Ashish Cherukuri

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Employment

Associate Professor, ENTEG, University of Groningen (Jan 2025-Present)
Assistant Professor, ENTEG, University of Groningen (Feb 2019-Dec 2024)
Postdoctoral Researcher, Automatic Control Laboratory, ETH, Zürich (Sep 2017-Jan 2019)
Advisor: Prof. John Lygeros

Education

PhD, University of California, San Diego (Jul 2012-Aug 2017)
Advisor: Prof. Jorge Cortés

Visiting Researcher (hosted by Prof. A. Dominguez-Garcia), Univ. of Illinois, Urbana-Champaign (Oct 2015)

MSc, ETH, Zürich (Sep 2008-Aug 2010)
Advisors: Prof. John Lygeros, Prof. Debasish Chatterjee, Dr. Peter Al-Hokayem

BTech, Indian Institute of Technology, Delhi (Jul 2004-Jun 2008)

Research Interests

I am broadly interested in optimization, optimization-based control, and game theory applied to network and multi-agent systems with applications in energy, mobility, and robotics. My current research focuses on:

1. Network routing and information design
2. Distributionally robust optimization for networks
3. Risk-averse model predictive control
4. Application of the above theoretical topics to energy and mobility networks

Awards and Honors

Robert E. Skelton Systems and Control Dissertation Award, University of California, San Diego, 2017
Outstanding Graduate Student Award in MAE, University of California, San Diego, 2016
MAE Distinguished Fellowship Award, University of California, San Diego, 2016
Focht-Powell fellowship, University of California, San Diego, 2012-2015
Excellence scholarship, ETH, Zürich, 2008-2010
Dean's merit award, Indian Institute of Technology, Delhi, 2005,'06,'07,'08
Best Student Paper Award Finalist:
American Control Conference, paper (C5), Chicago, IL, 2015
European Control Conference (with student Alireza Zolanvari), paper (C22), London, UK, 2022

Teaching

Course Coordinator
Introduction to Stochastic Programming (Graduate course), University of Groningen (2019-Present)

Data-driven Optimization (Graduate course), University of Groningen (2020-Present)

Talks

SCCW, California Institute of Technology (Apr'17) • EE, IISc Bangalore (Aug'18) • CyPhySS 2022, IISc Bangalore (Jul'22) • SysCon, IIT Bombay (Aug'18, Jan'16) • EE, IIT Delhi (Aug'18) • ECE, Michigan State University (Sep'22) • Mini Symposium, SIAM CT'21 (Jul'21) • Mini Symposium, SIAM CSE'23 (Jam'21) • DCSC, TU Delft (Jan'17) • Energy-Open, University of Groningen (Nov'19) • Optimization at Bernoulli Institute, University of Groningen (Jun'23) • ENTEG, University of Groningen (Apr'18, Jan'17) • ECE, University of Illinois, Urbana-Champaign (Apr'18, Oct'15) • ECE, University of Minnesota (Oct'15) • ECE, University of North Carolina at Charlotte (Mar'25) • ESE, University of Pennsylvania (Apr'17) • SCCW, University of Southern California (Nov'15) • ECE, University of Toronto (Apr'18) • Workshop on Challenges and Opportunities in Nonlinear and Constrained Control and Their Applications (May'23)

Research Grants

- PI, TKI HTSM "FD-CODE: Feature-Based Distributed Learning for Colorectal Cancer Detection from Colonoscopy Videos", $\sim$ 200k €, Duration: 10/2025-10/2028
- Co-PI, EU HORIZON-JTI-CLEANH2-2022-2 : "Towards the development of a hydRogen valley demonstratIng applications in an intEgRated EcoSystem in Greece (TRIERES)", $\sim$ 160k €, Duration: 08/2023-07/2028
- Co-PI and Work Package leader, RVO MOOI42009: "The Heat Is On (THIO)", $\sim$ 300k €, Duration: 09/2021-09/2025
- PI, Groningen Engineering Center PhD scholarship from Univ. of Groningen, $\sim$ 300k €, Duration: 09/2020-08/2024
- PI, Data Science and System Complexity PhD scholarship from Univ. of Groningen, $\sim$ 300k €, Duration: 09/2020-08/2024

Mentoring

Postdoctoral fellows
Bahadir Saltik (2021-present) [Co-supervised with Prof. B. Jayawardhana]

