDC)*, 2023. (<https://arxiv.org/pdf/2304.04705.pdf>)

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,” *IEEE Conference on Decision and Control (CDC)*, 2023. (<https://arxiv.org/pdf/2304.01945.pdf>)

Chih-Yuan Chiu. “SLAM Backends with Objects in Motion: A Unifying Framework and Tutorial,” *American Control Conference (ACC)*, 2023. (<https://arxiv.org/pdf/2207.05043.pdf>).

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,” *International Conference on Autonomous Agents and Multiagent Systems*, 2023. (<https://arxiv.org/pdf/2301.01398.pdf>).

Chih-Yuan Chiu, David Fridovich-Keil. “GTP-SLAM: Game-Theoretic Priors for Simultaneous Localization and Mapping in Multi-Agent Scenarios,” *IEEE Conference on Decision and Control (CDC)*, 2022. (<https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9992656>).

Chih-Yuan Chiu^{*}, Chinmay Maheshwari^{*}, Eric Mazumdar, Shankar Sastry and Lillian J. Ratliff. “Zeroth-Order Methods for Convex-Concave Minmax Problems: Applications to Decision-Dependent Risk Minimization”, *25th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022. (<https://proceedings.mlr.press/v151/maheshwari22a/maheshwari22a.pdf>).

Chih-Yuan Chiu^{*}, David Fridovich-Keil^{*}, and Claire Tomlin. “Encoding Defensive Driving as a Dynamic Nash Game,” *IEEE International Conference on Robotics and Automation (ICRA)*, 2020. (<https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9560788>)

Forrest Laine, David Fridovich-Keil, Chih-Yuan Chiu, and Claire Tomlin. “Multi-Hypothesis Interactions in Game-Theoretic Motion Planning”, *IEEE International Conference on Robotics and Automation (ICRA)*, 2020. (<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9561695>).

Forrest Laine, Chih-Yuan Chiu, Claire Tomlin, “Eyes-Closed Safety Kernels: Safety for Autonomous Systems Under Loss of Observability”, *Robotics: Science and Systems (RSS)*, 2020. (<https://www.roboticsproceedings.org/rss16/p096.pdf>).

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

Conferences

- IEEE Conference on Decision and Control (CDC), 2024.
- 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++, L^AT_EX

ORGANIZATIONS AND ACTIVITIES (Upcoming) **ACC 2025: Workshop on Mixed-Autonomy Traffic, Co-Organizers** 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.