

Claus Danielson  
Assistant Professor, Mechanical Engineering  
School of Engineering, University of New Mexico

## SUMMARY OF ACCOMPLISHMENTS

As an Assistant Professor in mechanical engineering, I focus on reliable autonomy for safety-critical cyber-physical systems, with applications in intelligent manufacturing and autonomous space logistics and assembly. My research advances the mathematical foundations of autonomy, optimization, and machine learning, resulting in novel algorithms with rigorous mathematical guarantees for stability, safety, and performance. These contributions support trustworthy, autonomy, which I have apply to diverse in domains such as autonomous vehicles, robotics, green energy, adaptive optics, and cancer treatment. The impact of my work is reflected in a strong publication record, student mentorship, and enhanced research capacity at UNM.

I take immense pride in the impact my scholarly contributions have had on both my field and the broader academic community. Since becoming an Assistant Professor five years ago, I have published 22 journal papers 20 peer-reviewed conference papers, and filed 2 patents. Additionally, I have presented 14 non-peer-reviewed papers to disseminate my research to a broader audience. My leadership in the academic community is reflected in my role as chair or co-chair for 17 conference sessions and in delivering 19 invited talks at prestigious universities and organizations. The impact of my research is further evidenced by the growth of my h-index from 3 to 21, and a 400% increase in my citation count since joining UNM. My expertise has been recognized by the *Institute of Electrical and Electronics Engineers (IEEE)*, which granted me the title of Senior Member. I have contributed to the academic community by serving as a frequent reviewer for countless high-impact journals and conferences, ensuring that my expertise contributes to the ongoing advancement of my field. Additionally, I served as an associate editor for the *IEEE Transactions on Control Systems Technology*, which is the leading experimental journal in my field and previous served as associate editor for the *IEEE Conference on Control Technology and Applications*. These accomplishments highlight the originality, quality, and significance of my work, as well as the recognition it has received from my peers.

Beyond my research accomplishments, I am a dedicated and effective mentor. I have had the privilege of mentoring 1 post-doctoral scholar, 6 doctoral students, and 7 master's students, 3 of whom have gone on to pursue PhDs. My mentorship approach emphasizes both technical skills and the development of soft-skills, helping students become leaders in their fields. My commitment to fostering both the technical and personal development of my students is evidenced by the fact that 5 of my 7 graduated students have earned degrees with distinction. The effectiveness of my mentorship is further demonstrated by my students' publishing success; for the most recent *American Control Conference*, my students submitted 6 papers with a 100% acceptance rate, moreover 4 of those papers were selected for joint publication in the *IEEE Letters of the Control Systems Society*, a high-impact journal in the field of autonomy and controls. Beyond academia, several of my students have secured prestigious industry positions, underscoring the effectiveness of my mentorship. These accomplishments not only highlight the strength of my research, but also my ability to inspire and guide students towards successful research careers.

I have built a thriving, self-sustaining research lab supported by significant external funding, including two NSF grants (one as PI), two Air Force Office of Scientific Research (AFOSR) grants totaling ~\$52M, two AFRL grants (as PI), and an LDRD grant with Sandia National Laboratories. My work in autonomous spacecraft led to three consecutive USSF Summer Faculty Fellowships (2021–2023). I have also mentored several self-funded graduate students from Sandia, COSMIAC, and the Nigerian government, reflecting both my research leadership and mentorship appeal. Recently, I helped secure an NSF NRT grant, Responsive and Resilient AI for Autonomous Systems (RAISE), to advance convergent research and transform STEM graduate education. These accomplishments underscore my contributions to strengthening UNM's research portfolio and national standing.

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## **PERSONAL**

### **Degrees**

#### Bachelors of Science in Mechanical Engineering

- School: University of Washington
- Dates: Fall 1998 – Winter 2003

#### Masters of Science In Mechanical Engineering

- School: Rensselaer Polytechnic Institute
- Dates: Fall 2004 – Spring 2006
- Thesis: Extremum Seeking Control for Adaptive Optics
- Advisor: John Wen (Center of Automation Technology and Systems (CATS))

#### Doctor of Philosophy in Mechanical Engineering

- School: University of California, Berkeley
- Dates: Fall 2008 – Spring 2014
- Dissertation: Symmetric Constrained Optimal Control: Theory, Algorithms, and Applications
- Advisor: Francesco Borrelli (Predictive Control Lab)
- Dissertation Committee: Francesco Borrelli, Kameshwar Poolla, Clair Tomlin
- Qualifying Exam Committee: Andrew Packard (Chair), Kameshwar Poolla, Clair Tomlin, Ian Agol

### **Positions at UNM**

1. Assistant Professor, Mechanical Engineering, University of New Mexico
  - Dates: Fall 2020 – Present

### **Positions at other Institutions or Organizations**

1. Principal Research Scientist, Mitsubishi Electric Research Laboratory
  - Dates: Fall 2014 – Fall 2020
2. Graduate Student Researcher, University of California, Berkeley
  - Dates: 2009-2014
3. Principal Space Systems Engineer, General Dynamics
  - Dates: 2007-2008
4. Principal Project Engineer and Owner, Sequoia Technologies
  - Dates: 2005-2007

### **Licenses, Registrations, and Certificates**

### **Professional Memberships**

- Senior Member, Institute of Electrical and Electronics Engineers (IEEE), 2018

## HONORS AND AWARDS

| <b>Name of Award / Honor</b>   | <b>Date</b>          | <b>Brief Description of Significance</b>  |
|--|----------------------|---|
| Nominated for UNM Early Career Research Award  | 2025                 | This prestigious honor is awarded to the most promising tenure-track faculty at the early stages of their careers. Recipients are recognized for initiating nationally prominent research programs and demonstrating exceptional potential for future impact in their fields. |
| Air Force Research Laboratories, Summer Faculty Fellowship Program                         | 2023                 | The U.S. Department of the Air Force Summer Faculty Fellowship Program is a prestigious, competitive initiative that fosters high-impact collaborations and advances critical national research objectives.   |
| Air Force Research Laboratories, Summer Faculty Fellowship Program                         | 2022                 | The U.S. Department of the Air Force Summer Faculty Fellowship Program is a prestigious, competitive initiative that fosters high-impact collaborations and advances critical national research objectives.   |
| Air Force Research Laboratories, Summer Faculty Fellowship Program                         | 2021                 | The U.S. Department of the Air Force Summer Faculty Fellowship Program is a prestigious, competitive initiative that fosters high-impact collaborations and advances critical national research objectives.   |
| Nominated for Best Student Paper Award at the Modeling, Estimation, and Control Conference | 2021                 | For paper “A predictive controller for drivability and comfort in multi-motor electric vehicles”  |
| Senior Member Institute of Electrical and Electronics Engineers (IEEE)                     | 2018                 | Senior membership recognitions exceptional technical and professional excellence for those who have made significant contributions to the field and demonstrated leadership, innovation, and sustained performance in their area of expertise.                                |
| Nominated for ASME Energy Systems Best Paper Award   | 2016                 | For paper “A reconfigurable plug-and-play model predictive controller for multi-evaporator vapor compression systems”   |
| Nominated for Best Student Paper Award at the American Control Conference                  | 2015                 | For paper “Model predictive control for treating cancer with ultrasonic heating”  |
| Frank and Margaret Lucas Scholarship Fund Fellowship                                       | 2014                 | Funds the top graduate student in the Mechanical Engineering department at University of California, Berkeley   |
| UC Berkeley Graduate Division Award  | 2012                 | Analogous to valedictorian for Berkeley-ME graduate students  |
| Second place for the UC-Dissertation-Year Fellowship                                       | 2012                 | Awarded for the best dissertation over all fields over all universities in the entire University of California system   |
| Federal Special Service or Act Award   | 2003<br>2004<br>2005 | For exceptional service or contributions that significantly benefit the public or the agency. These monetary awards recognize outstanding achievements related to official employment.  |

## TEACHING

### Teaching summary table of all courses taught at UNM

| Year | Semester | Course Number     | Course Title<br>(If course is co-taught, include name and affiliation of co-instructor) | Enrollment |        | Student Evaluations |              |              |
|------|----------|-------------------|---|------------|--------|---------------------|--------------|--------------|
|      |          |                   |   | UG         | Grad   | Return Rate (%)     | Mean Q.1     | Mean Q.2     |
| 2020 | Fall     | ME-482<br>ME-582  | Robot Engineering   | 8          | 0      | 50                  | 3.50         | 4.25         |
| 2021 | Spring   | ME-380<br>ECE-345 | Analysis and Design of Mechanical Control Systems (cross-listed with ECE)               | 38<br>2    | 0<br>0 | 32<br>0             | 4.33<br>NA   | 4.25<br>NA   |
| 2021 | Fall     | ME-461<br>ME-561  | Model Predictive Control  | 0          | 13     | 69                  | 4.89         | 5.00         |
| 2022 | Spring   | ME-380<br>ECE-345 | Analysis and Design of Mechanical Control Systems (cross-listed with ECE)               | 37<br>14   | 0<br>0 | 30<br>0             | 4.27<br>NA   | 4.54<br>NA   |
| 2022 | Fall     | ME-482<br>ME-582  | Robot Engineering   | 12         | 13     | 50<br>80            | 4.00<br>4.10 | 4.10<br>4.50 |
| 2023 | Spring   | ME-380<br>ECE-345 | Analysis and Design of Mechanical Control Systems (cross-listed with ECE)               | 38<br>7    | 0<br>0 | 39<br>43            | 4.07<br>4.67 | 4.33<br>5.00 |
| 2023 | Fall     | ME-461<br>ME-561  | Model Predictive Control  | 0          | 14     | 93                  | 4.77         | 4.82         |
| 2024 | Spring   | ME-380<br>ECE-345 | Analysis and Design of Mechanical Control Systems (cross-listed with ECE)               | 54<br>2    | 0<br>0 | 80<br>0             | 4.26<br>NA   | 3.79<br>NA   |
| 2024 | Fall     | ME-480<br>ME-580  | Dynamic System Analysis   | 1          | 19     | 47                  | 4.76         | 4.44         |
| 2025 | Spring   | ME-380<br>ECE-345 | Analysis and Design of Mechanical Control Systems                                       | 44<br>18   | 0<br>0 | 23<br>39            | 3.90<br>4.57 | 4.00<br>3.86 |
| 2025 | Fall     | ME-480<br>ME-580  | Dynamic System Analysis   | 0          | 16     |                     |              |              |