Current PhD students at University of Groningen
Alireza Zolanvari (2020-present)
Amin Maghami (2020-present) [Co-supervised with Prof. E. Ursavas]
Ashwin Aravind (2020-present) [Co-supervised with Prof. D. Chatterjee (IIT Bombay)]
Yifan Liu (2021-present) [Co-supervised with Prof. M. Cao]
Shaya Garjani (2024-present) [Co-supervised with Prof. N. Monshizadeh and Prof. B. Jayawardhana]

Graduated PhD student at University of Groningen
Jasper Verbree (2019-2024) (Thesis: *"Methods for analyzing routing games: Information design, risk-averseness, and Braess's paradox"*)

Masters research projects supervised at University of Groningen
Earde van den Akker (IEM'25) • Dhyay Ayu Saraswati Devany (IEM'24) • Susan Veldman (IEM'24) • Eva van Halen (IEM'24) • Elmar van Belkum (IEM'24) • Boris Cnossen (IEM '23) • Irene Lulofs (IEM '23) • Geeske Ridder (IEM '23) • Jonita Ruiter (IEM '22) • Bjarne Frons (IEM '22) • Roel Steggink (IEM '22) • Bas Perik (IEM '22) • Nico de Melo (IEM '21) • Thomas Koekoek (IEM '21) • Jasper Annema (IEM '20) • Job Spenkelink (IEM '20) • Bas Wieringa (IEM '20) • Henny Meijer (IEM '20) • Stefan de Groot (IEM '20) • Nick de Vries (IEM '20) • Sara Scheffer (IEM '19)

Bachelor integration projects supervised at University of Groningen
Johan Rienstra (IEM'25) • Tim Postmus (IEM'24) • Joep Neelissen (IEM'24) • Julius Geertsma (IEM'24) • Kamiel Politiek (IEM '23) • David Kuipers (IEM '23) • Pepe Penninkhof (IEM '23) • Rico van Til (IEM '22)

• Harm Schipper (IEM '22) • Emiel ter Veen (IEM '21) • Vincent Pellegrom (IEM '21) • Lucas Snijder (IEM '21) • Storm de Quaij (IEM '21) • Gabriele Ansaldo (IEM '20) • Bjarne Frons (IEM '20) • Daan Romkema (IEM '20)

Professional Service

Editorial activities
Associate Editor, IEEE Control Systems Letters, 2024-present
Associate Editor, Conference Editorial Board, IEEE Control Systems Society, 2019-2024

Program Committees
ICC - *Indian Control Conference:* ICC (2019-present)

Conference and Workshop Organization
Co-organizer: Summer School on "Control in Power and Energy Systems" at the Dutch Institute of Systems and Control (DISC), 2023
Co-organizer: Energy-Open 2019, University of Groningen, Groningen, 2019
Co-organizer: 30th Southern California Controls Workshop, University of California, San Diego, 2016

Conference Invited Session Organization
Co-organizer: Data-Driven Distributionally Robust Optimization and Control, Invited Session, CDC 2023
Co-organizer: Distributionally Robust Optimization and Control, Invited Session, CDC 2022

Reviewer for Journals
Annual Reviews in Control • Automatica • IEEE Control Systems Letters • IEEE Control Systems Magazine • IEEE Power Engineering Letters • IEEE Robotics and Automation Magazine • IEEE Transactions on Automatic Control • IEEE Transactions on Control of Network Systems • IEEE Transactions on Power Systems • IEEE Transactions on Signal Processing • IEEE Transactions on Smart Grid • IEEE Transactions on Sustainable Energy • IEEE Transactions on Systems, Man, and Cybernetics: Systems • IMA Journal of Mathematical Control and Information • International Journal of Control • Journal of Geometric Mechanics • Journal of Computational and Applied Mathematics • Nonlinear Analysis: Hybrid Systems • Operations Research Letters • SIAM Journal on Control and Optimization • SIAM Journal on Optimization • Systems and Control Letters

Reviewer for Conferences
American Control Conference • Conference on Decision and Control • European Control Conference • Indian Control Conference • International Conference on Cyber-Physical Systems • International Conference on Smart Grid Communications • Learning for Dynamics & Control • Mathematical Theory of Network Systems • Multi-Conference on Systems and Control • World Congress of the International Federation of Automatic Control

Reviewer for Books
Applied Mathematics Series, Cambridge University Press

Reviewer for Proposals
Department of Transport, USA

Member Councils and Working Groups
Discipline Council TBB Sector Plan (Techniche Bedrijfs Bestuurkunde) (March 2025-present)
4TU.AMI Srategic Research Initiative on Sequential Decision Making

