

Breanne Crockett

ROBOTICIST

Education

- 2022 - Present **PhD, Computer Science**
University of Colorado Boulder
Advisor: Bradley Hayes
- 2017 - 2021 **BS in Computer Science and Engineering**, Summa Cum Laude, College Honors
University of Toledo
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Research

- Aug. 2022 – Present **Research Assistant**
Collaborative AI and Robotics Lab, University of Colorado Boulder
- Investigating multi-agent path planning and collaborative interfaces for 3D reconstruction tasks
 - Implemented multi-robot simulation environment and conducted experiments with learning from demonstration and constrained motion planning algorithms
- Jan. 2021 – Aug. 2021 **Assistant Research Staff Member in Algorithms & Visualization**
Oak Ridge National Laboratory, Oak Ridge, TN
- Developed augmented reality interface for additive and subtractive manufacturing systems
 - Created and published algorithm for slicing object for multi-build point 3D printers
- Oct. 2020 – May 2022 **Undergraduate Researcher**
Interdisciplinary Data Engineering And Science Lab, University of Toledo
- Analyzed data from digital interactive textbooks to generate statistical summaries and identify features for machine learning algorithms
 - Perform clustering and other machine learning techniques to identify trends in students' behavior
- Jun. 2021 – Aug. 2021 **SULI Research Intern**
Oak Ridge National Laboratory, Oak Ridge, TN
- Jun 2020 – Aug. 2020
- Implemented computational geometry algorithms to support slicing with an arbitrary plane in advanced additive manufacturing applications
 - Developed methods to generate toolpaths for multi-build point 3D-printers focused on the optimization of workload distribution
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Teaching

- Aug. 2023 – Dec. 2023 **Teaching Assistant**, Advanced Robotics (CSCI 5302)
University of Colorado Boulder, Boulder, CO
Prof. Bradley Hayes
- Aug. 2022 – Dec. 2022 **Teaching Assistant**, Intro to Computing (CSCI 1300)
University of Colorado Boulder, Boulder, CO
Profs. Supriya Naidu, Tom Yeh, & Michael Hofer
- Aug. 2018 – Dec. 2021 **Teaching Assistant**,
Intro to Object-Oriented Programming (EECS 1510),
Nonlinear Data Structures (EECS 2510)
University of Toledo, Toledo, OH
Profs. Lawrence Thomas & Joseph Hobbs
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Publications

- Journals Christine Chang, Maria P. Stull, **Breanne Crockett**, Emily Jensen, Clare Lohrmann, Mitchell Herbert, and Bradley Hayes. "Iteratively Adding Latent Human Knowledge withing Trajectory Optimization Specifications Improves Learning and Task Outcomes". *IEEE Robotics and Automation Letters*. (2024)
- Conferences **Breanne Crockett***, Carl Mueller*, and Bradley Hayes. "Human Demonstrations Enable Efficient Solutions to Sequential Manifold Planning Problems". *Proceedings of International Conference on Human-Robot Interaction*. (2025)
- Charles Wade, **Breanne Crockett**, Michael Borish, and Robert Maccurdy; "Determining Optimal Print Orientation Using GPU-Accelerated Convex Hull Analysis". *Proceedings of the 8th ACM Symposium on Computational Fabrication* (2023)
- Tanner Hilsabeck, **Breanne Crockett**, Amir Parsaei, Kevin S. Xu, and M.W. Liberatore. "Clustering of Animation View Times in an Interactive Textbook for Material and Energy Balances". *Proceedings of ASEE Annual Conference* (2023)
- Breanne Crockett** and Michael Borish; "Toolpath planning for multiple build points using k-means clustering". *Proceedings of 33rd Annual International Solid Freeform Fabrication Symposium* (2022)
- S.J. Stone III, **Breanne Crockett**, Kevin S. Xu, and M.W. Liberatore. "Animation analytics in an interactive textbook for material and energy balances". *Proceedings of ASEE Annual Conference* (2022)
- Workshops **Breanne Crockett***, Kyler Ruvane*, Matthew B. Luebbbers, and Bradley Hayes. "Effective Human-in-the-loop Control Handover via Confidence-Aware Autonomy". *In Proceedings of the Workshop on Life-Long Learning with Human Help* (2023)
- Breanne Crockett**. "Measuring Students' Engagement with Digital Interactive Textbooks by Analyzing Clickstream Data". *Proceedings of the AAAI Conference on Artificial Intelligence: AAAI Undergraduate Consortium* (2022)
- Other Alex Roschli, Michael Borish, Abigail Barnes, Charles Wade, **Breanne Crockett**, Liam White, and Cameron Adkins. "ORNL Slicer 2: Open-Source Copyright". USDOE Office Energy Efficiency, and Renewable Energy. (2024)
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Honors & Awards

Human Robot Interaction, Student Volunteer (2025)
Computer Science Department Outstanding Service Award (2024)

Professional Service

Campus Leadership	Computer Science Graduate Student Association, Tea Time Coordinator (2024) Computer Science PhD Open House, Core Volunteer (2023, 2024, 2025)
Mentored Students	Nora Su, Undergraduate RA (2024 – Present)

Technical Skills

Programming Languages	Python, C++, C#, JavaScript, HTML/CSS
Frameworks & Applications	Unity, Docker, ROS, ROS2, Qt, Keras, Pandas, Git
Platforms	Windows, Linux, Microsoft HoloLens, Oculus Quest, Unitree Go1, Parrot Bebop 2, Amazon Deepracer, Rethink Robotics Sawyer