EvaluationKit Q1 = Rate the instructor's overall effectiveness (5 – highly effective, 1 – highly ineffective)

EvaluationKit Q2 = How comfortable do you feel approaching the instructor with questions? (5 – very comfortable, 1 – very uncomfortable)

### Course/Curriculum/Program Development & Teaching Innovations

- **Program Development: RAISE Program** Responsive and Resilient AI for Autonomous Systems (RAISE) is an NSF National Research Traineeship that establishes a new interdisciplinary graduate program at UNM. It offers cutting-edge research and graduate education in autonomous systems, providing MSc and PhD students with a unique opportunity to integrate AI and machine learning with a human-centric approach in autonomous systems.

- Dates: 2024 – Present
- **Teaching Innovations: Culturally Responsive Pedagogy** As part of the broader impacts of one of my NSF grants, I partnered with the UNM School of Education to develop pedagogy that is culturally relevant across different engineering disciplines. I have applied these techniques in my Introduction to Controls course, which is cross-listed between mechanical (ME-380) and electrical (ECE-345) engineering.
  - Dates: 2022 – Present
- **Course Development: ME-380 / ECE-345 – Analysis and Design of Mechanical Control Systems** Although my course largely follows the structure of the textbook, I create my own homework and exam questions. As noted in my teaching statement, students often consider this their hardest class due to the abstract nature of the subject. To make it more accessible, I design questions based on practical applications while highlighting that the abstract nature of controls is its strength, enabling use across diverse fields, from engineering to social sciences and business. Crafting these assignments involves distilling complex real-world problems into engaging, pedagogically effective projects that maintain their intellectual depth.
  - Dates: Winter 2020 – Present
- **Course Development: ME-480/580 – Dynamic System Analysis** I am actively developing this course, as this is only my second semester teaching it. Like the introductory controls course, I create my own homework and exam questions based on practical applications. However, for this course, I'm also developing my own structure and course notes, which I plan to eventually compile into a textbook.
  - Dates: Summer 2024 – Present
- **Course Development: ME-482/582 – Robotics** When I initially developed this course, I largely followed the structure of the robotics course I took as a graduate student, which focused on the kinematics and dynamics of robots. However, I have continued to develop this course, integrating more of my research in robot motion planning into the curriculum.
  - Dates: Summer 2020 – Fall 2022
- **Course Development: ME-447/547** (Previously listed as ME-461/561) As an advanced course at the forefront of my field, I continually refine the curriculum. Recently, I updated one of the modules to teach zonotopes instead of polytopes, as zonotopes are becoming the standard approach for set-based methods. I first began developing this course while a lecturer at the University of California, Berkeley and refined it as an industrial short course for Mitsubishi Electric Company (see below).
  - Dates: Fall 2014 – Fall 2023

### Short Courses and Workshops Taught

- Workshop: Data Driven Invariance Workshop, 64<sup>th</sup> Annual IEEE Conference on Decision and Control, Rio de Janeiro, Brazil, December 8, 2025. Workshop organizer and speaker. Other speakers from Duke, Georgia Tech, Berkeley, Waterloo, CU Boulder, Michigan, ETH Zurich, and University of Brussels. <https://sites.google.com/view/cdc25-data-driven-invariance/home?authuser=0>
- Short-Course: Model Predictive Control for Industry, Advanced Technology Center, Mitsubishi Electric Company, Osaka Japan, Summer 2017.

### PUBLICATIONS

#### *Publication Metrics*

| Metric    | Value | Improvement              |
|-----------|-------|--------------------------|
| Citations | 1286  | Increased 990 since 2020 |
| h-index   | 22    | Increased 18 since 2020  |
| i10-index | 40    | Increased 34 since 2020  |

## Refereed Journal Articles Since Joining UNM

Citations automatically generated in IEEE format from bibtex-files provided by publishers.

\* = corresponding author, PD = postdoctoral researcher, G = graduate student, UG = undergraduate student

1. K. Malek<sup>G</sup>, C. Danielson, and F. Moreu\*, “Immersive robot programming interface for human-guided automation and randomized path planning,” *ASME Letters in Translational Robotics*, vol. 1, p. 021003, 07 2025 <https://doi.org/10.1115/1.4069044>
2. R. M. Oakley<sup>G\*</sup>, P. Chao, and C. Danielson, A. T. Polonsky, “A Robust Data-Driven Approach for Mechanical Serial Sectioning,” *Integrating Materials and Manufacturing Innovation* vol. 14, p. 227–235, 2025, <https://doi.org/10.1007/s40192-025-00401-w>
3. A. Kashani<sup>G\*</sup>, and C. Danielson, “Data-driven invariant set for nonlinear systems with application to command governors,” *Automatica*, vol. 172, p. 112010, 2025 <https://doi.org/10.1016/j.automatica.2024.112010>
4. T. Brandt<sup>G\*</sup>, R. Fierro, and C. Danielson, “Safe vehicle motion planning using constraint admissible positive invariant sets on  $se(3)$ ,” *IEEE Control Systems Letters*, pp. 1–1, 2024 <https://doi.org/10.1109/LCSYS.2024.3523385>
5. A. Kashani<sup>G\*</sup>, A. K. Strong<sup>G</sup>, L. J. Bridgeman, and C. Danielson, “Probabilistic data-driven invariance for constrained control of nonlinear systems,” *IEEE Control Systems Letters*, vol. 8, pp. 3165–3170, 2024 <https://doi.org/10.1109/LCSYS.2024.3520025>
6. R. M. Oakley<sup>G\*</sup>, A. T. Polonsky, P. Chao, and C. Danielson, “Robust data-driven predictive run-to-run control for automated serial sectioning,” *IEEE Control Systems Letters*, pp. 1–1, 2024 <https://doi.org/10.1109/LCSYS.2024.3514977>
7. Z. Bernius<sup>G\*</sup>, C. Danielson, H. Harper<sup>G</sup>, and K. Armijo, “Tuning of real-time optimization of heliostat concentrated solar power,” *IEEE Control Systems Letters*, vol. 8, pp. 2559–2564, 2024 <https://doi.org/10.1109/LCSYS.2024.3496814>
8. A. Kashani<sup>G</sup>, S. Panahi<sup>PD</sup>, A. Chakrabarty, and C. Danielson, “Robust data-driven dynamic optimization using a set-based gradient estimator,” *Optimal Control Applications and Methods*, 2024 <https://doi.org/10.1002/oca.3157>
9. C. Danielson\*, J. Kloeppel, and C. Petersen, “Experimental validation of constrained spacecraft attitude planning via invariant sets,” *AIAA Journal of Guidance, Control, and Dynamics*, vol. 47, no. 1, pp. 61–71, 2024 <https://doi.org/10.2514/1.G007586>
10. T. Brandt<sup>G\*</sup>, R. Fierro, and C. Danielson, “Safe motion planning for serial-chain robotic manipulators via invariant sets,” *IEEE Control Systems Letters*, pp. 1–1, 2023 <https://doi.org/10.1109/LCSYS.2023.3347176>
11. C. Danielson\* and T. Brandt<sup>G</sup>, “Constraint admissible positive invariant sets for vehicles in  $se(3)$ ,” *IEEE Control Systems Letters*, vol. 7, pp. 3759–3764, 2023 <https://doi.org/10.1109/LCSYS.2023.3343422>
12. S. Panahi<sup>PD\*</sup>, A. Kashani<sup>G</sup>, and C. Danielson, “Primal–dual interior-point algorithm for symmetric model predictive control,” *Automatica*, vol. 155, p. 111157, 2023 <https://doi.org/10.1016/j.automatica.2023.111157>
13. C. Danielson\*, “Invariant configuration-space bubbles for revolute serial-chain robots,” *IEEE Control Systems Letters*, pp. 1–1, 2022 <https://doi.org/10.1109/LCSYS.2022.3224685>
14. D. Gallegos-Patterson<sup>G\*</sup>, K. Ortiz<sup>G</sup>, C. Danielson, J. D. Madison, and A. T. Polonsky, “A framework for closed-loop optimization of an automated mechanical serial-sectioning system via run-to-run control as applied to a robo-met.3d,” *JOM The Journal of The Minerals, Metals and Materials Society*, vol. 74, no. 8, pp. 2930–2940, 2022 <https://doi.org/10.1007/s11837-022-05372-3>