Member of Professional Societies
Control Systems Society (CSS) (2012-present) • Institute of Electrical and Electronics Engineers (IEEE) (2012-present) • Institute for Operations Research and Management Sciences (INFORMS) (2016-2019) • Society of Industrial and Applied Mathematics (SIAM) (2015-present)

University Service

Chair, Board of Admissions IEM, University of Groningen (2024-present)

Member, Board of Admissions IEM, University of Groningen, (2019-present)
Member, Data Science and Systems Complexity centre, University of Groningen (2021-present)
Member, MIT-RUG initiative on impact-driven research, University of Groningen (2023-present)

Publications

Preprints

(Pr-3) Verbree, J. and Cherukuri, A. (2024d). Wardrop equilibrium and Braess's paradox for varying demand. *Mathematical Programming*. Submitted. Available at `https://arxiv.org/abs/2310.04256`

(Pr-2) Verbree, J. and Cherukuri, A. (2024a). CVaR-based variational inequalities: stochastic approximation using computationally-efficient projections. *Systems & Control Letters*. Submitted. Available at `https://arxiv.org/abs/2211.07227`

(Pr-1) Verbree, J. and Cherukuri, A. (2024b). Inferring the prior in routing games using public signalling. *IEEE Transactions on Network Science and Engineering*. Submitted. Available at `https://arxiv.org/abs/2109.05895`

Book Chapters

(BC-1) Cherukuri, A., Dixit, A., and Hakobyan, A. (2025). Distributionally robust and risk-averse MPC for motion planning and control: Reformulations and computational issues. In Garone, E., Kolmanovsky, I., and Nguyen, T. W., editors, *Nonlinear and Constrained Control*. Springer

Patents

(P-1) Das, S., Aravind, A., Chatterjee, D., and Cherukuri, A. (2022a). Method and electronic device for global optimization to exact solutions of convex semi-infinite problems. IN202121061723

Journal articles (published/in press)

(J-21) Aravind, A., Chatterjee, D., and Cherukuri, A. (2026). Distributed alternating gradient-descent for convex semi-infinite programs over a network. *IEEE Transactions on Automatic Control*. To appear

(J-20) Zolanvari, A. and Cherukuri, A. (2026). Iterative risk-constrained model predictive control: A data-driven distributionally robust approach. *IEEE Transactions on Automatic Control*. Conditionally accepted

(J-19) Maghami, A., Ursavas, E., and Cherukuri, A. (2025). Joint investment-operation planning for assessing the economic impact of hydrogen integration in power systems. *IEEE Transactions on Energy Markets, Policy, and Regulation*, 3(3):236–250

(J-18) Shakarami, M., Cherukuri, A., and Monshizadeh, N. (2024). Dynamic interventions with limited knowledge in network games. *IEEE Transactions on Control of Network Systems*, 11(3):1153–1164

(J-17) Cherukuri, A. (2024). Sample average approximation of conditional value-at-risk based variational inequalities. *Optimization Letters*, 18:471–496

(J-16) Maghami, A., Ursavas, E., and Cherukuri, A. (2024). A two-step approach to Wasserstein distributionally robust chance- and security-constrained dispatch. *IEEE Transactions on Power Systems*, 39(1):1447–1459

(J-15) Aravind, A., Chatterjee, D., and Cherukuri, A. (2023). Cross apprenticeship learning framework: Properties and solution approaches. *IEEE Open Journal of Control Systems*, 2:36–48

(J-14) Das, S., Aravind, A., Cherukuri, A., and Chatterjee, D. (2022b). Near-optimal solutions of convex semi-infinite programs via targeted sampling. *Annals of Operations Research*, 318:129–146

(J-13) Shakarami, M., Cherukuri, A., and Monshizadeh, N. (2022). Steering the aggregative behavior of noncooperative agents: a nudge framework. *Automatica*, 136:110003

(J-12) Cherukuri, A., Stegink, T., Persis, C. D., van der Schaft, A. J., and Cortés, J. (2021). Frequency-driven market mechanisms for optimal dispatch in power networks. *Automatica*, 133:109861

(J-11) Cherukuri, A. and Hota, A. R. (2021). Consistency of distributionally robust risk- and chance-constrained optimization under Wasserstein ambiguity sets. *IEEE Control Systems Letters*, 5(5):1729–1734

