EMILY JENSEN

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EDUCATION

2020 **PhD Electrical & Computer Engineering**
University of California, Santa Barbara
Dissertation: Topics in Optimal Distributed Control

2019 **M.S. Electrical & Computer Engineering**
University of California, Santa Barbara

2015 **B.S. Engineering Mathematics & Statistics**
University of California, Berkeley

PROFESSIONAL APPOINTMENTS

2024-present **Assistant Professor, University of Colorado, Boulder**
Department of Electrical Computer & Energy Engineering

2022-23 **Postdoctoral Researcher, University of California, Berkeley**
Department of Electrical Engineering and Computer Science

2021 **Postdoctoral Researcher, Northeastern University**
Department of Mechanical and Industrial Engineering

ADDITIONAL RESEARCH EXPERIENCE

2018-20 **University of California, Santa Barbara**
Graduate Research Assistant

2016 **California Institute of Technology (Caltech)**
Research & Instructional Assistant for Computing and Mathematical Sciences

2014-15 **University of California Berkeley**
Undergraduate Research Assistant, Department of Mechanical Engineering

AWARDS & FELLOWSHIPS

2022 **Honorable Mention, Young Author Award**
International Federation on Automatic Control (IFAC), Conference on Networked Systems

2018 **Zonta Amelia Earhart Graduate Fellowship for Women in Aerospace Engineering**

2016 **UC Regent's Graduate Fellowship**

INVITED TALKS

2024 "Optimal Distributed Control with Spatial Constraints,"
Mini-course: Dynamics and Control in Spatiotemporal Systems
26th International Symposium on Mathematical Theory of Networks and Systems, Cambridge, UK,
August, 2024

2022 "System Level Synthesis for Spatially-Invariant Systems,"
Workshop on System Level Synthesis: New Frontiers in Distributed Control
IEEE Conference on Decision & Control, Cancun, Mexico, December 4, 2022

2022 "Information Structures of the Kalman Filter for the Elastic Wave Equation,"
International Federation on Automatic Control (IFAC), Conference on Networked Systems
Zurich, Switzerland, July 5, 2022

2020 "Structured Closed-loop vs. Structured Controller Design,"
Lund University, Department of Automatic Control, October 22, 2020

2020 "On the Gap between System Level Synthesis and Structured Controller Design"
37$^{\text{th}}$ Annual Southern California Controls Workshop
University of California, San Diego, January 19, 2020

PUBLICATIONS

Z. Turin, G. K. Taylor, H. G. Krapp, **E. Jensen**, J. S. Humbert. "Matching Sensing to Actuation and Dynamics in Distributed Sensorimotor Architectures," [To Appear] IEEE Access, 2025.

W. Marshall, B. Bamieh, **E. Jensen**. "A Convex Parameterization of Controllers Constrained to use only Relative Measurements," American Controls Conference (ACC), pp. 2592-2597, IEEE, 2024.

E. Jensen, N. Junnarkar, M. Arcak, X. Wu, and S. Gumussoy. "Certifying Stability and Performance of Uncertain Differential-Algebraic Systems: A Dissipativity Framework," IEEE Transactions on Control of Network Systems, IEEE, 2024.

N. Junnarkar, **E. Jensen**, X. Wu, S. Gummossoy, and M. Arcak. "Grouping of N-1 Contingencies for Controller Synthesis: A Study for Power Line Failures", IEEE Transactions on Power Systems, IEEE, 2024.

J. Arbelaiz, **E. Jensen**, B. Bamieh, A.E. Hosoi, A. Jadbabaie and L. Lessard. "Information Structures of the Kalman Filter for the Elastic Wave Equation," IFAC-PapersOnLine, 2022.

M. P. Chapman, **E. Jensen**, S. M. Chan, L. Lessard. "Information-theoretic multi-time-scale partially observable systems with relevance to leukemia treatment," Automatica 163 (2024): 111546.

E. Jensen and B. Bamieh. "An Explicit Parametrization of Closed Loops for Spatially Distributed Controllers with Sparsity Constraints," IEEE Transactions on Automatic Control, 2021.

E. Jensen, B. Bamieh and J. P. Epperlein. "Localization of the LQR Feedback Kernel in Spatially-Invariant Problems over Sobolev Spaces." IEEE 59th Conference on Decision and Control (CDC), pp. 1204-1209, IEEE, 2020.

E. Jensen and B. Bamieh. "On the Gap Between System Level Synthesis and Structured Controller Design: the Case of Relative Feedback." American Controls Conference (ACC), pp. 4594-4599, IEEE, 2020.

E. Jensen and B. Bamieh. "A Backstepping Approach to System Level Synthesis for Spatially Invariant Systems." American Control Conference (ACC), pp. 5295-5300, IEEE, 2020.

E. Jensen and B. Bamieh. "Optimal Spatially-Invariant Controllers with Locality Constraints: A System Level Approach." American Control Conference (ACC), pp. 2053-2058, IEEE, 2018.

E. Jensen and J. R. Marden. "Optimal Utility Design in Convex Distributed Welfare Games." American Control Conference (ACC), pp. 5756-5761, IEEE, 2018.

J. C. Doyle, Y. Nakahira, Y. P. Leong, **E. Jensen** et al, "Teaching Control Theory in High School." IEEE 55th Conference on Decision and Control (CDC), IEEE, 2016.

SERVICE TO PROFESSION & UNIVERSITY SERVICE

2024	Member of Graduate Student Committee, Department of Electrical, Computer & Energy Engineering at the University of Colorado, Boulder.
2024	Member of Faculty Search Committee, Department of Electrical, Computer & Energy Engineering at the University of Colorado, Boulder.
2022	Co-Organizer for Design of Robotics and Embedded systems, Analysis, and Modeling (DREAM) seminars at CITRIS, UC Berkeley
2020-24	Article Reviewer IEEE Transactions on Automatic Control, IEEE Control Systems Letters, IFAC Automatica
2018	Graduate Student Representative for Society of Women Engineers at UCSB

COMMUNITY INVOLVEMENT & OUTREACH

2024	**Girl's Inc.** Hosted "Girls in Control" engineering workshop for middle school students
2024	**University of Colorado, Boulder, Society of Women Engineers** Organized and hosted undergraduate research symposium
2024	**University of Colorado, Boulder, BOLD Center** BOLD Scholarship Reviewer
2022	**Berkeley High School** Classroom Volunteer
2017-22	**Girl's Inc. of Santa Barbara** Mentor for Teen Mentorship Program (2022) Volunteer & Tutor at Teen Center (2017-2021)
2020	**Berkeley Mechanical Engineering - Alumni Support** Volunteer - virtual undergraduate tutoring for introductory programming course
2014-15	**Pioneers in Engineering at UC Berkeley** Volunteer - robotics introduction with local schools

TEACHING EXPERIENCE

Instructor of Record, University of Colorado, Boulder

ECEN 3300: Linear Systems (Fall 2024)

ECEN 5738: Nonlinear Control Systems (Spring 2024)