15. C. Danielson\*, J. Kloeppel, and C. Petersen, "Spacecraft attitude control using the invariant-set motion-planner," *IEEE Control Systems Letters*, pp. 1–1, 2021 <https://doi.org/10.1109/LCSYS.2021.3132457>
16. C. Danielson\*, A. Chakrabarty, and S. Bortoff, "Extremum seeking control with an adaptive gain based on gradient estimation error," *IEEE Transactions on Systems Man and Cybernetics: Systems*, 2021 <https://doi.org/10.1109/TSMC.2022.3171132>
17. A. Chakrabarty\*, C. Danielson, S. A. Bortoff, and C. R. Laughman, "Accelerating self-optimization control of refrigerant cycles with bayesian optimization and adaptive moment estimation," *Applied Thermal Engineering*, vol. 197, p. 117335, 2021 <https://doi.org/10.1016/j.applthermaleng.2021.117335>
18. C. Danielson, "Fundamental domains for symmetric optimization: Construction and search," *SIAM Journal on Optimization*, vol. 31, no. 3, pp. 1827–1849, 2021 <https://doi.org/10.1137/20M1331627>
19. C. Danielson\*, "Terminal-cost design for model predictive control with linear stage-costs: A set-theoretic method," *Optimal Control Applications and Methods*, vol. 42, no. 4, pp. 943–964, 2021 <https://doi.org/10.1002/oca.2709>
20. S. Di Cairano\* and C. Danielson, "Indirect adaptive model predictive control and its application to uncertain linear systems," *International Journal of Robust and Nonlinear Control*, vol. 31, no. 18, pp. 8678–8702, 2021 <https://doi.org/10.1002/rnc.5166>
21. R. Lavaei<sup>G\*</sup>, R. Hall<sup>G</sup>, C. Danielson, and L. Bridgeman, "Constraint enforcement via tube-based mpc exploiting switching restrictions," *IEEE Control Systems Letters*, vol. 5, no. 5, pp. 1789–1794, 2021 <https://doi.org/10.1109/LCSYS.2020.3045391>
22. C. Danielson\*, "An alternating direction method of multipliers algorithm for symmetric model predictive control," *Optimal Control Applications and Methods*, vol. 42, no. 1, pp. 236–260, 2021 <https://doi.org/10.1016/j.ifacol.2018.11.051>

### **Before UNM**

1. S. A. Bortoff\*, P. Schwerdtner<sup>G</sup>, C. Danielson, S. Di Cairano, and D. J. Burns, "H-infinity loop-shaped model predictive control with HVAC application," *IEEE Transactions on Control Systems Technology*, pp. 1–16, 2022 <https://doi.org/10.1109/TCST.2022.3141937>
2. A. Chakrabarty\*, C. Danielson, S. Di Cairano, and A. Raghunathan, "Active learning for estimating reachable sets for systems with unknown dynamics," *IEEE Transactions on Cybernetics*, pp. 1–12, 2020 <https://doi.org/10.1109/TCYB.2020.3000966>
3. C. Danielson\*, K. Berntorp, A. Weiss, and S. D. Cairano, "Robust motion planning for uncertain systems with disturbances using the invariant-set motion planner," *IEEE Transactions on Automatic Control*, vol. 65, no. 10, pp. 4456–4463, 2020 <https://doi.org/10.1109/TAC.2020.3008126>
4. K. Berntorp\*, R. Bai<sup>G</sup>, K. F. Erliksson<sup>G</sup>, C. Danielson, A. Weiss, and S. D. Cairano, "Positive invariant sets for safe integrated vehicle motion planning and control," *IEEE Transactions on Intelligent Vehicles*, vol. 5, no. 1, pp. 112–126, 2020 <https://doi.org/10.1109/TIV.2019.2955371>
5. C. Danielson\*, L. J. Bridgeman, and S. Di Cairano, "Necessary and sufficient conditions for constraint satisfaction in switched systems using switch-robust control invariant sets," *International Journal of Robust and Nonlinear Control*, vol. 29, no. 9, pp. 2589–2602, 2019 <https://doi.org/10.1002/rnc.4509>
6. D. J. Burns\*, C. Danielson, J. Zhou, and S. Di Cairano, "Reconfigurable model predictive control for multi-evaporator vapor compression systems," *IEEE Transactions on Control Systems Technology*, vol. 26, no. 3, pp. 984–1000, 2018 <https://doi.org/10.1109/TCST.2017.2701772>
7. S. Koehler\*, C. Danielson, and F. Borrelli, "A primal-dual active-set method for distributed model predictive control," *Optimal Control Applications and Methods*, vol. 38, no. 3, pp. 399–419, 2017 <https://doi.org/10.1002/oca.2262>
8. C. Danielson\* and F. Borrelli, "Symmetric linear model predictive control," *IEEE Transactions on Automatic Control*, vol. 60, no. 5, pp. 1244–1259, 2015 <https://doi.org/10.1109/TAC.2014.2373693>

9. C. Danielson, F. Borrelli, D. Oliver, D. Anderson, and T. Phillips, “Constrained flow control in storage networks: Capacity maximization and balancing,” *Automatica*, vol. 49, no. 9, pp. 2612–2621, 2013  
<https://doi.org/10.1016/j.automatica.2013.05.014>

## Books & Book Chapters

### *Since Joining UNM*

None

### *Before UNM*

1. D. J. Burns\*, C. Danielson, S. Di Cairano, C. R. Laughman, and S. A. Bortoff, *Model Predictive Control of Multi-zone Vapor Compression Systems*, pp. 105–137. Cham: Springer International Publishing, 2018

## Peer-reviewed and Published Conference Abstracts and Proceedings

### *Since Joining UNM*

1. A. K. Strong<sup>G\*</sup>, A. Kashani<sup>G</sup>, C. Danielson, and L. Bridgeman, “Invariant set and lyapunov function synthesis for unmodeled discrete, dynamical systems using tree data structures,” in *IFAC Symposium on Nonlinear Control Systems (NOLCOS)*, 2025
2. T. Brandt<sup>G\*</sup>, R. Fierro, and C. Danielson, “Safe vehicle motion planning using constraint admissible positive invariant sets on se(3),” in *American Control Conference*, 2025 (Invited Session, Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2024.3523385>
3. T. Jimerson<sup>G</sup> and C. Danielson\*, “Attitude motion planning with moving keep-out cones via invariant sets,” in *American Control Conference*, 2024 (Invited Session)  
<https://doi.org/10.23919/ACC63710.2025.11107495>
4. A. Kashani<sup>G\*</sup>, A. K. Strong<sup>G</sup>, L. Bridgeman, and C. Danielson, “Probabilistic data-driven invariance for constrained control of nonlinear systems,” in *American Control Conference*, 2024 (Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2024.3520025>
5. A. K. Strong<sup>G\*</sup>, A. Kashani<sup>G</sup>, C. Danielson, and L. Bridgeman, “Data driven synthesis of invariant sets for unmodeled dynamical systems using a tree data structure,” in *American Control Conference*, 2024  
<https://doi.org/10.23919/ACC63710.2025.11108033>
6. R. M. Oakey<sup>G\*</sup>, A. T. Polonsky, P. Chao, and C. Danielson, “Robust data-driven predictive run-to-run control for automated serial sectioning,” in *American Control Conference*, 2024 (Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2024.3514977>
7. Z. Bernius<sup>G\*</sup>, C. Danielson, H. Harper<sup>G</sup>, and K. Armijo, “Tuning of real-time optimization of heliostat concentrated solar power,” in *American Control Conference*, 2024 (Dual submission with L-CSS)  
<https://doi.org/10.1109/LCSYS.2024.3496814>
8. L. Gao<sup>G\*</sup>, K. Aubert<sup>G</sup>, D. Saldana<sup>G</sup>, C. Danielson, and R. Fierro, “Decentralized adaptive aerospace transportation of unknown loads using a team of robots,” in *Symposium on Distributed Autonomous Robotic Systems*, 2024 <https://dars2024.engineering.cornell.edu/>
9. L. Gao<sup>G\*</sup>, C. Danielson, and R. Fierro, “Adaptive robot detumbling of a non-rigid satellite,” in *IEEE Conference on Decision and Control (CDC)*, pp. 5072–5078, 2024  
<https://doi.org/10.1109/CDC56724.2024.10886806>
10. N. Pavlasek<sup>G\*</sup>, H. Q. Li<sup>G</sup>, B. Acikmese, M. Oishi, and C. Danielson, “Blameless and optimal control under prioritized safety constraints,” in *American Control Conference (ACC)*, 2024 (Invited Session)  
<https://doi.org/10.23919/ACC60939.2024.10644404>



11. T. Brandt<sup>G\*</sup>, R. Fierro, and C. Danielson, “Safe motion planning for serial-chain robotic manipulators via invariant sets,” in *American Control Conference (ACC)*, 2024 (Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2023.3347176>
12. C. Danielson\* and T. Brandt<sup>G</sup>, “Constraint admissible positive invariant sets for vehicles in  $se(3)$ ,” in *American Control Conference (ACC)*, 2024 (Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2023.3343422>
13. S. Shore<sup>G\*</sup>, S. Lane, and C. Danielson, “Extremum seeking control techniques for antenna pointing,” in *American Control Conference (ACC)*, 2024 <https://doi.org/10.23919/ACC60939.2024.10644177>
14. L. Gao<sup>G\*</sup>, G. Cordova<sup>UG</sup>, C. Danielson, and R. Fierro, “Autonomous multi-robot servicing for spacecraft operation extension,” in *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2023 <https://doi.org/10.1109/IROS55552.2023.10341875>
15. C. Danielson\* and J. Kloeppel, “Rapid construction of safe search-trees for spacecraft attitude planning,” in *American Control Conference (ACC)*, 2023 (Invited Session) <https://doi.org/10.23919/ACC55779.2023.10156052>
16. C. Danielson\*, “Invariant configuration-space bubbles for revolute serial-chain robots,” in *American Control Conference (ACC)*, 2023 (Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2022.3224685>
17. A. Kashani<sup>G\*</sup>, A. Kalhor, B. N. Araabi, and C. Danielson, “Dead-beat identification for model reference adaptive control,” in *IEEE Conference on Decision and Control (CDC)*, 2022 <https://doi.org/10.1109/CDC51059.2022.9993147>
18. D. Damian Gallegos-Patterson<sup>G\*</sup>, K. R. Ortiz<sup>G</sup>, J. Madison, A. T. Polonsky, and C. Danielson, “Constrained run-to-run control for precision serial sectioning,” in *IEEE Conference on Control Technology and Applications (CCTA)*, pp. 540–545, 2022 <https://doi.org/10.1109/CCTA49430.2022.9966131>
19. C. Danielson\*, J. Kloeppel, and C. Petersen, “Spacecraft attitude control using the invariant-set motion-planner,” in *American Control Conference (ACC)*, 2022 (Invited Session, Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2021.3132457>
20. R. Lavaei<sup>G\*</sup>, R. Hall<sup>G</sup>, C. Danielson, and L. Bridgeman, “Constraint enforcement via tube-based mpc exploiting switching restrictions,” in 2021 *American Control Conference (ACC)*, pp. 858–863, 2021 (Dual submission with L-CSS) <https://doi.org/10.1109/LCSYS.2020.3045391>

