

# Bryce L. Ferguson

Postdoctoral Researcher at University of California, Berkeley  
Incoming Assistant Professor at Dartmouth College (Fall 2025)  
Thayer School of Engineering

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## Areas of Interest

Exploring information and control in large-scale autonomous systems. My research develops novel system and control paradigms emerging through the interconnectedness of many system components and human users. I search for improvements made possible by new technologies in domains like transportation, robotic fleets, renewable resources, smart grids, social networks, and other pertinent areas.

## Academic Employment



**Dartmouth College**  
*Assistant Professor (incoming)*  
*Thayer School of Engineering*

*2025 - beyond*  
Hanover, NH



**University of California, Berkeley**  
*Postdoctoral Researcher*  
*Department of Electrical Engineering & Computer Science*

*2024 - 2025*  
Berkeley, CA



**University of California, Santa Barbara**  
*Graduate Student Researcher*  
*Center for Control, Dynamical Systems, and Computation*

*2018 - 2024*  
Santa Barbara, CA



**University of Grenoble, Alpes**  
*CNRS Invited Research Fellow*  
*POLARIS group in Informatics Laboratory (LIG)*

*Fall 2022*  
Grenoble, FR



**University of Colorado, Colorado Springs**  
*Visiting Research Scholar*  
*Department of Computer Science*

*Summer 2019*  
Colorado Springs, CO



**University of California, Santa Barbara**  
*Undergraduate Research Assistant*  
*Smart Infrastructure Systems Lab*

*2017 - 2018*  
Santa Barbara, CA

## Education

- **Doctor of Philosophy in Electrical Engineering** 4.0  
*University of California, Santa Barbara* *2019 - 2024*
  - *Doctoral Thesis: On The Role of Information in the Control of Multi-Agent Systems: A Game Theoretic Approach* | Advisor: Jason R. Marden
- **Master of Science in Electrical Engineering** 4.0  
*University of California, Santa Barbara* *2018 - 2019*
  - *Emphasis in Control, Communication, and Signal Processing*

- **Bachelor of Science in Electrical Engineering** (Highest Honors) 3.97  
*University of California, Santa Barbara* 2016 - 2018
- **A.A. in Mathematics & A.S. in Engineering** (Highest Honors) 3.96  
*Santa Rosa Junior College* 2014 - 2016

## Awards & Honors

2023 UCSB Graduate Division Dissertation Fellowship Award  
 2023 CSS Student Travel Award for the IEEE Conference on Decision and Control  
 2023, 2022, 2021, 2020, 2019 UCSB ECE Outstanding TA Award  
 2022 Invited Research Fellow from the French Centre National de la Recherche Scientifique  
 2022 Cyber-Physical Systems Rising Star  
 2022 NSF ASI Scholar on Industrial Risk Management at INSA CVL and Inria Lille, France.  
 2022-2023 UCSB ECE Department Dissertation Fellowship Award  
 2020 ACC Best Student Paper Award Finalist  
 2019 CSS Student Travel Award for the IEEE Conference on Decision and Control  
 2018 Graduated with Highest Honors, University of California, Santa Barbara  
 2016-2018 ESTEEM Scholar with full tuition scholarship, University of California, Santa Barbara  
 2016-2018 Engineering Honor Society, University of California, Santa Barbara  
 2016-2018 Dean's Honors, College of Engineering, University of California, Santa Barbara  
 2016 Graduated with Highest Honors, Santa Rosa Junior College  
 2014-2016 Dean's List, Santa Rosa Junior College

