Conor Rowan

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Education

University of Colorado Boulder — Boulder, Colorado
Aerospace Engineering PhD Student (coadvised by Professors Alireza Doostan and Kurt Maute) — 08/2022 - Present

University of Colorado Boulder — Boulder, Colorado
Master of Science in Aerospace Engineering — 08/2022 - 12/2024

Dartmouth College — Hanover, New Hampshire
Bachelor of Engineering in Mechanical Engineering — 06/2016 - 06/2019

Bard College at Simon's Rock — Great Barrington, Massachusetts
Bachelor of Arts in Mathematics — 09/2014 - 06/2018

Research Interests

- Engineering mechanics
- Physics-informed machine learning
- Data-driven modeling
- Inverse problems
- Philosophy of science

Professional Experience

Boeing Commercial Airplanes — Seattle, Washington
Liaison Engineer — 09/2019 - 07/2022

- Liaison between manufacturing and design to troubleshoot production issues and ensure part compliance to engineering requirements for 737, 747, 767 and 777 airplane programs
- Lead a number of independent physics-based modeling and process improvement projects

Boeing Commercial Airplanes — Frederickson, Washington
Production Engineering Intern — 06/2018 - 09/2018

- Gained proficiency with Geometric Dimensioning and Tolerancing (GD&T) and complex engineering drawings

Teaching, Mentoring & Service

Reviewer — Boulder, Colorado
Engineering with Computers, Journal of Computational Physics — 03/2025 - Present

- Volunteer to review and provide feedback on submissions to the journal

Undergraduate research advisor — Boulder, Colorado
University of Colorado Boulder, Aerospace Engineering — 05/2025 - Present

- Advising two undergraduate research assistants (Kai Hampleman & Finn Murphy-Blanchard) on ongoing physics-informed machine learning research projects
- Advising one undergraduate student (Henry Robertson) on chaos and nonlinear dynamics independent research project

Undergraduate research advisor — Boulder, Colorado
University of Colorado Boulder, Aerospace Engineering — 12/2024 - 05/2025

- Worked with undergraduate students (Imad Dar & Eddie Magana Orantes) on semester-long projects in machine learning and computational mechanics

Tech & myth conference — Boulder, Colorado
University of Colorado Boulder, ATLAS Institute — 10/2024 - Present

- Helped organize conference on interdisciplinary approaches to understanding the societal impacts of technology

Partnership for informal science education in the community (PISEC) — Boulder, Colorado
University of Colorado Boulder, Physics Department — 10/2024 - Present

- Work with local high-school seniors on year-long engineering course projects and formation of STEM identity

Seminar on history, philosophy & ethics of science Boulder, Colorado
University of Colorado Boulder, Aerospace Engineering 09/2024 - 02/2025
- Founded and organized graduate student seminar series in the aerospace department

Philosophy of technology reading group Boulder, Colorado
University of Colorado Boulder, Benson Center for Western Civilization 09/2024 - 07/2025
- Founded and organized reading group for graduate students and community members

Graduate student mentor Boulder, Colorado
University of Colorado Boulder, Aerospace Engineering 08/2023 - Present
- Mentor for incoming first-year aerospace masters and PhD students

Teaching assistant Boulder, Colorado
University of Colorado Boulder, "Statics, Structures & Materials" 08/2022 - 12/2022
- Lead problem sessions, graded assignments, and helped with administration

Teaching assistant, tutor Hanover, New Hampshire
Dartmouth College, "Engineering Systems" 01/2019 - 03/2019
- Lead problem sessions and graded assignments

Publications

- Rowan, C., Miller, N., Doostan, A., Gayman, A., Maute, K., "Analyzing and designing experiments for the thermal conductivity of fibrous materials used in atmospheric entry applications," In preparation.
- Rowan, C., "Can scientific discovery be automated: on the prospects of equation discovery and symbolic regression," In preparation.
- Rowan, C., "Notes on an intuitive approach to elliptic homogenization," Preprint, 2026.
- Rowan, C., "Publish or parish: on the theology of modern physics," Submitted to Sigbovik (satire), 2026.
- Rowan, C., "On the possibility of small networks for physics-informed learning," Towards Data Science, 2026.
- Rowan, C., Murphy-Blancahrd, F., "Visualizing the loss landscape of physics-informed neural networks," Preprint, 2026.
- Rowan, C., "The explicit constraint force method for optimal experimental design," Preprint, 2026.
- Rowan, C., "Extending the explicit constraint force method to inverse problems," Preprint, 2025.
- Rowan, C., "On the failure of ReLU activation for physics-informed machine learning," Preprint, 2025.
- Rowan, C., "Finding geodesics with the Deep Ritz method," Preprint, 2025.
- Rowan, C., "Nonlinear discretizations and Newton's method: characterizing stationary points of regression objectives," Preprint, 2025.
- Rowan, C., Doostan, A., Maute, K., "Boundary condition enforcement with PINNs: a comparative study and validation on 3D geometries," Preprint, 2025. Submitted for publication.
- Norman, G., Rowan, C., Doostan, A., "Learning gradient flow: using equation discovery to accelerate engineering optimization," Submitted for publication.
- Rowan, C., Evans, J., and Maute, K., "Variational volume reconstruction using the Deep Ritz method," Preprint, 2025. Submitted for publication.
- Rowan, C., Evans, J., Maute, K., and Doostan, A., "Solving engineering eigenvalue problems with neural networks using the Rayleigh quotient," Internal Journal for Numerical Methods in Engineering, 2025.
- Rowan, C., and Doostan, A., "On the definition and importance of interpretability in scientific machine learning," Preprint, 2025. Journal of Machine Learning for Modeling and Computing, 2026.
- Rowan, C., Maute, K., and Doostan, A., "Physics-informed solution reconstruction in elasticity and heat transfer using the explicit constraint force method," Computer Methods in Applied Mechanics & Engineering, 2025.
- Rowan, C., "A thermoelastic plate model for shot peen forming metal panels based on effective torque," Journal of Manufacturing and Materials Processing, 2025.
- "The Untapped Value of Engineering Education," Colorado Engineer Magazine, 2024.
- "Human Systems and Complexity," Colorado Engineer Magazine, 2023.
- "Danger of Deepfakes Extend Far Beyond Misinformation," Colorado Engineer Magazine, 2023.

Honors and Awards

- Invited to participate in 2026 "Rising Stars in Computational and Sata Science" workshop
- June Harper PhD Fellowship through Benson Center for Western Civilization
- National Defense Science and Engineering Graduate (NDSEG) fellowship
- "Introduction to Complexity" certificate through the Santa Fe institute, attended 2025 Complex Systems Summer School
- Graduate peer mentoring impact recognition award
- Second place in annual interdisciplinary tech ethics competition hosted by the Wolf Law School at CU Boulder
- Colorado Engineer Magazine writer's scholarship
- KD Woods scholarship for past academic achievement
- Boeing "Material Review Board" (MRB) certification
- Merit scholarship from Bard College at Simon's Rock

Miscellaneous

- EMT, Wilderness EMT, and AIARE I avalanche certifications
- Active musician and rockclimber
- Trained Single Pitch Instructor (SPI)