Brendan Gould

bgould6@gatech.edu | bgould.me | 719–422–3145

Education

Georgia Institute of Technology *Expected Graduation*: May 2029
- Ph.D. Electrical and Computer Engineering
- Advisors: Dr. Sam Coogan and Dr. Kyriakos Vamvoudakis
- Research Interests: Game Theory, Controls, Human-Machine Interaction

University of Colorado Colorado Springs (GPA: 4.0) *Graduated*: May 2024
- B.S. Computer Science (Summa Cum Laude)
  - Minor: Game Programming + 3D
- B.S. Mathematics (Summa Cum Laude, Honors Program Graduate)

The Classical Academy High School *Graduated*: May 2020
- Valedictorian, Class of 2020

Academic Appointments

Research Assistant Georgia Institute of Technology August 2024 – Present
- Ph.D. student advised by Dr. Sam Coogan and Dr. Kyriakos Vamvoudakis
- Implemented computationally efficient safety verification methods using reachability analysis and `JAX`
- Developed novel models of *intent uncertainty* in strategic agents, allowing deception and unknown objectives

Research Assistant University of Colorado Colorado Springs May 2021 – May 2024
- Undergraduate student advised by Dr. Philip Brown
- Investigated information design for Vehicle-to-Vehicle communication
- Published multiple journal and conference papers and presented at international conferences

Publications

Preprints

[P2] **B. T. Gould**, C.-Y. Chiu, A. Leeman, K. Vamvoudakis, S. Coogan, G. Chou, "Over-Approximating Minimizer Sets of Parameterized Constrained Convex Programs via Reachability Analysis", *In Submission*, 2026.

[P1] **B. T. Gould**, K. Vamvoudakis, "A Novel Framework for Honey-X Deception in Zero-Sum Games", *In Submission*, 2025.

Journal Articles

[J3] **B. T. Gould**, A. Harapanahalli, S. Coogan, "Automatic and Scalable Safety Verification using Interval Reachability with Subspace Sampling", *IEEE Control Systems Letters*, June 2025. (The contents of this paper were also submitted to the CDC 2025 Program Committee for presentation at the conference.)

[J2] **B. T. Gould** and P. N. Brown, "Information Design Under Uncertainty for Vehicle-to-Vehicle Communication", *IEEE Control Systems Letters*, December 2023. (The contents of this paper were also selected by the ACC 2024 Program Committee for presentation at the conference.)

[J1] **B. T. Gould** and P. N. Brown, "Information Design for Vehicle-to-Vehicle Communication", *Transportation Research Part C: Emerging Technologies*, vol. 150, May 2023.

Conference Papers

[C4] **B. T. Gould**, A. Harapanahalli, S. Coogan, "`linrax`: A JAX Compatible, Simplex Method Linear Program Solver", *2026 American Control Conference (to appear)*, May 2026.

[C3] E. Reppas, A. Wadi, **B. T. Gould**, K. Vamvoudakis, "Quantum Deception: Honey-X Deception using Quantum Games", *2026 American Control Conference (to appear)*, May 2026.

[C2] **B. T. Gould** and P. N. Brown, "Rationality and Behavior Feedback in a Model of Vehicle-to-Vehicle Communication", *IEEE Conference on Decision and Control*, December 2023.

[C1] **B. T. Gould** and P. N. Brown, "On Partial Adoption of Vehicle-to-Vehicle Communication: When Should Cars Warn Each Other of Hazards?", *2022 American Control Conference*, June 2022.

Honors and Awards

National Science Foundation Graduate Research Fellow — Awarded 2025
Outstanding Undergraduate Student: B.S. Computer Science, UCCS — May 2024
Outstanding Undergraduate Student: B.S. Mathematics, UCCS — May 2024
UCCS President's List — Fall 2020 – Spring 2024
Kane Scholarship: Full tuition and fees Academic Merit Scholarship — March 2020
Valedictorian of The Classical Academy — Class of 2020
UCCS Chancellor's Scholarship — 2020
Eagle Scout BSA: Pikes Peak Council, Jamboree District — February 2019

Academic Service

Website Chair, Decision and Control Laboratory (DCL) Student Committee August 2025 – Present
- Helped organize the annual DCL student symposium (2026)

Organizer of the DCL Summer Reading Group May 2025 – August 2025

Reviewer for the following venues:
- IEEE Control Systems Letters (L-CSS)
- IEEE Conference on Decision and Control (CDC)
- American Control Conference (ACC)
- Learning for Dynamics and Control Conference (L4DC)

Industry Experience

Modeling and Simulation Contractor Network Goods Institute June 2024 – August 2024
- Investigate novel payment mechanism design to incentivize public good funding
- Designed game theoretic model of how humans would value and spend index wallet currency
- Programmed simulation to empirically investigate economic behavior
- The Network Goods Institute has progressed to index wallet experiments with real humans

AI Engineer Lockheed Martin May 2022 – August 2022
- Applied Image Classification techniques to anomaly detection for space vehicle testing
- Researched many different approaches to AI anomaly detection as part of an Agile team
- Implemented transfer learning from AlexNet model using deep convolutional neural networks in PyTorch
- Developed custom data loading methods, model architecture, and validation procedures
- Designed custom binary and multi-class classifier modules
- Achieved over 98% multi-class classification accuracy on synthetic validation data

Technical Activities

Team Lead for Penguin Noir (part of Game Programming minor) January 2022 – December 2022
- Developed fast paced, momentum and combo based game in Unity and GameMaker Studio 2
- Chosen as one of two team leads in an Agile environment, assisted and approved the work of other developers
- Performed a wide variety of technical game development tasks resulting in commercial publication on Steam

UCCS Machine Learning Workshop March 2022 – April 2022
- Explored machine learning concepts in a group setting
- Discussed theoretical aspects of stochastic gradient descent and neural networks
- Applied these concepts to find curves of best fit for random data sets

2D Game Engine January 2021 – January 2023

- Developing a 2D game engine in C++
- Rendering module:
  - OpenGL rendering w/ GLFW windowing library
  - Immediate mode GUI using Dear ImGui
  - Built lightweight pixel editor capable of: Full color drawing, Undo / Redo actions, Save / Load to disk
- Physics Engine module (dimension agnostic):
  - Performant collision detection utilizing Quadtrees and the Gilbert-Johnson-Keerthi algorithm
  - Impulse based collision resolution

IEEE Student Member July 2023

Technical Skills

Languages: Python, C++, Java, C#, JavaScript
Technologies: JAX, Matlab, Mathematica, PyTorch, Vulkan, OpenGL, GLFW, Unity
Programming: Object Oriented Programming (OOP), Gradient Descent, Neural Networks
Operating Systems: Linux (Arch, Ubuntu), Windows
Business Tools: LaTeX, Microsoft Office, Technical Writing
Collaboration: Git, GitHub, GitLab, Microsoft Teams, Zoom, Jira, Trello