### **Before UNM**

1. D. Chen<sup>G</sup>, C. Danielson\*, and S. D. Cairano, “A predictive controller for drivability and comfort in multi-motor electric vehicles,” *IFAC-PapersOnLine*, vol. 54, no. 20, pp. 650–656, 2021. *Modeling, Estimation and Control Conference (MECC)* 2021 (Nominated for Best Paper) <https://doi.org/10.1016/j.ifacol.2021.11.245>
2. A. Chakrabarty\*, C. Danielson, and Y. Wang, “Data-driven optimal tracking with constrained approximate dynamic programming for servomotor systems,” in *IEEE Conference on Control Technology and Applications (CCTA)*, pp. 352–357, 2020 <https://doi.org/10.1109/CCTA41146.2020.9206315>
3. D. Chen<sup>G</sup>, C. Danielson\*, and M. Iezawa, “Improving Passenger Comfort by Exploiting Hub Motors in Electric Vehicles: Suspension Modeling,” in *ASME Dynamic Systems and Control Conference (DSCC)*, vol. 2, 10 2020
4. C. Danielson\*, K. Berntorp, S. D. Cairano, and A. Weiss, “Motion-planning for unicycles using the invariant-set motion-planner,” in 2020 *American Control Conference (ACC)*, pp. 1235–1240, 2020 <https://doi.org/10.23919/ACC45564.2020.9147919>
5. C. Danielson\* and S. Di Cairano, “A reference governor for wheel-slip prevention in railway vehicles with pneumatic brakes,” in 2020 *American Control Conference (ACC)*, pp. 1011–1016, 2020 <https://doi.org/10.23919/ACC45564.2020.9147647>

6. J. G. Ordóñez<sup>G</sup>, C. Danielson\*, D. Limon, S. A. Bortoff, and S. Di Cairano, “Steady-state analysis of hvac performance using indoor fans in control design,” in *2019 IEEE Conference on Decision and Control (CDC)*, pp. 2952–2957, 2019 <https://doi.org/10.1109/CDC40024.2019.9029730>
7. A. Chakrabarty\*, R. Quirynen, C. Danielson, and W. Gao, “Approximate dynamic programming for linear systems with state and input constraints,” in *2019 European Control Conference (ECC)*, pp. 524–529, 2019 <https://doi.org/10.23919/ECC.2019.8795815>
8. S. A. Bortoff\*, P. Schwerdtner<sup>G</sup>, C. Danielson, and S. Di Cairano, “H-infinity loop-shaped model predictive control with heat pump application,” in *European Control Conference (ECC)*, pp. 2386–2393, 2019 <https://doi.org/10.23919/ECC.2019.8796158>
9. P. Schwerdtner<sup>G</sup>, S. A. Bortoff\*, C. Danielson, and S. Di Cairano, “Projection-based anti-windup for multivariable control with heat pump application,” in *European Control Conference (ECC)*, pp. 1281–1287, 2019 <https://doi.org/10.23919/ECC.2019.8795876>
10. P. Krupa<sup>G</sup>, C. Danielson\*, C. Laughman, S. A. Bortoff, D. J. Burns, S. Di Cairano, and D. Limon, “Modelica implementation of centralized mpc controller for a multi-zone heat pump,” in *European Control Conference (ECC)*, pp. 1784–1789, 2019 <https://doi.org/10.23919/ECC.2019.8795616>
11. H. Ahn and C. Danielson, “Moving horizon sensor selection for reducing communication costs with applications to internet of vehicles,” in *American Control Conference (ACC)*, pp. 1464–1469, 2019 <https://doi.org/10.23919/ACC.2019.8814322>
12. C. Danielson\*, “An alternating direction method of multipliers algorithm for symmetric mpc,” in *IFAC Conference on Nonlinear Model Predictive Control (NMPC)*, vol. 51, pp. 319–324, 2018. <https://doi.org/10.1016/j.ifacol.2018.11.051>
13. K. Berntorp\*, C. Danielson, A. Weiss, and S. Di Cairano, “Positive invariant sets for safe integrated vehicle motion planning and control,” in *IEEE Conference on Decision and Control (CDC)*, pp. 6957–6962, 2018 <https://doi.org/10.1109/TIV.2019.2955371>
14. A. Chakrabarty\*, A. Raghunathan, S. Di Cairano, and C. Danielson, “Data-driven estimation of backward reachable and invariant sets for unmodeled systems via active learning,” in *IEEE Conference on Decision and Control (CDC)*, pp. 372–377, 2018 <https://doi.org/10.1109/CDC.2018.8619646>
15. S. A. Bortoff\*, D. J. Burns, C. R. Laughman, H. Qiao<sup>G</sup>, C. Danielson, A. Goldsmith, and S. Di Cairano, “Power optimizing control of multi-zone heat pumps,” in *IEEE Conference on Control Technology and Applications (CCTA)*, pp. 826–833, 2018 <https://doi.org/10.1109/CCTA.2018.8511640>
16. C. Danielson\*, “Symmetric control design for multi-evaporator vapor compression systems,” in *ASME Dynamic Systems and Control Conference (DSCC)*, 2017
17. K. Berntorp\*, A. Weiss, C. Danielson, I. V. Kolmanovsky, and S. Di Cairano, “Automated driving: Safe motion planning using positively invariant sets,” in *2017 IEEE International Conference on Intelligent Transportation Systems (ITSC)*, pp. 1–6, 2017 <https://doi.org/10.1109/ITSC.2017.8317672>
18. A. Weiss\*, C. Danielson, K. Berntorp, I. Kolmanovsky, and S. Di Cairano, “Motion planning with invariant set trees,” in *IEEE Conference on Control Technology and Applications (CCTA)*, pp. 1625–1630, 2017 <https://doi.org/10.1109/CCTA.2017.8062689>
19. C. Danielson\*, L. Bridgeman<sup>G</sup>, and S. Di Cairano, “Constraint satisfaction for switched linear systems with restricted dwell-time,” in *American Control Conference (ACC)*, pp. 3682–3687, 2017 <https://doi.org/10.23919/ACC.2017.7963517>
20. J. Zhou, S. Di Cairano\*, and C. Danielson, “Indirect adaptive mpc for output tracking of uncertain linear polytopic systems,” in *American Control Conference (ACC)*, pp. 3054–3059, 2017 <https://doi.org/10.23919/ACC.2017.7963416>
21. C. Danielson\*, A. Weiss, K. Berntorp, and S. Di Cairano, “Path planning using positive invariant sets,” in *IEEE Conference on Decision and Control (CDC)*, pp. 5986–5991, 2016 <https://doi.org/10.1109/CDC.2016.7799188>
22. C. Danielson\* and S. Di Cairano, “Robust soft-landing control with quantized input,” *IFAC-PapersOnLine*, vol. 49, no. 18, pp. 35–40, *IFAC Symposium on Nonlinear Control Systems (NOLCOS)* 2016 <https://doi.org/10.1016/j.ifacol.2016.10.136>

