Rahul Chandan

University of California, Santa Barbara
Center for Control, Dynamical Systems and Computation

Department of Electrical and Computer Engineering
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Google Scholar profile

SUMMARY

Ph.D. student trained in systems control, with strong leadership skills developed from extensive teaching and mentorship experience, and the ability to work well independently as well as on a team.

Special interest in the following research areas:

- Economics and computation
- Multiagent systems
- Game Theory
- Optimization

EDUCATION

University of California, Santa Barbara (UCSB)　　　　　　　　　Santa Barbara, CA
Ph.D., *Electrical and Computer Engineering*　　　　　　　　　　Expected Dec. 2022
- Advisor: Prof. Jason Marden

University of California, Santa Barbara　　　　　　　　　　　　Santa Barbara, CA
M.S., *Electrical and Computer Engineering*　　　　　　　　　　Sep. 2017 - Sep. 2019

University of Toronto　　　　　　　　　　　　　　　　　　　Toronto, ON
B.A.Sc., *Engineering Science (Electrical and Computer Engineering Option)*　Sep. 2012 - June 2017
- Minor in Robotics and Mechatronics
- Thesis: *Simulation and Analysis of the Stability of Dynamical, Nonlinear Systems in a Plastic Network Structure*
- Advisor: Prof. Luca Scardovi

RESEARCH EXPERIENCE

University of California, Santa Barbara　　　　　　　　　　　　Santa Barbara, CA
Graduate Student Researcher, *Electrical and Computer Engineering*　Sep. 2018 - Present
UC Regents' Fellow　　　　　　　　　　　　　　　　　　　Sep. 2017 – Aug. 2021

Defense Advanced Research Projects Agency (DARPA)　　　　　　Arlington, VA
Student Researcher, *Mortarium Fluidum*　　　　　　　　　　　Jan. 2020 - May 2021
- Program: Context Reasoning for Autonomous Teaming (CREATE)
- Program Manager: Aaron Kofford

University of Toronto　　　　　　　　　　　　　　　　　　　Toronto, ON
Thesis Student, *Engineering Science*　　　　　　　　　　　　Sep. 2016 - Apr. 2017

University of Cambridge　　　　　　　　　　　　　　　　　Cambridge, UK
Summer Researcher, *Applied Mathematics and Theoretical Physics*　Summer 2016

University of Singapore　　　　　　　　　　　　　　　　　Singapore, SG
Summer Researcher, *Physics*　　　　　　　　　　　　　　　Summer 2013

TEACHING & MENTORSHIP EXPERIENCE

University of California, Santa Barbara   Santa Barbara, CA
Teaching Assistant, *Convex Optimization*   Sep. - Dec. 2021
Teaching Assistant, *Convex Optimization*   Jan. - Mar. 2021
Teaching Assistant, *Convex Optimization*   Jan. - Mar. 2020
Grader, *Dynamic Programming* (graduate course)   Apr. - June 2019
Teaching Assistant, *Convex Optimization*   Jan. - Mar. 2019

University of Toronto   Toronto, ON
Peer-Assisted Study Sessions (PASS)
PASS Facilitator, *Fundamentals of Electric Circuits*   Jan. - Apr. 2017
PASS Facilitator, *Structures and Materials*   Sep. - Dec. 2016

NSight Mentorship Program
Chair   Apr. 2015 - Apr. 2017
Mentor   Sep. 2013 - Apr. 2017

ADDITIONAL WORK EXPERIENCE

Intel: Programmable Solutions Group (formerly Altera)   Toronto, ON
Computer Hardware Engineer, *IPD - External Memory Interfaces*   May 2015 - May 2016

Safran Electronics - Canada   Peterborough, ON
Summer Intern, *Systems Engineering*   May 2014 - Aug. 2014

JOURNAL PUBLICATIONS

[J5]   **Chandan, R.**, Paccagnan, D., & Marden, J. R. (2021). The Anarchy-Stability Tradeoff in Congestion Games. *Games and Economic Behavior (GEB)*, *submitted*.

[J4]   **Chandan, R.**, Paccagnan, D., & Marden, J. R. (2021). When Smoothness is Not Enough: Toward Exact Quantification and Optimization of the Price of Anarchy. *Mathematics of Operations Research (MOR)*, *submitted*.

[J3]   Paarporn, K., **Chandan, R.**, Alizadeh, M., & Marden, J. R. (2021). A General Lotto game with asymmetric budget uncertainty. *Mathematics of Operations Research*, *submitted*.

[J2]   Paccagnan, D., **Chandan, R.**, & Marden, J. R. (2021). Optimal Taxes in Congestion Games. *Transactions on Economics and Computation (TEAC)*.

[J1]   Paccagnan, D., **Chandan, R.**, & Marden, J. R. (2019). Utility Design for Distributed Resource Allocation–Part I: Characterizing and Optimizing the Exact Price of Anarchy. *IEEE Transactions on Automatic Control (TAC)*.

BOOK CHAPTERS & REVIEW PUBLICATIONS

[B1]   **Chandan, R.**, Marden, J. R., & Paccagnan, D. (2021). Utility and Mechanism Design in Multiagent Systems: An Overview. In *Annual Reviews in Control*, *submitted*.

CONFERENCE PUBLICATIONS

[C8]   Paarporn, K., **Chandan, R.**, Alizadeh, M., & Marden, J. R. (2021). The Division of Assets in Multiagent Systems: A Case Study in Team Blotto Games. In *IEEE Conference on Decision and Control (CDC)*, *accepted*.