## Journal Articles

- (J8) **Bryce L. Ferguson**, Dario Paccagnan, Bary S. R. Pradelski, and Jason R. Marden, "Collaborative Decision-Making and the k-Strong Price of Anarchy in Common Interest Games," under review at IEEE Transactions on Automatic Control (TAC).
- (J7) **Bryce L. Ferguson**, Philip N. Brown, and Jason R. Marden, "Information Signalling with Concurrent Monetary Incentives in Bayesian Congestion Games," IEEE Transactions on Intelligent Transportation Systems (T-ITS) 2024.
- (J6) **Bryce L. Ferguson**, Dario Paccagnan, and Jason R. Marden, "The Cost of Informed Decision Making in Multi-Agent Maximum Coverage Problems," IEEE Control Systems Letters (L-CSS) 2023.
- (J5) **Bryce L. Ferguson** and Jason R. Marden, "Robust Utility Design in Distributed Resource Allocation Problems with Defective Agents," Dynamic Games and Applications (DGAA) 2022.
- (J4) **Bryce L. Ferguson**, Philip N. Brown, and Jason R. Marden, "The Effectiveness of Subsidies and Tolls in Congestion Games," IEEE Transactions on Automatic Control (TAC) 2021.
- (J3) **Bryce L. Ferguson**, Philip N. Brown, and Jason R. Marden, "The Effectiveness of Subsidies and Taxes in Atomic Congestion Games," IEEE Control Systems Letters (L-CSS) 2021.
- (J2) Dario Paccagnan, Rahul Chandan, **Bryce L. Ferguson**, and Jason R. Marden, "Optimal taxes in atomic congestion games," ACM Transactions on Economics and Computation (TEAC) 2021.
- (J1) **Bryce L. Ferguson**, Philip N. Brown, and Jason R. Marden, "Value of Information in Incentive Design: A Case-Study in Simple Congestion Networks," IEEE Transaction on Computational Social Systems (TCSS) 2023.

## Working Papers

- (W3) “Network Defense with Limited Capabilities in Dynamic Defender-Attacker Blotto Games (dDAB),” by **Bryce L. Ferguson**, Austin K. Chen, Daigo Shishika, Michael Dorothy, Jason R. Marden, George J. Pappas, and Vijay Kumar.
- (W2) “Equilibrium Selection in Matching Markets with Unknown Preferences,” by Vade Shah, **Bryce L. Ferguson**, and Jason R. Marden.
- (W1) “The Robustness of Marginal Cost Taxes to Limited Network and Population Incentivizability,” by Yixiao (Rey) Yue, **Bryce L. Ferguson**, Mahnoosh Alizadeh, and Jason R. Marden.

## Proceedings of Refereed Conferences

- (C15) **Bryce L. Ferguson**, Dario Paccagnan, Bary S. R. Pradelski, and Jason R. Marden, “Bridging the Gap Between Central and Local Decision-Making: The Efficacy of Collaborative Equilibria in Altruistic Congestion Games,” IEEE Conference on Decision and Control (CDC), 2024. (under review)
- (C14) Vade Shah, **Bryce L. Ferguson**, and Jason R. Marden, “Learning Optimal Stable Matches in Decentralized Markets with Unknown Preferences,” IEEE Conference on Decision and Control (CDC), 2024. (under review)
- (C13) **Bryce L. Ferguson**, Dario Paccagnan, Bary S. R. Pradelski, and Jason R. Marden, “Collaborative Coalitions in Multi-Agent Systems: Quantifying the Strong Price of Anarchy for Resource Allocation Games,” IEEE Conference on Decision and Control (CDC), 2023.
- (C12) Runyu Zhang, Yuyang Zhang, Rohit Konda, **Bryce L. Ferguson**, Jason R. Marden, Na Li, “Markov Games with Decoupled Dynamics: Price of Anarchy and Sample Complexity,” IEEE Conference on Decision and Control (CDC), 2023.
- (C11) Austin K. Chen\*, **Bryce L. Ferguson**\*, Daigo Shishika, Michael Dorothy, Jason R. Marden, George J. Pappas, and Vijay Kumar, “Path Defense in Dynamic Defender-Attacker Blotto Games (dDAB) with Limited Information,” American Control Conference (ACC), 2023.
- (C10) **Bryce L. Ferguson**, Daigo Shishika and Jason R. Marden, “Ensuring the Defense of Paths and Perimeters in Dynamic Defender-Attacker Blotto Games (dDAB) on Graphs,” 58th Annual Allerton Conference on Communication, Control, and Computing, 2022.
- (C9) **Bryce L. Ferguson**, Philip N. Brown and Jason R. Marden, “Avoiding Unintended Consequences: How Incentives Aid Information Provisioning in Bayesian Congestion Games,” IEEE Conference on Decision and Control (CDC), 2022.
- (C8) **Bryce L. Ferguson** and Jason R. Marden, “Robust Utility Design in Distributed Resource Allocation Problems with Defective Agents,” IEEE Conference on Decision and Control (CDC), 2021.
- (C7) Yixiao Yue, **Bryce L. Ferguson** and Jason R. Marden, “Incentive Design for Congestion Games with Unincentivizable Users,” IEEE Conference on Decision and Control (CDC), 2021.
- (C6) **Bryce L. Ferguson** and Jason R. Marden, “The Impact of Fairness on Performance in Congestion Networks,” American Control Conference (ACC), 2021.