23. L. J. Bridgeman, C. Danielson\*, and S. Di Cairano, “Stability and feasibility of mpc for switched linear systems with dwell-time constraints,” in *American Control Conference (ACC)*, pp. 2681–2686, 2016 <https://doi.org/10.1109/ACC.2016.7525323>
24. J. Zhou<sup>G</sup>, D. J. Burns\*, C. Danielson, and S. Di Cairano, “A reconfigurable plug-and-play model predictive controller for multi-evaporator vapor compression systems,” in *American Control Conference (ACC)*, pp. 2358–2364, 2016 (Nominated for Best Paper) <https://doi.org/10.1109/ACC.2016.7525270>
25. C. Danielson\* and F. Borrelli, “Symmetric constrained optimal control,” IFAC-PapersOnLine, vol. 48, no. 23, pp. 366–371, *IFAC Conference on Nonlinear Model Predictive Control (NMPC)* 2015 <https://doi.org/10.1016/j.ifacol.2015.11.307>
26. C. Danielson\* and S. Di Cairano, “Reduced complexity control design for symmetric lpv systems,” in *IEEE Conference on Decision and Control (CDC)*, pp. 72–77, 2015 <https://doi.org/10.1109/CDC.2015.7402088>
27. C. Danielson\* and S. Bauer, “Numerical decomposition of symmetric linear systems,” in *IEEE Conference on Decision and Control (CDC)*, pp. 2061–2066, 2015 <https://doi.org/10.1109/CDC.2015.7402510>
28. F. Chuang\*, C. Danielson, and F. Borrelli, “Robust approximate symmetric model predictive control,” in *IEEE Conference on Decision and Control (CDC)*, pp. 2400–2405, 2015 <https://doi.org/10.1109/CDC.2015.7402567>
29. D. Hensley<sup>G</sup>, R. Orendorff<sup>G</sup>, E. Yu<sup>G</sup>, C. Danielson\*, V. Salgaonkar, and C. Diederich, “Model predictive control for treating cancer with ultrasonic heating,” in *American Control Conference (ACC)*, pp. 220–225, 2015 (Nominated for Best Paper) <https://doi.org/10.1109/ACC.2015.7170739>
30. S. Koehler\*, C. Danielson, and F. Borrelli, “A primal-dual active-set method for distributed model predictive control,” in *American Control Conference (ACC)*, pp. 4759–4764, 2015 <https://doi.org/10.1109/ACC.2015.7172079>
31. F. Chuang\*, C. Danielson, and F. Borrelli, “Optimality of certainty equivalence in expected value problems for uncertain linear systems,” in *IEEE Conference on Decision and Control (CDC)*, pp. 2822–2827, 2014 <https://doi.org/10.1109/CDC.2014.7039822>
32. C. Danielson\* and F. Borrelli, “Identification of the symmetries of linear systems with polytopic constraints,” in *American Control Conference*, pp. 4218–4223, 2014 <https://doi.org/10.1109/ACC.2014.6859278>
33. M. Preindl\*, C. Danielson, and F. Borrelli, “Performance evaluation of battery balancing hardware,” in *European Control Conference (ECC)*, pp. 4065–4070, 2013 <https://doi.org/10.23919/ECC.2013.6669307>
34. M. Preindl\*, S. Bolognani, and C. Danielson, “Model predictive torque control with pwm using fast gradient method,” in 2013 *IEEE Applied Power Electronics Conference and Exposition (APEC)*, pp. 2590–2597, 2013 <https://doi.org/10.1109/APEC.2013.6520661>
35. C. Danielson\* and F. Borrelli, “Symmetric explicit model predictive control,” IFAC Proceedings Volumes, vol. 45, no. 17, pp. 132–137, *IFAC Conference on Nonlinear Model Predictive Control (NMPC)* <https://doi.org/10.3182/20120823-5-NL-3013.00083>
36. C. Danielson\*, F. Borrelli, D. Oliver, D. Anderson, M. Kuang, and T. Phillips, “Balancing of battery networks via constrained optimal control,” in *American Control Conference (ACC)*, pp. 4293–4298, 2012 <https://doi.org/10.1109/ACC.2012.6315251>
37. C. Danielson\*, S. Lacy, B. Hindman, P. Collier, J. Hunt, and R. Moser, “Extremum seeking control for simultaneous beam steering and wavefront correction,” in *American Control Conference (ACC)*, pp. 6 pp.–, 2006 <https://doi.org/10.1109/ACC.2006.1657425>

## Other Publications and Products

1. B. Russell<sup>G\*</sup>, N. Wolfe<sup>G</sup>, G. Gutow, L. R. G. Carrillo, C. Danielson, and R. Fierro, "A multi-robot experimental platform for emulating autonomous on-orbit servicing," in *AIAA SciTech Forum and Exposition*, 2025
2. A. Kashani<sup>G\*</sup> and C. Danielson, "Model-free data-driven control for nonlinear systems," in *The University of New Mexico Shared Knowledge Conference*, 2025
3. K. Armijo<sup>\*</sup>, H. Harper<sup>G</sup>, Z. Bernius<sup>G</sup>, A. Blumenthal, L. Garcia-Maldonado, A. Overacker, R. Brost, B. Bean, and C. Danielson, "Helioclosed closed loop controls for heliostat field testing," in *Solar Power and Chemical Energy Systems (SolarPACES)*, 2024
4. Z. Bernius<sup>G\*</sup>, H. Harper<sup>G</sup>, C. Danielson, and K. Armijo, "Real-time optimization of heliostats," in *Solar Power and Chemical Energy Systems (SolarPACES)*, 2024
5. A. Kashani<sup>G\*</sup>, G. Azeez<sup>G</sup>, and C. Danielson, "Direct data-driven control of constrained dynamical systems," in *ASME 2024 International Mechanical Engineering Congress and Exposition*, 2024
6. A. Kashani<sup>G\*</sup>, G. Azeez<sup>G</sup>, and C. Danielson, "Novel machine learning architectures for dynamic constraint enforcement," in *8th Annual Sandia Machine Learning and Deep Learning (MLDL) Workshop*, 2024
7. G. Ganiyu Azeez<sup>G\*</sup>, A. Ali Kashani<sup>G</sup>, and C. Danielson, "Air-conditioning system constraint enforcement using a reference governor," in *2024 ASHRAE Annual Conference*, ASHRAE, Sept. 2024
8. H. Harper<sup>G\*</sup>, Z. Bernius<sup>G</sup>, C. Danielson, and K. Armijo, "Closed loop controls testing: Small-scale experiment and single heliostat testing," in *Solar Power and Chemical Energy Systems (SolarPACES)*, 2024
9. K. Armijo<sup>\*</sup>, H. Harper<sup>G</sup>, Z. Bernius<sup>G</sup>, L. Garcia-Maldonado, A. Blumenthal, A. Evans, and C. Danielson, "Helioclosed closed loop control: Extremum seeking control small-scale and single heliostat testing," in *ASME 2024 Energy Sustainability*, 2023
10. K. Armijo<sup>\*</sup>, H. Harper<sup>G</sup>, Z. Bernius<sup>G</sup>, C. Danielson, A. Blumenthal, and L. Garcia-Maldonado, "NSTTF helioclosed wireless closed-loop controls test bed development," in *Solar Power and Chemical Energy Systems (SolarPACES)*, 2023
11. T. Brandt<sup>G\*</sup>, R. Fierro, and C. Danielson, "Robot motion planning with guaranteed safety via invariant sets," in later-breaking poster at *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2023
12. N. Pavlasek<sup>G\*</sup>, S. Li<sup>G</sup>, M. Oishi, B. Ackimese, and C. Danielson, "Generating blamelessly optimal control for prioritized constraint sets," in *Robotics Systems and Science Conference, Towards Safe Autonomy: New Challenges and Trends in Robot Perception*, 2023
13. R. McCarthy<sup>G\*</sup>, C. Danielson, S. Phillips, and R. Fierro, "Model predictive control for an omnidirectional multi-rotor uav for space applications," in *AIAA SciTech Forum and Exposition*, 2023
14. D. Gallegos-Patterson<sup>G\*</sup>, J. Madison, and C. Danielson, "Improving autonomous data collection by iterative learning control as applied to a robomet.3d mechanical serial-sectioning system," in *Algorithm Development in Materials Science and Engineering*, 2021

## Work Under Review

1. A. Kashani<sup>G\*</sup>, A. K. Strong<sup>G</sup>, L. Bridgeman, and C. Danielson, "Data-driven deterministic control barrier functions," Submitted to *Optimal Control Applications and Methods*, 2025
2. L. Gao<sup>G\*</sup>, C. Danielson, A. Kwas, and R. Fierro, "Safe on-orbit dislodging of deployable structures via robust adaptive mpc," Submitted to *IEEE Transactions on Control Systems Technology*, 2025
3. A. K. Strong<sup>G\*</sup>, A. Kashani<sup>G</sup>, C. Danielson, and L. Bridgeman, "Learning continuous piecewise affine barrier functions for nonlinear lipschitz systems," in *Conference on Neural Information Processing Systems*, 2025

### **Invited conference/symposium/colloquium/seminar series presentations**

1. “Robust Data-Driven Control for Manufacturing Processes”, Materials & Manufacturing Division, Digital Manufacturing Group, Air Force Research Laboratories, Wright-Patterson AFB, May 2025
2. “Constrained Control in a Data-Driven Paradigm”, New Mexico State University, September 2023
3. “Motion Planning and Extreme-Scale Optimization”, University of Washington, January 2023
4. “Spacecraft Attitude Control using the Invariant-Set Motion-Planner”, Aerial and Space Robotics Workshop, June 2022
5. “Spacecraft Attitude Control using Invariant Sets”, University of Minnesota, Aerospace Engineering and Mechanics, February 2022
6. “Constrained Control: Theory, Algorithms, and Applications”, Duke University, Thomas Lord Department of Mechanical Engineering and Material Science, January 2022
7. “Control for Systems with Constraints”, New Mexico Institute of Mining and Technology, Mechanical Engineering, October 2021
8. “Moving from Industry to Academia”, Dynamics System and Control Conference, Industrial Session, October 2020
9. “Invariant-set Motion-Planner and its application to Autonomous Driving”, AI Accelerator Summit, June 2020
10. “Algorithms for Real-Time Optimization and Control”, University of Arizona, January 2020
11. “Constrained Control: Theory, Algorithms, and Applications”, University of New Mexico, January 2020
12. “Constrained Control: Theory, Algorithms, and Applications”, Washington State University, November 2019
13. Google Tensor Processing Unit (TPU) cloud discussion panel, Moderator, October 2019
14. , “Invariant-set Motion-Planner and its application to Autonomous Driving”, AI Accelerator Summit October 2019
15. “Alternative Research Career Paths”, Dynamic Systems and Control Conference, Industrial Panel, October 2019
16. “Motion Planning for Autonomous Driving”, Industrial Session, Dynamic Systems and Control Conference, October 2019
17. “Constrained Control: Theory, Algorithms, and Applications”, Colorado School of Mines, April 2019
18. “Constrained Control: Theory, Algorithms, and Applications”, University of Massachusetts, Lowell, April 2019
19. “Constrained Control: Theory, Algorithms, and Applications”, University of Kentucky, January 2018

