

Srikar Guru

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EDUCATION

University of Virginia

Charlottesville, Virginia | May 2025

- **Degree:** B.S. in Computer Science and Cognitive Science with Mathematics Minor.
- **GPA:** 3.94 / 4.00.
- **Coursework:** Autonomous Systems, Reinforcement Learning, NLP, Artificial Intelligence, Algorithms, Computer Architecture, Discrete Math, Advanced Cybersecurity, Differential Equations, Probability, Multivar Calculus, Linear Algebra.

Thomas Jefferson HS for Science and Technology

Alexandria, Virginia | June 2021

PROFESSIONAL EXPERIENCE

Zipline | Autonomy Intern

San Francisco, CA | 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, CA | 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, CA | May 2022 - Aug 2022

- Spearheaded development of a secure browser-based software deployment system to notify hardware operators of software updates and removing dependence between developers and operators, 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.
- Overhauled the central backend database to be persistent to provide redundancy and not propagate blackouts.

RESEARCH

Cavalier Autonomous Racing | Motion Planning Lead & Perception and Controls Engineer

May 2022 - Present

- Designed an online spatiotemporal graph planner to optimize overtakes following dynamics constraints and avoiding opponents.
- Created a DFA state machine to strategize overtake locations and timings in multi-agent environments.
- Applied GPU acceleration with CUDA and PCL to optimize Clustering and ICP algorithms run on LiDAR point clouds.
- Developed an online stitching algorithm to predict opponent trajectory based on historical odometry data from previous laps.

Chandra Robot Autonomy Lab | Undergraduate Researcher

Oct 2021 - May 2022

- Created *LiveNet*, a robust neural network generating deadlock-free, minimally invasive trajectories in constrained environments.
- Created a modular simulation environment with double-integrator dynamics and automatic benchmarking of metrics such as time-to-goal, deadlock frequency, invasiveness, and path deviation on custom-generated test suites..

PROJECTS

CodingClash RTS Game Competition

October 2020

- Organized a custom real-time strategy game contest where 40+ users created Python AIs to compete against one another.
- Built a secure, scalable game engine utilizing RestrictedPython to evaluate code and hosted it with Django and PostgreSQL.
- Automatically scheduled and tracked games with Redis and Celery while updating live elo rankings on a ReactJS frontend.

Rubik's Cube Robot

March 2019

- 3D printed a housing for 6 stepper motors and 6 connectors to rotate a cube's faces, surpassing speeds of 10 turns per second.
- Applied CV techniques with four cameras to capture the cube's initial state and displayed it through an interactive JS GUI.
- Programmed CFOP and Kociemba algorithms in Python and controlled motors via Arduino, achieving < 4-second solve times.

KEY SKILLS

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