- (C5) **Bryce L. Ferguson**, Philip N. Brown, and Jason R. Marden, “Carrots or Sticks? The Effectiveness of Subsidies and Tolls in Congestion Games,” American Control Conference (ACC), 2020. [**Best student paper award finalist**]
- (C4) Rahul Chandan, Dario Paccagnan, **Bryce L. Ferguson**, and Jason R. Marden, “Computing Optimal Taxes in Atomic Congestion Games,” NetEcon, 2019.
- (C3) **Bryce L. Ferguson**, Philip N. Brown, and Jason R. Marden, “Utilizing Information Optimally to Influence Distributed Network Routing,” IEEE Conference on Decision and Control (CDC), 2019.
- (C2) Nathaniel Tucker, **Bryce Ferguson**, and Mahnoosh Alizadeh, “An Online Pricing Mechanism for Electric Vehicle Parking Assignment and Charge Scheduling,” American Control Conference (ACC), 2019.
- (C1) **Bryce Ferguson**, Varun Nagaraj, Emre Can Kara, and Mahnoosh Alizadeh, “Optimal Planning of Workplace Electric Vehicle Charging Infrastructure with Smart Charging Opportunities,” IEEE International Conference on Intelligent Transportation Systems (ITSC), 2018.

## Presentations

- (P34) “Beyond Local Decision-Making: The Efficacy of Collaborative Architectures in Multi-Agent Systems,” for the ONR Science of Autonomy review meeting, Alexandria, VA, July 2024.
- (P33) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” seminar for the Semi-autonomous series at University of California, Berkeley, July 2024.
- (P32) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” invited seminar for a research group in Electrical Engineering and Applied Mathematics department at Harvard University, March 2024.
- (P31) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” seminar for the Center for Control, Dynamical Systems, and Computation at the University of California, Santa Barbara, March 2024.
- (P30) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” seminar for the Department of Electrical and Computer Engineering at North Carolina State University, March 2024.
- (P29) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” Jones Seminar for the Thayer School of Engineering at Dartmouth College, February 2024.
- (P28) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” seminar for the Industrial and Systems Engineering Department at Texas A& M University, February 2024.
- (P27) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” seminar for the Department of Civil and Environmental Engineering at the University of Michigan, February 2024.
- (P26) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” for the Autonomy Talks seminar series virtually hosted by the Institute for Dynamic Systems and Control at ETH Zurich, January 2024.
- (P25) “Information as Control: Emerging Paradigms for Multi-Agent Systems,” seminar for the School of Manufacturing Systems and Networks at Arizona State University, January 2024.

