Srikar Gouru

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EDUCATION

Carnegie Mellon University Pittsburgh, Pennsylvania | Expected May 2027

- **Degree:** M.S. in Robotics
- **GPA:** 4.0 / 4.0
- **Coursework:** Planning and Decision Making, Multi-Robot Planning, Fundamentals of Computer Vision, Robotic Mechatronics

University of Virginia Charlottesville, Virginia | May 2025

- **Degree:** B.S. in Computer Science and Cognitive Science
- **GPA:** 3.94 / 4.0
- **Coursework:** F1/10 Autonomous Racing, Reinforcement Learning, Natural Language Processing, Artificial Intelligence, Algorithms, Computer Architecture, Advanced Cybersecurity, Advanced Mathematics

PROFESSIONAL EXPERIENCE

Zipline | Autonomy Intern San Francisco, California | May 2024 - Aug 2024

- Implemented a multimodal search-based Global Planner capable of long-range replanning to avoid deadlocks and reach emergency docks while optimizing energy consumption, avoiding intruders, and maintaining dynamics constraints
- Refactored simulation suite to allow more generic scenarios with varying planner, controls, and environment configurations
- Programmed custom Dubins library with 2D shortest path algorithm and random path generation

Zipline | Flight Routes Intern San Francisco, California | May 2023 - Aug 2023

- Developed optimal A* Search on 2D and 3D lattices and experimented with Grid, Quadtree, and Framed Quadtree lattices
- Devised path optimization algorithms using Gradient Descent and Simulated Annealing techniques and tuned hyperparameters
- Created a benchmarking suite with Matplotlib visualization and cProfiling to compare search and optimization algorithms

SpaceX | Starship Control Software Intern Los Angeles, California | May 2022 - Aug 2022

- Spearheaded development of a secure browser-based software deployment system, speeding up hardware test iteration cycles
- Implemented versioning in control software to provide operators with software release summaries and enable software reverts
- Devised a communication protocol between processes to monitor deployments and detect failures, improving system robustness

RESEARCH EXPERIENCE

ARCS Lab | Graduate Researcher Carnegie Mellon University | Aug 2025 - Present

- Formulated a hierarchical search algorithm for multi-agent grid search and rescue with online task discovery and anytime replanning
- Accelerated optimal multi-agent grid surveillance by 200x using efficient cell pruning, parallelization, and mTSP-based heuristics

Cavalier Autonomous Racing | Motion Planning Lead & Controls Engineer University of Virginia | May 2022 - May 2025

- Built an online spatiotemporal graph planner to optimize overtake trajectories while maintaining stable control and avoiding opponents, as well as a DFA to strategize push-to-pass timings and budget in multi-agent races, earning 2nd place at CES 2025
- Developed a simulation environment with data-driven vehicle dynamics using JAX, and created a custom suite of scenarios to benchmark the speed and effectiveness of various planning and controls algorithms, able to run real-time with <1 millisecond fidelity
- Implemented a race-ready adaptive cruise control algorithm utilizing MPC, safely achieving deceleration rates > 8 m/s^2 on track

Chandra Robot Autonomy Lab | Undergraduate Researcher University of Virginia | Oct 2021 - May 2022

- Published *LiveNet*, a robust neural network generating deadlock-free, minimally invasive trajectories in constrained environments, achieving up to 20x computational speedup and 5x less path deviation compared to existing algorithms for similar scenarios
- Created a modular multi-agent simulation environment with double-integrator dynamics and automatic metric benchmarking

PUBLICATIONS

Srikar Gouru, Ariel Felner, & Jiaoyang Li. (2025). **Scalable Algorithms with Provable Optimality Bounds for the Multiple Watchman Route Problem.** Submitted to ICAPS 2026. Submitted | December 2025

Srikar Gouru, Siddarth Lakkoju, & Rohan Chandra. (2025). **LiveNet: Robust, Minimally Invasive Multi-Robot Control for Safe and Live Navigation in Constrained Environments.** *Proceedings of the 7th Annual L4DC Conference*, in *PMLR* Poster | June 2025

SKILLS

- **Languages:** Python, C++, Rust, C, Java, Bash, MATLAB, Arduino, JavaScript, Assembly, HTML, SQL
- **Libraries:** TensorFlow, PyTorch, OpenCV, PCL, CPLEX, Matplotlib, Boost, Gurobi, Scikit-Learn, NumPy, Django, Flask
- **Technologies:** Git, Linux, ROS 2, CMake, Bazel, Docker, gRPC, Protobuf, PostgreSQL, React.js, Firebase, CI/CD