

# Yash Jain

Austin, TX

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## Education

### The University of Texas at Austin

Austin, TX

B.S. Computational Engineering, Honors - GPA: 3.97/4.00

August 2023 – May 2026

Distinguished College Scholar. Relevant Coursework: Scientific Computation, CFD, Structural Analysis, Linear Systems, Software Engineering, Engineering Computation. Planned Coursework: Senior Design, Applied Time Series, Electromechanical Systems

### The University of Texas at Austin

Austin, TX

B.S. Mathematics - GPA: 3.97/4.00

August 2023 – May 2026

Distinguished College Scholar. Relevant Coursework: Real Analysis, Algebra, Numerical Linear Algebra, Probability & Statistics, Mathematical Modeling. Planned Coursework: Partial Differential Equations, Numerical Differential Equations, Mathematical Modeling

## Research Experience

### Control and Learning for Autonomous Robotics Lab - Dr. David Fridovich-Keil

Austin, TX

Researcher, Multi-Agent Game Theory for Autonomous Driving

Jan 2025 – Present

- Built a Julia/Python framework for multi-agent dynamic games, integrating MCP solvers, receding-horizon control, and CARLA simulation for real time driving scenarios.
- Developed a multimodal intent inference system combining inverse game solving, VAEs, and DINO embeddings; improved goal prediction stability across ambiguous rollouts.
- Created differentiable simulation modules to enable gradient based optimization over multi-agent interactions.
- Targeting a journal submission to IJRR imminently.

### Moncrief Summer Research Internship, Oden Institute

Austin, TX

Research Intern

May 2025 – Aug 2025

- 6,500 Stipend + Housing/Meals/Travel
- Investigated multimodal driver intent inference using DINO vision models, LSTM based encoders, and latent space alignment via VAEs.
- Designed cross modal fusion networks that improved planning robustness in multi agent settings under sensor noise and occlusion.
- Improved multimodal inference pipeline by refining latent space alignment techniques and validating robustness across diverse driving rollouts.
- Presented a research poster to 30+ faculty, postdocs, and industry researchers at the Moncrief Summer Scholar's Poster Session.

### Texas Spacecraft Laboratory - Dr. Brandon Jones

Austin, TX

Command & Data Handling Engineer, SCOPE-1 Mission

Aug 2024 – Oct 2025

- Developed satellite flight software in NASA F' on BeagleBone Black, handling telemetry, fault protection, and command execution.
- Integrated subsystem data streams into a robust CDH pipeline; validated performance through unit tests, hardware in loop integration, and orbital simulation.
- Debugged and resolved embedded software failures across flight systems during integrated testing.

### Longhorn Rocketry Association

Austin, TX

Payload Engineer

Aug 2024 – May 2025

- Designed and 3D printed payload components in SolidWorks for launch vehicle integration; collaborated on structural layout and sensor housing.
- Integrated oxygen production experiments with sensor arrays; calibrated for in flight data capture and real time telemetry.
- Led end to end system integration and version control across payload revisions, reducing integration time.

### Texas Spacecraft Laboratory - Dr. Brandon Jones

Austin, TX

Software Engineer, High-Altitude Weather Balloon Mission

Aug 2023 – Aug 2024

- Developed an embedded avionics stack using Arduino and custom PCBs for telemetry and data logging in extreme conditions.
- Implemented fault tolerant sensor interfacing and mission critical firmware for low pressure, sub zero environments.
- Improved flight data integrity through redesign of software–hardware integration and telemetry buffering.

## Teaching & Academic Service

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### Computational Engineering Department, UT Austin

Austin, TX

#### Tutor Manager

Aug 2024 – Present

- Delivered 100+ one on one tutoring sessions for core courses in computation, statics/dynamics, and software engineering.
- Improved student outcomes by scaffolding complex concepts through interactive problem breakdowns and visual modeling.

### Department of Physics, UT Austin

Austin, TX

#### Learning Assistant, PHY 329C: Computational Physics

Aug 2025 – Dec 2025

- Guided 30+ students in topics including numerical linear algebra, ODE/PDE solvers, optimization, and scientific Python.
- Applied active learning and cognitive science strategies to deepen conceptual understanding and foster student led discovery.

### Sanger Learning Center, UT Austin

Austin, TX

#### Teaching Assistant, M 110T: Business Calculus

Jan 2025 – May 2025

- Led weekly discussions and exam reviews for 10+ students, supporting applied calculus learning in a business context.
- Created worksheets and visual aids linking calculus to optimization, marginal analysis, and real world business models.

### Sanger Learning Center, UT Austin

Austin, TX

#### Peer Tutor (Math, Physics, Engineering)

Aug 2024 – Aug 2025

- Conducted 200+ tutoring sessions with a 5.0/5.0 rating, supporting student success in calculus, physics, programming, and DEs.
- Designed training guides, peer interview rubrics, and academic workshops that improved tutor preparation and consistency center wide.

## Leadership & Community

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### Texas Spacecraft Laboratory

Austin, TX

#### Student Director

Aug 2025 – Present

- Led operations for a 100+ member research lab, managing logistics, access control, onboarding, and equipment scheduling.
- Designed the Freshman Exploratory Initiative, enabling 25+ first year students to contribute to satellite systems via guided systems engineering curriculum.
- Oversaw Class-100 cleanroom installation by coordinating vendors, procurement, and facilities for mission ready integration.

### Texas Spacecraft Laboratory

Austin, TX

#### Facilities Manager

Nov 2023 – Aug 2025

- Managed thermal/vacuum chambers and additive manufacturing tools, supporting spacecraft testing and development.
- Implemented a lab wide equipment check out and point of contact system, reducing delays and increasing lab utilization.
- Spearheaded deployment of a new industrial 3D printer and created onboarding workflows for multiteam usage.

### AIAA, UT Austin

Austin, TX

#### Treasurer

Aug 2023 – May 2025

- Managed finances for a 100+ member student organization supporting technical competitions, outreach, and national convention participation.
- Increased organizational budget by 30% through new industry sponsorships, profit sharing events, and merchandise expansion.

### Association of Computational Engineering (ACE)

Austin, TX

#### Treasurer

Aug 2023 – May 2025

- Oversaw budget for departmental org representing 30–40% of Computational Engineering majors; supported hackathons, workshops, and speaker events.
- Led planning and execution of major initiatives including coding competitions and technical interview prep series.

## Publications & Presentations

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**2025:** Y. Jain, X. Liu, L. Peters, “Bayesian Inverse Games with High-Dimensional Multi-Modal Observations,” under review at *International Journal of Robotics Research (IJRR)*.

**2025:** *Learning To Drive: Vision Meets Game Theory*. Poster presented at the Moncrief Summer Scholar’s Poster Session, Oden Institute.

**2024:** Contributor to PutnamBench, an open-source benchmark for automated theorem proving, presented at the ICML AI4MATH Workshop (2024). Contributed implementation; not a publication author.

## Skills

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**Languages:** Python, Julia, C++, MATLAB, Java

**ML & AI:** VAEs, LSTMs, Vision Transformers, multimodal fusion

**Control & Planning:** MCP solvers, receding-horizon control, Nash computation, intent inference

**Simulation & Autonomy:** CARLA, trajectory optimization, real time integration, differentiable simulation

**Numerical Methods:** ODE/PDE solvers, nonlinear optimization, constraint systems

**Tools & Platforms:** ROS2, Git, Docker, Linux, SolidWorks