- (P24) “Collaborative Coalitions in Multi-Agent Systems: Quantifying the Strong Price of Anarchy for Resource Allocation Games,” at the 62nd IEEE Conference on Decision and Control (CDC), Singapore, December 2023.
- (P23) “Markov Games with Decoupled Dynamics: Price of Anarchy and Sample Complexity,” at the 62nd IEEE Conference on Decision and Control (CDC), Singapore, December 2023.
- (P22) “The Cost of Informed Decision Making in Multi-Agent Maximum Coverage Problems,” at the 62nd IEEE Conference on Decision and Control (CDC), Singapore, December 2023.
- (P21) “Collaborative Decision-Making and the k-Strong Price of Anarchy in Common Interest Games,” at the 42nd Southern California Control Workshop at the University of California, Riverside, November 2023.
- (P20) “Information as Control: Emerging Control Paradigms for Multi-Agent Systems,” seminar for the Co-PI seminar series at the University of California, San Diego, November 2023.
- (P19) “Information as Control: The Role of Communication in Multi-Agent Systems,” student seminar for the ECE department at the University of California, Santa Barbara, October 2023.
- (P18) “Information as Control: The Role of Communication in Distributed Systems,” Invited seminar for DESCON Lab at the University of Colorado, Colorado Springs, August 2023.
- (P17) “Game Theory and Multi-Agent Systems: Local Decision-Making for Global Performance,” UCSB Graduate Division Lunch & Learn Seminar Series, July 2023.
- (P16) “Information as Control: The Role of Communication in Distributed Systems,” Invited seminar for AY23 Seminar Series in the Electrical and Computer Engineering Department at the University of California, Santa Cruz, May 2023.
- (P15) “Avoiding Unintended Consequences: How Incentives Aid Information Provisioning in Bayesian Congestion Games,” 61st IEEE Conference on Decision and Control (CDC), Cancun, Mexico, December 2022.
- (P14) “Information and Influence: Overcoming and Exploiting Uncertainty in Congestion Games,” Invited seminar for Dynamics and Control of Networks (DANCE) research team at University of Grenoble - Alpes, November 2022.
- (P13) “The Tragedy of the Commons and the Price of Anarchy,” Invited talk for Mechanism Design for Social Good (MD4SG) Climate & Environment working group, October 2022.
- (P12) “Information and Influence: Overcoming and Exploiting Uncertainty in Congestion Games,” Invited seminar for POLARIS research team at University of Grenoble - Alpes, October 2022.
- (P11) “Ensuring the Defense of Paths and Perimeters in Dynamic Defender-Attacker Blotto Games (dDAB) on Graphs,” 58th Annual Allerton Conference on Communication, Control, and Computing at Urbana/Champagne Illinois, September 2022.
- (P10) “Information and Influence: Overcoming and Exploiting Uncertainty in Congestion Games,” ControlX Series at University of Washington, June 2022.
- (P9) “Avoiding Unintended Consequences: How Incentives Aid Information Provisioning in Bayesian Congestion Games,” 39th Southern California Control Workshop, University of California, Irvine. April 2022.
- (P8) “Robust Utility Design in Distributed Resource Allocation Problems with Defective Agents,” 60th Conference on Decision and Control, Austin, Texas, December 2021.

- (P7) “The Effectiveness of Subsidies and Taxes in Atomic Congestion Games,” 60th Conference on Decision and Control, Austin, Texas, December 2021.
- (P6) “The Impact of Fairness on Performance in Congestion Networks.” The 2021 American Control Conference New Orleans, Louisiana, May 2021.
- (P5) “Research in Congestion Games: Incentives and Information,” Invited talk at Decision Science and Control Lab at the University of Colorado, Colorado Springs, April 2021.
- (P4) “Carrots or Sticks? The Effectiveness of Subsidies and Tolls in Congestion Games.” The 2020 American Control Conference Denver, Colorado, July 2020. [Best student paper award finalist]
- (P3) “Carrots or Sticks? The Effectiveness of Subsidies and Tolls in Congestion Games.” CCDC Prospective Student Visit Day UC Santa Barbara, California, February 2020.
- (P2) “Utilizing Information Optimally in Distributed Network Routing,” 58th Conference on Decision and Control Nice, France, December 2019.
- (P1) “Optimal Planning of Workplace Electric Vehicle Charging Infrastructure with Smart Charging Opportunities.” 21st IEEE International Conference on Intelligent Transportation Systems, Maui, Hawaii, USA, December 2018.

