

Thomas Cohn

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Education

Massachusetts Institute of Technology

Ph.D. in Computer Science and Engineering

- Advisor: Russ Tedrake
- GPA 5.00/5.00

S.M. in Electrical Engineering and Computer Science

- Advisor: Russ Tedrake
- Thesis Title: [Motion Planning along Manifolds with Geodesic Convexity and Analytic Inverse Kinematics](#)

Cambridge, Massachusetts

Sep. 2022 - Present

University of Michigan

B.S.E. Computer Science and Engineering

B.S. Honors Mathematics

- Magna Cum Laude
- Engineering Honors Program
- Minors in Statistics and Music
- GPA 3.74/4.00

Ann Arbor, Michigan

Sep. 2017 - May 2022

Honors and Awards

- 2024 Best Paper Award in Robot Manipulation Finalist, ICRA
2023 Best Paper Award Finalist, RSS
2022 Outstanding Undergraduate Research Award, University of Michigan
2021 1st Place Award, University of Michigan Engineering Research Symposium

Publications

Conference Publications

- [C3] Thomas Cohn, Seiji Shaw, Max Simchowitz, and Russ Tedrake. "Constrained bimanual planning with analytic inverse kinematics". In: *2024 IEEE International Conference on Robotics and Automation (ICRA)*. IEEE. 2024, pp. 6935–6942. **Best Paper in Robot Manipulation Award Finalist**.
[C2] Thomas Cohn, Mark Petersen, Max Simchowitz, and Russ Tedrake. "Non-Euclidean Motion Planning with Graphs of Geodesically-Convex Sets". In: *Proceedings of Robotics: Science and Systems (RSS)*. Daegu, Republic of Korea, July 2023. **Best Paper Award Finalist**.
[C1] Thomas Cohn, Nikhil Devraj, and Odest Chadwicke Jenkins. "Topologically-informed atlas learning". In: *2022 International Conference on Robotics and Automation (ICRA)*. IEEE. 2022, pp. 3598–3604.

Journal Publications

- [J3] Shruti Garg, Thomas Cohn, and Russ Tedrake. "Planning Shorter Paths in Graphs of Convex Sets by Undistorting Parametrized Configuration Spaces". In: *IEEE Robotics and Automation Letters* (2025).
[J2] Thomas Cohn, Mark Petersen, Max Simchowitz, and Russ Tedrake. "Non-Euclidean motion planning with graphs of geodesically convex sets". In: *The International Journal of Robotics Research* (2024).
[J1] Thomas Cohn, Odest Chadwicke Jenkins, Karthik Desingh, and Zhen Zeng, "TSBP: Tangent Space Belief Propagation for Manifold Learning". In: *IEEE Robotics and Automation Letters* 5.4 (2020), pp. 6694–6701.

Preprints

- [P3] Thomas Cohn and Russ Tedrake. "Sampling-Based Motion Planning with Discrete Configuration-Space Symmetries". In: *arXiv preprint arXiv:2503.00614* (2025). Accepted for Publication at IROS 2025.
[P2] Lexi Foland, Thomas Cohn, Adam Wei, Nicholas Pfaff, Boyuan Chen, and Russ Tedrake. "How Well do Diffusion Policies Learn Kinematic Constraint Manifolds?" In: *arXiv preprint arXiv:2510.01404* (2025).
[P1] Peter Werner, Thomas Cohn*, Rebecca H. Jiang*, Tim Seyde, Max Simchowitz, Russ Tedrake, and Daniela Rus. "Faster Algorithms for Growing Collision-Free Convex Polytopes in Robot Configuration Space". In: *arXiv preprint arXiv:2410.12649* (2024). Accepted for Publication at ISRR 2024. *Denotes equal contribution.

Workshop Papers

- [W1] Lexi Foland, **Thomas Cohn**, Adam Wei, Nicholas Pfaff, Boyuan Chen, and Russ Tedrake. “How Well do Diffusion Policies Learn Kinematic Constraint Manifolds?” In: *RoDGE: Robotic Data Generation and Evaluation. 2025 International Conference on Intelligent Robots and Systems (IROS)*. 2025.

