

# Chih-Yuan Chiu

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ACADEMIC EMPLOYMENT	<b>Georgia Institute of Technology</b> <i>Postdoctoral Fellow and Research Engineer II,</i> <i>Department of Electrical and Computer Engineering.</i> <i>Supervisor: Professor Justin Romberg</i>	Aug 2024 - now
EDUCATION	<b>University of California, Berkeley</b> <i>Ph.D., Department of Electrical Engineering and Computer Sciences</i> <i>Advisor: Professor Shankar Sastry</i> <b>National Taiwan University</b> <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> <a href="https://chihyuanchiu.github.io/">https://chihyuanchiu.github.io/</a> <i>Google Scholar:</i> <a href="https://scholar.google.com/citations?hl=en&amp;user=cl9ModoAAAAJ">https://scholar.google.com/citations?hl=en&amp;user=cl9ModoAAAAJ</a>	
JOURNAL PUBLICATIONS	<b>Chih-Yuan Chiu*</b> , Jingqi Li*, Maulik Bhatt, Negar Mehr. “Contingency Games for Multi-Agent Interaction,” <i>IEEE Robotics and Automation Letters (RA-L)</i> , 2024 ( <a href="https://ieeexplore.ieee.org/document/10400882">https://ieeexplore.ieee.org/document/10400882</a> ).  Lasse Peters, Andrea Bajcsy, <b>Chih-Yuan Chiu</b> , 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 ( <a href="https://ieeexplore.ieee.org/document/10400882">https://ieeexplore.ieee.org/document/10400882</a> ).  Druv Pai, Michael Psenka, <b>Chih-Yuan Chiu</b> , 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 ( <a href="https://www.sciencedirect.com/science/article/pii/S0016003223000960">https://www.sciencedirect.com/science/article/pii/S0016003223000960</a> ).  Amay Saxena*, <b>Chih-Yuan Chiu*</b> , 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. (*Equal contribution.) ( <a href="https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9793570">https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9793570</a> ).  Forrest Laine, David Fridovich-Keil, <b>Chih-Yuan Chiu</b> , and Claire Tomlin. “The Computation of Approximate Generalized Feedback Nash Equilibria”, <i>SIAM Journal on Optimization</i> . ( <a href="https://epubs.siam.org/doi/epdf/10.1137/21M142530X">https://epubs.siam.org/doi/epdf/10.1137/21M142530X</a> ).  <b>Chih-Yuan Chiu</b> , Devansh Jalota, Marco Pavone. “Credit vs. Discount-Based Congestion Pricing: A Comparison Study,” <i>IEEE Conference on Decision and Control (CDC)</i> , 2024. ( <a href="https://arxiv.org/pdf/2403.13923.pdf">https://arxiv.org/pdf/2403.13923.pdf</a> )  <b>Chih-Yuan Chiu</b> , Shankar Sastry. “Parameter Estimation in Optimal Tolling for Traffic Networks Under the Markovian Traffic Equilibrium,” <i>American Control Conference (ACC)</i> , 2024. ( <a href="https://drive.google.com/file/d/1LM7BwxI4nt0py8J8TFy0yLXNHIBi4kL7/view?usp=sharing">https://drive.google.com/file/d/1LM7BwxI4nt0py8J8TFy0yLXNHIBi4kL7/view?usp=sharing</a> )  <b>Chih-Yuan Chiu</b> , Chinmay Maheshwari, Pan-Yang Su, Shankar Sastry. “Dynamic Tolling in Arc-based Traffic Assignment Models,” <i>59th Annual Allerton Conference on Communication, Control, and Computing</i> , 2023. ( <a href="https://arxiv.org/pdf/2307.05466.pdf">https://arxiv.org/pdf/2307.05466.pdf</a> )  <b>Chih-Yuan Chiu*</b> , Chinmay Maheshwari*, Pan-Yang Su, Shankar Sastry. “Arc-based Traffic Assignment: Equilibrium Characterization and Learning,” <i>IEEE Conference on Decision and Control (CDC)</i> , 2023. (*Equal contribution.)( <a href="https://arxiv.org/pdf/2304.04705.pdf">https://arxiv.org/pdf/2304.04705.pdf</a> )	
CONFERENCE PUBLICATIONS		

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**<sup>\*</sup>, Chinmay Maheshwari<sup>\*</sup>, 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. (<sup>\*</sup>Equal contribution.) (<https://proceedings.mlr.press/v151/maheshwari22a/maheshwari22a.pdf>).

**Chih-Yuan Chiu**<sup>\*</sup>, David Fridovich-Keil<sup>\*</sup>, and Claire Tomlin. “Encoding Defensive Driving as a Dynamic Nash Game,” *IEEE International Conference on Robotics and Automation (ICRA)*, 2020. (<sup>\*</sup>Equal contribution.) (<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 ECE Decision and Control Laboratory Student Seminar** Oct 2024  
“Interaction-aware Multi-Agent Control: The Role of Information.”

**UIUC ECE Seminar** Mar 2024  
“Towards Safe and Efficient Mobility.”

**Duke University ECE and ME Seminar** Mar 2024  
“Towards Safe and Efficient Mobility.”

**UT Dallas CS Seminar** Feb 2024

*“Towards Safe and Efficient Mobility.”*

**Washington University at St. Louis ESE Seminar**

Jan 2024

*“Towards Safe and Efficient Mobility.”*

**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*

CONFERENCE  
REVIEWING

**Conferences and Journals**

- IEEE Control Systems Letters, 2024.
- IEEE Conference on Decision and Control (CDC), 2024.
- IEEE Robotics and Automation Letters (RA-L), 2024.
- American Control Conference (ACC), 2024.
- IEEE International Conference on Robotics and Automation (ICRA), 2022.
- Journal of Machine Learning Research (JMLR), 2023.
- 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.

ACADEMIC TRANSLATION	Yung, Chee Fai, <i>Linear Algebra</i> , 2nd ed., 2012, Wuhan Book Co., Ltd., Taiwan (to be published).
SOFTWARE SKILLS	Python, Matlab, C++, L <sup>A</sup> T <sub>E</sub> X
ORGANIZATIONS AND ACTIVITIES	<p>(<i>Upcoming</i>) <b>ACC 2025: Workshop on Mixed-Autonomy Traffic, Co-Organizers</b> July 2024  <i>Workshop on Emerging Challenges and Opportunities in Mixed Autonomy Transportation Systems</i>  (<a href="https://sites.google.com/view/acc2025workshoponmixedautonomy/home?authuser=0">https://sites.google.com/view/acc2025workshoponmixedautonomy/home?authuser=0</a>)</p> <p><b>Decision and Control Laboratory Student Seminar Co-Organizer</b> Sep 2024 - now  <i>Monthly seminar on emerging challenges in the control of robotic and cyber-physical systems, at Georgia Tech ECE</i></p> <p><b>DREAM Seminar Co-Organizer</b> Sep 2022 - Dec 2023  <i>Weekly seminar on control theory, robotics, optimization, computer vision, and machine learning, at UC Berkeley EECS.</i></p> <p><b>Semiautonomous Seminar Co-Organizer</b> Jan 2020 - Dec 2021  <i>Weekly seminar on control theory, robotics, optimization, computer vision, and machine learning, at UC Berkeley EECS.</i></p>