(J-10) Poolla, B. K., Hota, A. R., Bolognani, S., Callaway, D. S., and Cherukuri, A. (2021). Wasserstein distributionally robust look-ahead economic dispatch. *IEEE Transactions on Power Systems*, 36(3):2010–2022

(J-9) Cherukuri, A. and Cortés, J. (2020a). Cooperative data-driven distributionally robust optimization. *IEEE Transactions on Automatic Control*, 65(10):4400–4407

(J-8) Cherukuri, A. and Cortés, J. (2020b). Iterative bidding in electricity markets: rationality and robustness. *IEEE Transactions on Network Science and Engineering*, 7(3):1265–1281

(J-7) Stegink, T., Cherukuri, A., Persis, C. D., van der Schaft, A. J., and Cortés, J. (2019). Hybrid interconnection of iterative bidding and power network dynamics for frequency regulation and optimal dispatch. *IEEE Transactions on Control of Network Systems*, 6(2):572–585

(J-6) Cherukuri, A., Mallada, E., Low, S. H., and Cortés, J. (2018). The role of convexity in saddle-point dynamics: Lyapunov function and robustness. *IEEE Transactions on Automatic Control*, 63(8):2449–2464

(J-5) Cherukuri, A. and Cortés, J. (2018). Distributed coordination of DERs with storage for dynamic economic dispatch. *IEEE Transactions on Automatic Control*, 63(3):835–842

(J-4) Cherukuri, A., Gharesifard, B., and Cortés, J. (2017b). Saddle-point dynamics: conditions for asymptotic stability of saddle points. *SIAM Journal on Control and Optimization*, 55(1):486–511

(J-3) Cherukuri, A. and Cortés, J. (2016c). Initialization-free distributed coordination for economic dispatch under varying loads and generator commitment. *Automatica*, 74:183–193

(J-2) Cherukuri, A., Mallada, E., and Cortés, J. (2016a). Asymptotic convergence of constrained primal-dual dynamics. *Systems & Control Letters*, 87:10–15

(J-1) Cherukuri, A. and Cortés, J. (2015c). Distributed generator coordination for initialization and anytime optimization in economic dispatch. *IEEE Transactions on Control of Network Systems*, 2(3):226–237

Conference proceedings

(C-27) Liu, Y. and Cherukuri, A. (2024). Hierarchical optimization framework for network resource allocation under uncertainty. In *IEEE Conf. on Decision and Control*, pages 1257–1262, Milan, Italy

(C-26) Verbree, J. and Cherukuri, A. (2024c). Inferring the prior using public signalling in Bayesian persuasion routing games. In *IEEE Conf. on Decision and Control*, pages 3967–3972, Milan, Italy

(C-25) Zolanvari, A. and Cherukuri, A. (2023). Wasserstein distributionally robust risk-constrained iterative MPC for motion planning: computationally efficient approximations. In *IEEE Conf. on Decision and Control*, pages 2022–2029, Singapore

(C-24) Cherukuri, A., Zolanvari, A., Banjac, G., and Hota, A. (2022). Data-driven distributionally robust optimization over a network via distributed semi-infinite programming. In *IEEE Conf. on Decision and Control*, pages 4771–4775, Cancun, Mexico

(C-23) Saltik, M. B., Jayawardhana, B., and Cherukuri, A. (2022). Iterative learning and model predictive control for repetitive nonlinear systems via Koopman operator approximation. In *IEEE Conf. on Decision and Control*, pages 3059–3065, Cancun, Mexico

(C-22) Zolanvari, A. and Cherukuri, A. (2022). Data-driven distributionally robust iterative risk-constrained model predictive control. In *European Control Conference*, pages 1578–1583, London, United Kingdom **(Best Student Paper Award Finalist)**

(C-21) Shakarami, M., Cherukuri, A., and Monshizadeh, N. (2021). Adaptive interventions for social welfare maximization in network games. In *IEEE Conf. on Decision and Control*, pages 942–947, Austin, TX

(C-20) Shakarami, M., Cherukuri, A., and Monshizadeh, N. (2020). Nudging the aggregative behavior of noncooperative agents. In *IEEE Conf. on Decision and Control*, pages 2579–2584, Jeju island, Republic of Korea

(C-19) Verbree, J. and Cherukuri, A. (2020). Stochastic approximation for CVaR-based variational inequalities. In *IEEE Conf. on Decision and Control*, pages 2216–2221, Jeju island, Republic of Korea