Presentations

- 2025 **Invited Talk**, “Non-Euclidean Motion Planning with Graphs of Geodesically-Convex Sets”
ICCOPT
- 2025 **Oral Presentation**, “Non-Euclidean Motion Planning with Graphs of Geodesically-Convex Sets”
LIDS Student Conference
- 2024 **Oral + Poster Presentation**, “Constrained Bimanual Planning with Analytic Inverse Kinematics”
ICRA
- 2023 **Poster Presentation**, “Constrained Bimanual Planning with Analytic Inverse Kinematics”
Northeast Robotics Colloquium
- 2023 **Oral + Poster Presentation**, “Non-Euclidean Motion Planning with Graphs of Geodesically-Convex Sets”
RSS
- 2022 **Oral + Poster Presentation**, “Topologically-Informed Atlas Learning”
ICRA
- 2021 **Poster Presentation**, “Topologically-Informed Atlas Learning”
University of Michigan Engineering Research Symposium – 1st Place Award
- 2021 **Poster Presentation**, “Coordinate Chart Particle Filter for Deformable Object Pose Estimation”
University of Michigan Engineering Research Symposium
- 2020 **Oral Presentation**, “TSBP: Tangent Space Belief Propagation for Manifold Learning”
IROS
- 2019 **Poster Presentation**, “TSBP: Tangent Space Belief Propagation for Manifold Learning”
University of Michigan Engeineering Research Symposium

Grants and Fellowships

- 2024 **Graduate Research Fellowship**, National Science Foundation
- 2022 **Frederick and Barbara Cronin Fellowship**, Massachusetts Institute of Technology
- 2020 **Raab Family Scholarship**, University of Michigan Marching Band
- 2019 **Wanda W. Lincoln Scholarship**, University of Michigan Marching Band
- 2017 **The Gloria Wille Bell and Carlos R. Bell Scholarship**
- 2017 **Regents Merit Scholarship**, University of Michigan

Teaching

2024 (Spring)	CSCI 5551: Introduction to Intelligent Robotic Systems , Guest Lecture Faculty Instructor: Karthik Desingh	University of Minnesota
2023 (Fall)	6.4210: Robotic Manipulation , Teaching Assistant Faculty Instructor: Russ Tedrake	Massachusetts Institute of Technology
2022 (Winter)	EECS 367: Introduction to Autonomous Robotics , Teaching Assistant Faculty Instructor: Chad Jenkins	University of Michigan
2021 (Fall)	ROB 102: Introduction to AI and Programming , Teaching Assistant Faculty Instructor: Chad Jenkins	University of Michigan
2020 (Winter)	ENGR 100-250: Microprocessors and Toys , Teaching Assistant Faculty Instructor: Peter Chen	University of Michigan
2019 (Winter)	ENGR 100-250: Microprocessors and Toys , Teaching Assistant Faculty Instructor: Peter Chen	University of Michigan

Work Experience

- 2022- **Graduate Student Research Assistant**, Massachusetts Institute of Technology, PI: [Russ Tedrake](#)
- 2016-2022 **Undergraduate Student Research Assistant**, University of Michigan, PI: [Chad Jenkins](#)
- 2021 **Curriculum Designer**, Robotics @ Marygrove
- 2017-2018 **Software Developer**, Number DNA

Extracurriculars

- 2022-Present **MIT Graduate Hillel**, President 2024-2025
2017-2022 **Michigan Marching Band**, Cymbal Section Leader 2019-2022
2017-2022 **Michigan Hockey Pep Band**
2018-2020 **Michigan Percussion Chamber Ensemble**

Service

- 2024-Present **Reviewer**, ICRA, RA-L, IROS, Acta Astronautica, Humanoids, T-RO, L-CSS, T-MECH, Neurocomputing
2024-Present **Graduate School Application Mentor**, MIT GAAP Program