## Teaching Experience

- Spring 2023 *Teaching Assistant* - ECE 194D: Foundations of Reinforcement Learning
  - Student Feedback: 5.0/5.0 [Outstanding TA Award Winner]
- Fall 2021 *Teaching Assistant* - ECE 149: Game Theory for Networked Systems
  - Student Feedback: 4.82/5.0 [Outstanding TA Award Winner]
- Spring 2021 *Grader* - ECE 271C: Optimal Control and Dynamic Programming
- Fall 2020 *Teaching Assistant* - ECE 149: Game Theory for Networked Systems
  - Student Feedback: 5.0/5.0 [Outstanding TA Award Winner]
- Spring 2020 *Grader* - ECE 271C: Optimal Control and Dynamic Programming
- Winter 2020 *Grader* - ECE 594D: Mechanism Design
- Fall 2019 *Teaching Assistant* - ECE 194V: Special Topics in Game Theory
  - Student Feedback: 4.54/5.0 [Outstanding TA Award Winner]
- Winter 2019 *Teaching Assistant* - ECE 194V: Special Topics in Game Theory
  - Student Feedback: 4.75/5.0 [Outstanding TA Award Winner]

## Mentoring & Advising

- 2023 *High School Summer Research Project Mentor* for Ethan Liu, University of California, Santa Barbara, on The Consequences of Asynchronous Communication in Distributed Optimization Networks and Federated Learning.
- 2023 *High School Summer Research Project Mentor* for Jack Ke, University of California, Santa Barbara, on Autonomous Vehicle Platooning Communication Structures.
- 2023 *Navy Intern Mentor* for PIPELINES interns at NAVAIR on designing artificial intelligence to perform code reviews and detect security hazards in Navy software.
- 2021–2023 *Master’s Research Mentor* for Yixiao (Rey) Yue, University of California, Santa Barbara on Robust and Constrained Incentive Mechanism Design.
- 2022 *Navy Intern Mentor* for PIPELINES interns at NAVFAC on Pier Structure from Motion (SfM) Utilizing Unmanned Aircraft Systems (UAS).
- 2022 *External Research Mentor* for International Baccalaureate student on Sequential Zero-Sum Game Theory in Fighting Video Games.
- 2020–2021 *Undergrad Research Advisor* for Yixiao (Bella) Yue, University of California, Santa Barbara, on Incentive Design for Congestion Games with Unincentivizable Users.
- 2019 *High School Summer Research Project Mentor* for Adit Shah, University of California, Santa Barbara, on Improving the Efficiency and Scalability of Multi-Drone Surveillance Systems with Decentralized Control.
- 2019 *High School Summer Research Project Mentor* for Nischal Sinha, University of California, Santa Barbara, on The Self-Driving Pizza Car: Optimizing Control Algorithms for Autonomous Delivery Systems.
- 2019 *High School Summer Research Project Mentor* for Siddharth Ganesan, University of California, Santa Barbara, on An Efficient and Centralized Multi-Robot Surveillance System with Optimized Path Plannings.
- 2019 *Junior High School Science Fair Mentor* at Goleta Valley Junior High School

## Service

### Review Activity:

- Conference      Conference on Decision and Control (25) ◦ American Control Conference (13) ◦ Intelligent Transportation Systems Conference (6) ◦ Symposium on Algorithmic Game Theory ◦ Conference on Web and Internet Economics (3)

Journal

Transactions on Control of Network Systems (9) ◦ Transactions on Systems, Man and Cybernetics: Systems (3) ◦ Journal of Computational and Applied Mathematics ◦ Transactions on Automatic Control (12) ◦ Automatica (2) ◦ Information & Communications Technology Express ◦ Transportation Research Part B: Methodological (3) ◦ Control Systems Letters (2) ◦ Energy Reports ◦ Transactions on Smart Grid

Society Membership:

- IEEE 2016 - present
  - CSS 2018 - present
- Tau Beta Pi Engineering Honor Society 2017 - present
- ACM 2021 - present
- EAAMO Bridges (formerly MD4SG) 2022 - present

Misc.

- UCSB Perspective Student Liaison 2019, 2020, 2021, 2024
- Tutor to undergraduates in Signal Processing, Systems, and Circuits courses through ESTEEM program
- Mentor to undergraduate transfer students through UCSB Transfer Peer Network