### **Contributed conference/symposium presentations**

- A. Kashani<sup>G</sup> and C. Danielson, “Model-free data-driven control for nonlinear systems,” in *The University of New Mexico Shared Knowledge Conference*, 2025
- A. Kashani<sup>G</sup>, G. Azeez<sup>G</sup>, and C. Danielson, “Direct data-driven control of constrained dynamical systems,” in *ASME 2024 International Mechanical Engineering Congress and Exposition*, 2024
- A. Kashani<sup>G</sup>, G. Azeez<sup>G</sup>, and C. Danielson, “Novel machine learning architectures for dynamic constraint enforcement,” in *8th Annual Sandia Machine Learning and Deep Learning (MLDL) Workshop*, 2024

- G. Ganiyu Azeez<sup>G</sup>, A. Ali Kashani<sup>G</sup>, and C. Danielson, “Air-conditioning system constraint enforcement using a reference governor,” in 2024 *ASHRAE Annual Conference, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)*, Sept. 2024
- T. Brandt<sup>G</sup>, R. Fierro, and C. Danielson, “Robot motion planning with guaranteed safety via invariant sets,” in *IEEE International Conference on Intelligent Robots and Systems (IROS)*, 2023
- N. Pavlasek<sup>G</sup>, S. Li<sup>G</sup>, M. Oishi, B. Ackimese, and C. Danielson, “Generating blamelessly optimal control for prioritized constraint sets,” in *Robotics Systems and Science Conference, Towards Safe Autonomy: New Challenges and Trends in Robot Perception*, 2023

## TECHNOLOGY TRANSFER

| Title   | Co-Inventors   | Date Filed | Application Status<br>(Provisional or Issued) | Patent Number | Impact<br>(e.g., Licensed and/or product in market, etc.) |
|---|--|------------|---|---------------|---|
| Robust Data-Driven Run-to-Run Control via One-Step Constrained Optimization for Automated Serial Sectioning | R. Oakley<br>C. Danielson                                    | Feb 2025   | Pending                                       |               |   |
| A System and Method for Enforcing Operational Hard-Constraints for An Air Conditioner                       | C. Danielson<br>G. Azeez<br>A. Kashani,                      | April 2024 | Pending                                       |               |   |
| System and method for controlling motion of a vehicle technical field                                       | S. Di Cairano<br>C. Danilson<br>D. Chen                      | Oct 2021   | Issued  | US11,731,655  | Product in market   |
| Extremum seeking control system and a method for controlling a system                                       | C. Danielson<br>A. Chakrabarty                               | March 2021 | Issued  | US11,899,409  |   |
| Extremum Seeking Control with Stochastic Gradient Estimation  | A. Chakrabarty<br>C. Danielson<br>S. Bortoff<br>C. Laughman, | March 2021 | Issued  | US 1,467,544  |   |
| System and method for feasibly positioning servomotors with unmodeled dynamics                              | A. Chakrabarty<br>C. Danielson<br>Y. Wang                    | July 2020  | Issued  | US11,392,104  |   |
| System and method for wheel-slip prevention in railway vehicles with pneumatic brakes                       | C. Danielson<br>S. Di Cairano                                | Jan 2020   | Issued  | US11,584,341  | Product in market   |

|  |  |             |        |              |                   |
|--|--|-------------|--------|--------------|-------------------|
| Receding horizon state estimator   | H. Ahn<br>C. Danielson                                   | July 2019   | Issued | US11,124,196 |                   |
| System and method for data-driven control of constrained system  | A. Chakrabarty<br>R. Quirynen<br>C. Danielson<br>W. Gao  | March 2019  | Issued | US11,106,189 |                   |
| Symmetry Alternating Direction Method of Multipliers   | C. Danielson   | July 2018   | Issued | US10,795,330 |                   |
| System And Method for Controlling Motion of Vehicle with Variable Speed  | K. Berntorp<br>C. Danielson<br>A. Weiss<br>S. Di Cairano | June 2018   | Issued | US11,091,158 | Product in market |
| System And Method for Generating a Controller for Multi-zone Heating, Ventilation, and Air Conditioning System | C. Danielson   | July 2017   | Issued | US10,488,068 |                   |
| System And Method for Controlling Lateral Motion of Vehicle  | K. Berntorp<br>A. Weiss<br>C. Danielson<br>S. Di Cairano | March 2017  | Issued | US10,994,729 | Product in market |
| Methods And Systems for Path Planning Using a Network of Safe-sets   | C. Danielson<br>A. Weiss<br>K. Berntorp<br>S. Di Cairano | Nov 2016    | Issued | US10,012,988 | Product in market |
| Train Automatic Stopping Control with Quantized Throttle and Braking”  | C. Danielson<br>S. Di Cairano                            | August 2016 | Issued | US10,093,331 | Product in market |
| System And Method for Controlling Multi-zone Vapor Compression System  | D. Burns<br>J. Zhou<br>C. Danielson<br>S. Di Cairano     | June 2016   | Issued | US10,094,598 | Product in market |
| Model Predictive Control with Uncertainties  | S. Di Cairano<br>C. Danielson                            | June 2015   | Issued | US10,281,897 |                   |

Only domestic patents listed. Most of the issued patents above were also patented in Japan, China, and the European Union.

### ***Other major entrepreneurial activities***

1. Small Business Technology Transfer (STTR) MDA23-T002 Phase II, “Missile Defense Agency AI-Informed Algorithms Combined with Differential Game Theory to Support Swarm-on-Swarm Engagements” in collaboration with *Stellar Science*, Missile Defense Agency, not awarded.

2. Small Business Innovative Research (SBIR) Grant FA8650-07-M-1210: “Micro Electro-Mechanical Systems (MEMS)-Based Adaptive Optics” during start-up *Sequoia Technologies*, Department of Defense – Air Force. Amount: \$100,000.00, June 2007 - April 2008
3. Small Business Innovative Research (SBIR) Grant FA8650-08-C-1415: “Miniaturized Long-Range Free Space Optical Communication Systems for Mobile Platforms” during start-up *Sequoia Technologies*, Department of Defense – Air Force. Amount: \$740,958.00, May 2008 - September 2010

***Other industry and government interactions***

- Air Force Research Laboratory Summer Faculty Fellow (SFFP), Kirtland Air Force Base, (2021, 2022, 2023).

**MENTORING**

**Mentoring of postdoctoral researchers and visiting scholars**

| Name          | Last Degree Date | Prior Affiliation | Position Title Dates        | Research Project                            | Funding PI |
|---------------|------------------|-------------------|-----------------------------|---|------------|
| Shirin Panahi | PhD 2020         | UNM               | Postdoc Fall 2020-Fall 2021 | Symmetry exploiting optimization algorithms | Start-up   |

**Mentoring of PhD and Master’s Students**

***Committee Chaired (graduated)***

| Student Name     | Degree and Program | Graduation Date<br>(Degree progress if not yet graduated) | Names of Thesis Committee Members                         | Thesis Title   | Source of Funding & PI             |
|------------------|--------------------|---|---|--|------------------------------------|
| Ali Kashani*     | PhD, ME            | Spring 2025   | C. Danielson<br>M. Oishi<br>R. Fierro<br>W. Wan           | Data-Driven Constrained Control  | NSF<br>NSF                         |
| Scott Shore      | PhD, ME            | Spring 2023   | C. Danielson<br>C. Christodoulou<br>J. Russell<br>S. Lane | Extremum Seeking Control Algorithms for Extremely High Frequency Antenna System Pointing | COSMIAC                            |
| Damian Gallegos* | MS, ME             | Summer 2022   | C. Danielson<br>J. Madison<br>M. Oishi                    | Run-to-Run Control via Constrained Optimization of a Mechanical Serial-Sectioning System | Sandia                             |
| Ganiyu Azeez     | MS, ME             | Fall 2023   | C. Danielson<br>P. Vorobieff<br>M. Oishi                  | Reference Governor for Air Conditioner   | NSF<br>LDRD<br>Nigerian-Government |



|                  |        |             |  |   |                |
|------------------|--------|-------------|--|---|----------------|
| Rhianna Oakley*  | MS, ME | Fall 2024   | C. Danielson<br>T. Khraishi<br>A. Polonsky | Robust Data-Driven Run-to-Run Control via One-Step Constrained Optimization for Automated Serial Sectioning | Sandia<br>SSTI |
| Trazon Jimerson* | MS, ME | Summer 2025 | C. Danielson<br>M. Oishi<br>R. Fierro      | Graph Based Planning with Guarantees  | NSF<br>AFRL    |
| Zachary Bernius* | MS, ME | Summer 2024 | C. Danielson<br>M. Oishi<br>K. Armijo      | Tuning of Real-Time Optimization of Heliostat Concentrated Solar Power                                      | Sandia         |

\* Denotes graduated with distinction

***Committee Chaired (in progress)***

|                 |                        |                           |  |     |                     |
|-----------------|------------------------|---------------------------|--|-----|---------------------|
| Teo Brandt      | PhD (in progress), ME  | Comprehensive Exam Passed | C. Danielson<br>R. Fierro<br>W. Wan<br>S. Phillips | TBD | SURI<br>SSTI<br>NSF |
| Rhianna Oakley  | PhD (in progress), ME  | Qualifying Exam Passed    | TBD  | TBD | SSTI<br>AFRL        |
| Trazon Jimerson | PhD (in progress), ME  | Pre-Qualifying Exam       | TBD  | TBD | RAISE               |
| Daniel Garcia   | PhD (in progress), ECE | Pre-Qualifying Exam       | TBD  | TBD | COSMIAC             |
| Alex Atcitty    | MSc (in progress), ME  |                           | TBD  | TBD | AFRL<br>RAISE       |
| Steven Kao      | MSc (in progress), ECE |                           | TBD  | TBD | Start-up            |