(C-18) Cherukuri, A. (2019). Sample average approximation of CVaR-based Wardrop equilibrium in routing under uncertain costs. In *IEEE Conf. on Decision and Control*, pages 3164–3169, Nice, France

(C-17) Dietrich, J., Hota, A. R., and Cherukuri, A. (2019). Data-driven regret minimization in routing games under uncertainty. In *European Control Conference*, pages 1702–1707, Naples, Italy

(C-16) Hota, A. R., Cherukuri, A., and Lygeros, J. (2019). Data-driven chance constrained optimization under Wasserstein ambiguity sets. In *American Control Conference*, pages 1501–1506, Philadelphia, PA

(C-15) Stegink, T., Cherukuri, A., Persis, C. D., van der Schaft, A. J., and Cortés, J. (2018b). Stable interconnection of continuous-time price-bidding mechanisms with power network dynamics. In *Power Systems Computation Conference*, Dublin, Ireland. Electronic proceedings

(C-14) Stegink, T., Cherukuri, A., Persis, C. D., van der Schaft, A. J., and Cortés, J. (2018a). Integrating iterative bidding in electricity markets and frequency regulation. In *American Control Conference*, pages 6182–6187, Milwaukee, WI

(C-13) Cherukuri, A. and Cortés, J. (2017a). Data-driven distributed optimization using Wasserstein ambiguity sets. In *Allerton Conf. on Communications, Control and Computing*, pages 38–44, Monticello, IL

(C-12) Cherukuri, A. and Cortés, J. (2017b). Decentralized Nash equilibrium seeking by strategic generators for DC optimal power flow. In *Annual Conference on Information Systems and Sciences*, Baltimore, MD. Electronic proceedings

(C-11) Cherukuri, A., Domínguez-García, A. D., and Cortés, J. (2017a). Distributed coordination of power generators for a linearized optimal power flow problem. In *American Control Conference*, pages 3962–3967, Seattle, WA

(C-10) Cherukuri, A. and Cortés, J. (2016b). Distributed algorithms for convex network optimization under non-sparse equality constraints. In *Allerton Conf. on Communications, Control and Computing*, pages 452–459, Monticello, IL

(C-9) Cherukuri, A., Mallada, E., Low, S. H., and Cortés, J. (2016b). The role of strong convexity-concavity in the convergence and robustness of the saddle-point dynamics. In *Allerton Conf. on Communications, Control and Computing*, pages 504–510, Monticello, IL

(C-8) Cherukuri, A. and Cortés, J. (2016a). Decentralized Nash equilibrium learning by strategic generators for economic dispatch. In *American Control Conference*, pages 1082–1087, Boston, MA

(C-7) Cherukuri, A. and Cortés, J. (2015b). Distributed dynamic economic dispatch of power generators with storage. In *IEEE Conf. on Decision and Control*, pages 2365–2370, Osaka, Japan

(C-6) Cherukuri, A., Mallada, E., and Cortés, J. (2015). Convergence of Caratheodory solutions for primal-dual dynamics in constrained concave optimization. *SIAM Conference on Control and Its Applications*, pages 290–296

(C-5) Cherukuri, A. and Cortés, J. (2015a). Asymptotic stability of saddle points under the saddle-point dynamics. In *American Control Conference*, pages 2020–2025, Chicago, IL **(Best Student Paper Award Finalist)**

(C-4) Cherukuri, A. and Cortés, J. (2014). Distributed coordination for economic dispatch with varying load and generator commitment. In *Allerton Conf. on Communications, Control and Computing*, pages 475–482, Monticello, IL

(C-3) Cherukuri, A., Martinez, S., and Cortés, J. (2014). Distributed, anytime optimization in power-generator networks for economic dispatch. In *American Control Conference*, pages 172–177, Portland, OR

(C-2) Cherukuri, A., Chatterjee, D., Hokayem, P., and Lygeros, J. (2011). Stochastic receding horizon control: stability results. In *IFAC World Congress*, pages 150–155, Milan, Italy

(C-1) Nagy, Z., Miyashita, S., Muntwyler, S., Cherukuri, A., Abbott, J. J., Pfeifer, R., and Nelson, B. J. (2009). Morphology detection for magnetically self-assembled modular robots. In *IEEE/RSJ Int. Conf. on Intelligent Robots & Systems*, pages 5281–5286, St. Louis, MO