[C7]   Konda, R., **Chandan, R.**, & Marden, J. R. (2021). Mission Level Uncertainty in Multi-Agent Resource Allocation. In *IEEE Conference on Decision and Control (CDC)*, *accepted*.

[C6]   **Chandan, R.**, Paccagnan, D., & Marden, J. R. (2021). Tractable mechanisms for computing near-optimal utility functions. In *Proceedings of the 20th International Conference on Autonomous Agents and MultiAgent Systems (AAMAS)* (pp. 306-313).

[C5]   **Chandan, R.**, Paarporn, K., & Marden, J. R. (2020). When showing your hand pays off: Announcing strategic intentions in Colonel Blotto games. In *Proceedings of the 2020 Annual American Controls Conference (ACC)* (pp. 4632-37).

[C4]   **Chandan, R.**, Paccagnan, D., & Marden, J. R. (2019). When Smoothness is Not Enough: Toward Exact Quantification and Optimization of the Price-of-Anarchy. In *Proceedings of the 58th IEEE Conference on Decision and Control (CDC)* (pp. 4041-46).

[C3]   Paarporn, K., **Chandan, R.**, Alizadeh, M., & Marden, J. R. (2019). Characterizing the interplay between information and strength in Blotto games. In *Proceedings of the 58th IEEE Conference on Decision and Control (CDC)* (pp. 5977-82).

[C2]   **Chandan, R.**, Paccagnan, D., Ferguson, B. L., & Marden, J. R. (2019). Computing optimal taxes in atomic congestion games. In *Proceedings of the 14th Workshop on the Economics of Networks, Systems and Computation (NetEcon)* (p. 2).

[C1]   **Chandan, R.**, Paccagnan, D., & Marden, J. R. (2019). Optimal price of anarchy in cost-sharing games. In *Proceedings of the 2019 Annual American Controls Conference (ACC)* (pp. 2277-82).

CONFERENCE PRESENTATIONS

[P7]   **Chandan, R.** (2021, October). *The Anarchy-Stability Tradeoff in Congestion Games*. Presentation at the INFORMS 2021 Annual Meeting. Online.

[P6]   **Chandan, R.** (2021, July). *The Anarchy-Stability Tradeoff in Congestion Games*. Poster presented at the 22nd ACM Conference on Economics and Computation (EC). Online.

[P5]   **Chandan, R.** (2021, May). *Tractable Mechanisms for Computing Near-Optimal Utility Functions*. Paper presented at the 20th International Conference on Autonomous Agents and MultiAgent Systems (AAMAS). Online.

[P4]   **Chandan, R.** (2020, July). *When showing your hand pays off: Announcing strategic intentions in Colonel Blotto games*. Paper presented at the 2020 Annual American Controls Conference (ACC). Online.

[P3]   **Chandan, R.** (2019, December). *When Smoothness is Not Enough: Toward Exact Quantification and Optimization of the Price-of-Anarchy*. Paper presented at the 58th IEEE Conference on Decision and Control (CDC). Nice, France.

[P2]   **Chandan, R.** (2019, July). *Optimal price of anarchy in cost-sharing games*. Paper presented at the 2019 Annual American Controls Conference (ACC). Philadelphia, PA.

[P1]   **Chandan, R.** (2019, June). *Computing optimal taxes in atomic congestion games*. Paper presented at the 14th Workshop on the Economics of Networks, Systems and Computation (NetEcon). Phoenix, AZ.

ACADEMIC SERVICE

Journal Reviewer: Mathematics of Operations Research (MOR), Discrete Applied Mathematics (DAM), IEEE Transactions on Automatic Control (TAC), IEEE Transactions on Control of Networked

Systems (TCNS), IEEE Transactions on Systems, Man and Cybernetics: Systems (TSMC), IEEE Transactions on Communications (TCOM), IEEE Control Systems Letters (L-CSS)

Conference Reviewer: Conference on Web and Internet Economics (WINE), Symposium on Algorithmic Game Theory (SAGT), IEEE Conference on Decision and Control (CDC), American Control Conference (ACC)

Notetaker: 2019 Workshop on Control for Networked Transportation Systems (CNTS)

Society Memberships: INFORMS (2021-Present), ACM (2021-Present), IEEE (2018 - Present), Center for Control, Dynamical Systems and Computation (CCDC, 2017 - Present)

PROFESSIONAL EXPERIENCE

Intel: Programmable Solutions Group (formerly Altera)   Toronto, ON
Computer Hardware Engineer, *IPD - External Memory Interfaces*   May 2015 - May 2016

Safran Electronics - Canada   Peterborough, ON
Summer Intern, *Systems Engineering*   May 2014 - Aug. 2014

HONOURS & AWARDS

Outstanding TA Award 2020-21, University of California, Santa Barbara   May 2021
Outstanding TA Award 2019-20, University of California, Santa Barbara   May 2020
UC Regents' Fellowship, University of California, Santa Barbara   Sep. 2017 - Aug. 2021
CCDC Outstanding Scholar Fellowship, UCSB   Fall 2017
B.A.Sc. awarded with Honours, University of Toronto   June 2017
Gordon Cressy Student Leadership Award, University of Toronto   May 2017
President's Entrance Scholarship, University of Toronto   Sep. 2012

ADDITIONAL LANGUAGES

French: advanced proficiency in speaking, reading, and writing (DELF B2 Certification)
Hindi: advanced proficiency in speaking, reading, and writing