***Committees Served***

| Student Name | Degree and Program | Graduation Date<br>(Degree progress if not yet graduated) | Name of Thesis Committee Chair | Names of Thesis Committee Members                       | Thesis Title   |
|--------------|--------------------|---|--------------------------------|---|--|
| Adam Thorpe  | PhD, ECE           | Spring 2023   | M. Oishi                       | M. Oishi<br>C. Danielson<br>E. Tsiropoulou<br>R. Fierro | Data-Driven Stochastic Optimal Control Using Hilbert Space Embeddings of Distributions |

|                          |          |             |           |   |   |
|--------------------------|----------|-------------|-----------|---|---|
| Elijah Wyckoff           | MS, ME   | Summer 2022 | F. Moreu  | F. Moreu<br>C. Danielson<br>R. Fierro                             | Augmented Reality (AR) for Human Control of Engineering Tasks   |
| Georgia Kaufman          | MS, ECE  | Spring 2023 | M. Oishi  | M. Oishi<br>C. Danielson<br>G. Balakishnana<br>R. Fierro          | Data-driven Porosity Prediction for Directed Energy Deposition  |
| Isaac Seslar             | MS, ECE  | Summer 2021 | M. Oishi  | M. Oishi<br>C. Danielson<br>R. Fierro<br>K. Lang                  | Airborne Counter-Uncrewed Systems with Runtime Assurance Control  |
| Isabella Aldred          | MS, ECE  | Fall 2021   | A. Bidram | A. Bidram<br>R. Fierro<br>C. Danielson                            | Smart-grid  |
| Jean-Elie Pierre         | PhD, ECE | Fall 2023   | R. Fierro | R. Fierro<br>X. Sun<br>M. Pattichis<br>C. Danielson               | Securing The Skies: Safety-Constrained Decentralized Multi-UAV Coordination with Deep Reinforcement Learning            |
| Jee Won Choi             | PhD, ECE | Fall 2021   | A. Bidram | A. Bidram<br>R. Fierro<br>C. Danielson                            | Frequency and Voltage Control of Microgrids using a Distributed Finite-Time and Event-Triggered Strategy                |
| Kaveh Malek              | PhD, ME  | Fall 2024   | F. Moreu  | F. Moreu<br>C. Danielson<br>A. Mueen<br>C. Farrar                 | Integration of Pattern Recognition, Convolutional Networks, and Robotics Fundamentals with Wearable Immersive Platforms |
| Paul Onor                | MS, ECE  | Spring 2022 | M. Oishi  | M. Oishi<br>R. Fierro<br>C. Danielson                             | Stochastic Optimal Shared Control with Non-Gaussian Processes   |
| Riley McCarthy           | MS, ME   | Fall 2023   | R. Fierro | R. Fierro<br>C. Danielson<br>Sandia                               | Control of Quadrotors   |
| Vignesh Sivaramakrishnan | PhD, ECE | Fall 2024   | M. Oishi  | M. Oishi<br>R. Fierro<br>A. Bidram<br>C. Danielson<br>P. Tsiotras | Theory and algorithms to learn, propagate, and exploit uncertainty for stochastic optimal control of dynamical systems  |

|             |          |             |           |  |  |
|-------------|----------|-------------|-----------|--|--|
| Longsen Gao | PhD, ECE | Summer 2023 | R. Fierro | R. Fierro<br>C. Danielson<br>A. Bidram<br>M. Oishi | Adaptive and Predictive Control for On-Orbit Servicing |
|-------------|----------|-------------|-----------|--|--|

#### **Mentoring of Undergraduate Students, High School Students, and Teachers**

| <b>Name</b>          | <b>Program / School</b> | <b>Mentoring Years</b> | <b>Research Project</b>  | <b>Source of Funding &amp; PI</b>    |
|----------------------|-------------------------|------------------------|--|--------------------------------------|
| Christian Talamantes | ECE                     | 2027                   | Sandia National Laboratories, Laboratory Directed Research and Development, Vulnerability, Reliability, Survivability of Solid-State Transformers with respect to Electromagnetic Pulse and Physical Attacks | Sandia                               |
| Kevin Maresca        | ME                      | 2021                   | Motion planning for cars   | Start-up                             |
| Wilder Parks         | ME                      | 2024                   | Hardware/Software Interfacing for Autonomous Vehicles  | UNM SOE Engineering Student Services |
| Kevin Duron          | ME                      | 2022                   | Motion planning for cars   | UNM SOE Engineering Student Services |
| Joshua Gabbard       | ME                      | 2024                   | Hardware/Software Interfacing for Autonomous Vehicles  | UNM SOE Engineering Student Services |
| Yubei Shu            | ME                      | 2024                   | Hardware/Software Interfacing for Autonomous Vehicles  | UNM SOE Engineering Student Services |
| Joy Lantz            | ECE                     | 2024                   | Data-Driven Control of Solid-State Transformers  | UNM SOE Engineering Student Services |
| Rick Wolfley         | CS                      | 2023                   | Motion Planning for Autonomous Vehicles  | UNM SOE Engineering Student Services |
| Caleb Shaw           | ME                      | 2022                   | Advanced Control for Energy Systems  | UNM SOE Engineering Student Services |
| Si Hyun Jung         | CS                      | 2022                   | Advanced Control for Energy Systems  | UNM SOE Engineering Student Services |

#### **Student Mentoring Activities**

- Faculty Mentor, UNM Engineering Student Success Center (ESS), STEM Mentoring Program, 2020-Present

- Award on Recommendation: Trazon Jimerson, RAISE Fellowship, 2 years of funding for PhD (tuition, fees, stipend)
- Award Recommendation: Alex Atcitty, RAISE Fellowship, 1 year of funding for Masters (tuition, fees, stipend)
- Award on Recommendation: Rhianna Oakley, Year-Round Intern, Sandia National Laboratories, 2 years of funding for Masters (stipend)
- Award on Recommendation: Zachary Bernius, Year-Round Intern, Sandia National Laboratories, 2 years of funding for Masters (stipend)
- Award on Recommendation: Haden Harper, Year-Round Intern, Sandia National Laboratories, 2 years of funding for Masters (stipend)
- Award on Recommendation: Bryan Medina De La Paz, Student Grant Award (Travel), IFAC Modeling Estimation and Control Conference (MECC) 2025, Funds conference registration
- Award on Recommendation: Ali Kashani, Student Grant Award (Travel), IEEE Conference on Decision and Control (CDC) 2022, funds travel to conference
- Award on Recommendation: Ali Kashani, Poster Competition, ASME 2024 International Mechanical Engineering Congress and Exposition, 2024, funds for travel
- Award on Recommendation: Ali Kashani, UNM Doctoral Conference Presentation Award, 2022, funds for travel

## GRANTS AND CONTRACTS

### *External to UNM:*

|  |  |
|--|--|
| 1. Agency/Title of Grant                                     | National Science Foundation, NRT-AI Responsive and Resilient AI for Autonomous Systems Engineering (RAISE) |
| 2. Duration of Funding                                       | June 2024 – May 2029   |
| 3. Total amount of award                                     | \$2,001,573  |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator, \$23,406 (0.2 months of summer salary to review applications)                   |
| 5. Co-investigators  | Meeko Oishi (Principal Investigator), Melanie Moses, Rafael Fierro (Co-Principal Investigators)            |

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|--|---|
| 1. Agency/Title of Grant                                     | Air Force Office of Scientific Research (AFOSR), Space Strategic Technical Institute (SSTI) for In-Space Operations   |
| 2. Duration of Funding                                       | April 2025 – March 2030 (early terminated)  |
| 3. Total amount of award                                     | \$47,000,000 (\$1,216,000 to UNM)   |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator, \$608,000  |
| 5. Co-investigators  | Rafael Fierro (UNM), Texas A&M, Prairie View A&M, Southwest Research Institute, University of Texas Austin, University of Texas El Paso, Carnegie Mellon University |

|                          |  |
|--------------------------|--|
| 1. Agency/Title of Grant | Air Force Research Laboratories, Spacecraft Attitude Motion Planning with Dynamic Keep-Out Zones |
| 2. Duration of Funding   | May 2024 – Dec 2024  |
| 3. Total amount of award | \$120,000  |

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| 4. Your role & amount for which you are directly responsible | Principal Investigator, \$60,000 |
| 5. Co-investigators  | None                             |

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|--|--|
| 1. Agency/Title of Grant                                     | Air Force Research Laboratories, Spacecraft Attitude Motion Planning with Dynamic Keep-Out Zones |
| 2. Duration of Funding                                       | Jan 2024 – Present   |
| 3. Total amount of award                                     | \$60,000   |
| 4. Your role & amount for which you are directly responsible | Principal Investigator, \$60,000   |
| 5. Co-investigators  | None   |

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| 1. Agency/Title of Grant                                     | National Science Foundation, Data-Driven Invariant Sets for Provably Safe Autonomy |
| 2. Duration of Funding                                       | August 2023 – July 2026  |
| 3. Total amount of award                                     | \$670,000  |
| 4. Your role & amount for which you are directly responsible | Principal Investigator, \$310,927  |
| 5. Co-investigators  | Leila Bridgeman (Duke) Co-Principal Investigator                                   |

