Mrinal Jain

404-203-7573 | mrinal@gatech.edu | linkedin.com/in/its-mrinaljain/ | github.com/mrinalTheCoder

Education

Georgia Institute of Technology — Atlanta, GA
Master of Science in Computer Science — *Graduating May 2027*
- **Concentration**: Artificial Intelligence

Bachelor of Science in Computer Science — *Graduating May 2026*
- **Concentrations**: Intelligence, Systems & Architecture — **GPA: 4.0**
- **Coursework**: Data Structures and Algorithms, Perception & Robotics, Computer Vision, Machine Learning, Applied Combinatorics, Probability & Statistics, Design & Analysis of Algorithms, Operating Systems, Computer Architecture

Experience

Robotics Intern — June 2025 – August 2025
Georgia Tech Research Institute — *Atlanta, GA*
- Designed and executed contact rich experiments to evaluate physical fidelity of **NVIDIA Isaac Sim**.
- Set up **Docker** containers and improved Universal Robotics, PickNik Robotics codebases to integrate **ROS2** robotic arm control algorithms with Isaac Sim.
- Achieved 100% success rate on contact skills in Isaac Sim; transferred to physical robots with 0 performance loss.
- Trained high accuracy cable insertion/extraction tasks and evaluated Sim2Real transfer on **UR5e robotic arms**.

Data Science Intern — June 2024 – August 2024
Galaxeye Space — *Bangalore, India*
- Created an image segmentation pipeline including data collection, training, and deployment using **PyTorch, Lightning, W&B, and GCP** for aquaculture pond detection.
- Achieved **90% precision and recall** for aquaculture pond segmentation from open-source satellite imagery (Sentinel-II) with 10m resolution.
- Model was deployed to map over 200,000 ponds, leading to **insights sold to several clients**.

Undergraduate Researcher — August 2024 – Present
People, AI, and Robotics Lab @ Georgia Tech | Prof. Animesh Garg — *Atlanta, GA*
- Created novel data augmentation techniques for Vision-Language-Action models and Behavior Cloning Algorithms. Achieved SOTA performance (**100% success rate** on multiple tasks), published to **ICRA 2025**.
- Quantified the performance of several Behavior Cloning Algorithms on various environments, simulators, data augmentations.
- Working on a high efficiency data platform for robotics using **Apache Arrow**, with features such as **cloud provider integration** and **parallelized data pipelines**.

Projects

Software Lead, RoboNav | *Competitive Mars Rovers @ Georgia Tech* — August 2023 – Present
- Lead a team of 15 to create a distributed, real time **ROS2** codebase in **C++**.
- Implemented **A*** and **RRT** path planning algorithms, **terrain traversibility estimation** using **LiDAR**, **Extended Kalman Filters** for localization, and **trajectory following** algorithms for autonomous navigation.
- Used **RTSP** and **HLS** video streaming protocols to display video feeds on custom built **reactJS** dashboard.
- One of 35 teams accepted to **University Rover Challenge** out of over 100.

QuickER — October 2024
- Used **OpenAI Whisper**, **Twilio** to monitor 911 ambulance calls in real time.
- Developed an agentic system using Langchain that used RAG, language embedding, and Llama 3.1 to reduce patient waiting times and triage with approx. 90% accuracy.

Shooter Tracker (Later Synopta, Inc.) | *Co-Founder and CTO* — October 2023 – July 2024
- Trained custom RT-DETR transformer models to detect firearms on CCTV, beating SoTA YOLO model performance.
- Implemented novel graph-based multi-camera tracking algorithms using an **SQL backend** with **FastAPI endpoints** to scale to 100+ camera systems and integrate with a **Next.js** dashboard.
- Won HackGT 2023 Innovation track.

Technical Skills

Languages: Python, C/C++, Bash/ZSH, SQL (Postgres, MySQL), JavaScript, Java, R, HTML/CSS
Frameworks: ROS, ROS2, MongoDB, CUDA, SLURM, Apache Arrow, Firebase Flask, FastAPI, React, REST APIs, Node.js, Next.js, Twilio, OAuth 2.0
Developer Tools: Git, Docker, Google Cloud Platform, vim, VS Code, clangd, Hugging Face, Jira, Eclipse, Figma
Libraries: PyTorch, Pandas, NumPy, MatPlotLib, Seaborn, OpenCV, Ultralytics, Isaac Lab, Mujoco Sim, Langchain