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|--|--|
| 1. Agency/Title of Grant                                     | Sandia National Laboratories, Laboratory Directed Research and Development, Vulnerability, Reliability, Survivability of Solid-State Transformers with respect to Electromagnetic Pulse and Physical Attacks |
| 2. Duration of Funding                                       | April 2024-March 2026  |
| 3. Total amount of award                                     | \$1,275,000  |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator, \$44,000  |
| 5. Co-investigators  | Sandia National Laboratories, New Mexico State University  |

|  |   |
|--|---|
| 1. Agency/Title of Grant                                     | Mitsubishi Electric Research Laboratories, Gift |
| 2. Duration of Funding                                       | 2023, 2021                                      |
| 3. Total amount of award                                     | \$10,000  |
| 4. Your role & amount for which you are directly responsible | Principal Investigator, \$10,000                |
| 5. Co-investigators  | None  |

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|--------------------------|--|
| 1. Agency/Title of Grant | Air Force Office of Scientific Research (AFOSR), Space University Research Initiative, Breaking the Launch-Once Use-Once Paradigm. |
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| 2. Duration of Funding                                       | April 2022 – March 2027  |
| 3. Total amount of award                                     | \$4,950,000  |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator, \$294,635                           |
| 5. Co-investigators  | Rafael Fierro (UNM-ECE), Carnegie Mellon University, Texas A&M |

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|--|--|
| 1. Agency/Title of Grant                                     | National Science Foundation, Negotiated Planning for Stochastic Control of Dynamical Systems |
| 2. Duration of Funding                                       | August 2021 – July 2024  |
| 3. Total amount of award                                     | \$750,000  |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator, \$245,863   |
| 5. Co-investigators  | Meeko Oishi (UNM-ECE), Behcet Acikmese (University of Washington)                            |

***Internal to UNM:***

None

***Pending proposals***

|  |   |
|--|---|
| 1. Agency/Title of Grant                                     | National Science Foundation, CAREER Exploiting Symmetry for Extreme-Scale Constrained Dynamical Systems |
| 2. Duration of Funding                                       | August 2026 – July 2031   |
| 3. Total amount of award                                     | \$599,623   |
| 4. Your role & amount for which you are directly responsible | Principal Investigator, \$599,623   |
| 5. Co-investigators  | None  |

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|--|---|
| 1. Agency/Title of Grant                                     | National Science Foundation, Materials Research Science and Engineering Centers, Multiscale Architecture Polymeric Materials for Biomanufacturing |
| 2. Duration of Funding                                       | TBD   |
| 3. Total amount of award                                     | TBD   |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator   |
| 5. Co-investigators  | TBD   |

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|--------------------------|---|
| 1. Agency/Title of Grant | National Science Foundation, EPSCoR Collaborations for Optimization Research Ecosystems, A Statewide Consortium for |
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|--|---|
|  | Drone Technology, STEM Education, and Community Engagement in New Mexico                    |
| 2. Duration of Funding                                       | January 2026 – December 2029  |
| 3. Total amount of award                                     | \$1,200,000   |
| 4. Your role & amount for which you are directly responsible | Senior Personnel, \$117,030   |
| 5. Co-investigators  | Fernando Moreu (UNM-Civil), New Mexico State University, New Mexico Institute of Technology |

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|--|---|
| 1. Agency/Title of Grant                                     | National Institute of Standards and Technology (NIST) Manufacturing USA Institute, Promoting Resilient Industry with Manufacturing and Emerging Artificial Intelligent (PRIME-AI)   |
| 2. Duration of Funding                                       | April 2025 – March 2030   |
| 3. Total amount of award                                     | \$70,000,000  |
| 4. Your role & amount for which you are directly responsible | Co-Principal Investigator, \$575,381 (cost-share limited)   |
| 5. Co-investigators  | Xiang Sun (UNM-ECE), Christos Christodoulou (UNM-ECE), Michael Devetsikiotis (UNM-ECE), Rafael Fierro (UNM-ECE), Oregon State University, Arizona State University, University of California Berkeley, University of Daytona, University of Utah. |

## SERVICE

### Service to the Department

- Mechanical Engineering Qualifying Exams:
  - Mathematics Qualifying Exam: 2021, 2022, 2023, 2024, 2025
  - Controls Qualifying Exam: 2023, 2024
- Accreditation Committee, Department of Mechanical Engineering, Accreditation Board for Engineering and Technology (ABET)
  - Designed homework and exam questions to assess the ABET learning outcomes below. Gathered data and drafted reports that assess success of learning outcomes, providing both qualitative and quantitative assessment.
    1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
    2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
    4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
  - Meeting with ABET representative during 2024 re-accreditation process.
  - Dates: Fall 2020 – Present
- Faculty Search Committee 2022, Mechanical Engineering Department.

## Service to the School and University

- University of New Mexico – Sandia National Laboratories Collaborations Roadmaps
- External board member, Amrita University (UNM's sister school in India), Board of Studies for the Bachelors of Technology Automation and Robotics Program

## Service to the Discipline / Profession

- Panelist, National Science Foundation (NSF), 2025
- Associate Editor, *IEEE Transactions on Control Systems Technology*, October 2024 – Present.
- Associate Editor, *IEEE Control Systems Society, Conference Editorial Board*, 2019 – 2024.
- Panelist, National Science Foundation (NSF), 2024
- Panelist, Department of Energy (DoE), 2023
- Panelist, National Science Foundation (NSF), 2022
- International Programming Committee Member, *Nonlinear Model Predictive Control Conference*, 2018, 2021 (held every 3 years).
- Panelist, National Science Foundation (NSF), 2020
- Panelist, Air Force Office of Scientific Research (AFOSR), 2018
- American Society of Mechanical Engineers (ASME), Energy Systems Technical Committee
  - Organize special sessions at annually at the American Control Conference (ACC) 2018, 2019, 2020, 2021, 2022, the Dynamic Systems and Control Conference (DSCC) 2019, 2020, the Modeling Estimation and Control Conference (MECC) 2021, 2022.
  - Judge for annual best paper award at the American Control Conference (2018, 2019, 2020)
- Conference Chair or Co-Chair:
  - Co-Chair, “Optimal Control I”, *American Control Conference*, 2025, Denver Colorado United States
  - Co-Chair, “Adaptive Control I”, *American Control Conference*, 2025, Denver Colorado United States
  - Co-Chair, “Constrained Control I”, *American Control Conference*, 2024, Toronto Canada
  - Co-Chair, “Robotics”, *American Control Conference*, 2023, San Diego California United States
  - Co-Chair, “Optimization and Model Predictive Control I”, *Conference on Control Technology and Applications*, 2022, Trieste Italy,
  - Co-Chair, “Battery Modeling and Estimation”, *American Control Conference*, 2022, Atlanta Georgia United States
  - Co-Chair, “Hybrid Systems I”, *American Control Conference*, 2020, Denver Colorado United States (held online)
  - Co-Chair, “Networked Control Systems III”, *American Control Conference*, 2019, Philadelphia Pennsylvania United States
  - Co-Chair, “Machine Learning I”, *IEEE Conference on Decision and Control*, 2018, Miami Florida, United States
  - Chair, “Tuesday Morning Regular Session 2 (Optimization)”, *Nonlinear Model Predictive Control Conference*, 2018, Madison Wisconsin United States
  - Co-Chair, “Tuesday Morning Regular Session 1 (Optimization)”, *Nonlinear Model Predictive Control Conference*, 2018, Madison Wisconsin United States
  - Co-Chair, “Predictive Control for Linear Systems”, *American Control Conference*, 2017, Seattle Washington United States
  - Chair, “Switched Systems I”, *IEEE Conference on Decision and Control*, 2016, Las Vegas Nevada United States
  - Chair, “Friday Afternoon Regular”, *Nonlinear Model Predictive Control Conference*, 2015, Seville Spain
  - Co-Chair, “Linear Systems I”, *IEEE Conference on Decision and Control*, 2015, Osaka Japan



- Chair, “Predictive Control for Linear Systems”, *American Control Conference*, 2015, Chicago Illinois United States
- Chair, “Predictive Control I”, *American Control Conference*, 2014, Portland Oregon, United States.
- Journal Reviewer: *IEEE Transactions on Automatic Control*, *IEEE Transactions of Control Systems Technology*, *Automatica*, *Acta Astronautica*, *Optimal Control Applications and Methods*, *International Journal of Robust and Nonlinear Control*, *International Journal on Intelligent Robotics and Applications*
- Conference Reviewer: *American Control Conference*, *IEEE Conference on Decision and Control*, *European Control Conference*, *Dynamic Systems and Control Conference*, *Nonlinear Optimal Control Symposium*, *Nonlinear MPC Conference*, *Conference on Control Technology and Application*, *IEEE/ASME Modeling Estimation and Control Conference*.

### **Service and Engagement to the Community / Public**

None

### **PROFESSIONAL DEVELOPMENT**

- Training: Responsible Conduct of Research Training, Spring 2025
- Workshop: Technical Communication without Jargon, Spring 2024
- Training: Streamlyne Training, Spring 2023
- Workshop: Early Career Lunch and Learn: Implementing your Research Strategic Plan, Spring 2023
- Workshop: DOE and EPSCoR Track 4 Early Career Grant Workshop, Spring 2023
- Workshop: Handling Student Academic Dishonesty Incidents, Fall 2022
- Networking Event: Combat Dining-In, Military and DoD Civilian Networking Opportunity, Summer 2022
- Webinar: Naval STEM HBCU/MI Program, Fall 2022
- Webinar: Naval STEM HBCU/MI Program, Spring 2022
- Workshop: CAREER Workshop Series, Summer 2022
- Workshop: CAREER Workshop Series, Summer 2022
- Workshop: CAREER Workshop Series, Spring 2022
- Workshop: NM EPSCoR Early Career Leadership Workshop, Spring 2022
- Workshop: Broader Impacts, Fall 2020
- Workshop: NSF CAREER Workshop, Fall 2020
- Workshop: Successful Grant Writing, Fall 2020