

VIGNESH SUNDARARAJAN

☎ +1-(765)-775-7397 ✉ sundar18@purdue.edu in [sundararajan-vignesh](#) 🌐 [vigneshsundararajan](#) 🌐 [vigneshsundararajan.github.io](#)

Education

Purdue University - West Lafayette, USA | Master of Science - Aeronautics and Astronautics Engineering 2021 - Present
Research: Secure and Safe Assured Autonomy (S2A2) | Center for Integrated Systems in Aerospace Lab | 🌐 [Website](#)

SRM University - Chennai, India | Bachelor of Technology - Mechanical Engineering 2016 - 2020
Relevant Coursework: Economics and Principles of Management, Multidisciplinary Design, Electronics and Instrumentation

Skills

Programming: C++, Python, MATLAB, SQL, R, Lua, HTML, CSS, Javascript, \LaTeX | **Project Management:** Confluence, Jira, Agile, Git
Frameworks/Libraries: Tensorflow/Keras, PyTorch, Scikit-Learn, Numpy, Eigen, openCV, Matplotlib, Pandas, Dask, Plotly, Folium, Flask
Cloud/DevOps/Big Data: AWS, Google Cloud, Docker, Kubernetes, Spark, HDFS, Parquet | **Robotics Stack:** ROS, Gazebo, CMake, Linux

Experience

Technical Project Manager - Data Science | The Purdue Data Mine + John Deere August 2022 - Present

- Leading a team of 13 students to develop an automated, large scale geospatial analysis tool to predict ideal land candidates for wildlife conservation using machine learning and open source raster satellite data.
- Strategizing sprint plans and organizing weekly code review labs for performance monitoring using Agile Software Principles.
- Communicating with senior management of John Deere to define project scope and update timelines with an active feedback loop.

Data Scientist | Dauch Center for the Management of Manufacturing Enterprises June 2022 - August 2022

- Performed a univariate exploratory data analysis to study sensor ping frequency of the client's nationwide fleet of trucks.
- Achieved a 60× speed improvement and 85% storage use reduction by implementing a parallelized data processing pipeline to model ETL tasks for handling raw Telematics data.
- Implemented K-Means Clustering to identify high-traffic regions and presented findings to the business end of the organization

Aerodynamicist | Purdue Electric Racing | 🌐 [Team Website Link](#) August 2021 - August 2022

- Designed a correlation study to validate feasibility of Front Wing CFD simulation results with data obtained from the Boeing Wind Tunnel at the Aerospace Sciences Laboratory at Purdue. Achieved a 7% margin of error.
- Designed an underbody duct cooling system for the motor controllers. Parametrized the CFD study by adding duct angle as a tunable parameter. Analyzed airflow interaction with the Front Wing and determined the mass flow rate for a series of velocities to identify optimal duct angle.

Vice President and Design Lead | SRM University Formula Student (FSAE) Team April 2017 - October 2018

- Successfully managed a cross functional team of 30 to secure National awards in Sales and Business Presentations, along with ranks of 4 and 8 in the Design and Overall events respectively.
- Lead the development of core vehicle components (Wheel Assembly, Differential and Engine Mounts, Chassis) from design to manufacturing and assembly, on a tight budgetary and time constraint.

Projects

Research Lead | Space & Earth Analogs Research Chapter of Purdue | 🌐 [Social Media Link](#) August 2022 - Present

- Managing multiple research groups to facilitate participation in NASA's RASC-AL competition
- Delivering weekly talks on the application of Systems Engineering to Human space exploration and organizing hands on workshops to prepare members for participation in Analog astronaut missions such as the Mars Desert Research Station (MDRS) mission.

Monocular Vision based Navigation of a 4-wheeled robot | 🌐 [Github Link](#) March 2022 - April 2022

- Calibrated a monocular camera interfaced with a Raspberry Pi and performed 3D localization using the Fiducials ROS package.
- Implemented a PID controller to navigate the robot towards an Aruco marker placed in the environment.
- Developed a line follower mechanism by using infrared sensors as a fallback in case the vision system fails.

Image Super-Resolution using a Generative Adversarial Network | 🌐 [Github Link](#) August 2021 - December 2021

- Implemented SRGAN, based on the ResNet architecture(16 Residual Blocks with skip connections), with a perceptual loss function that uses high level feature maps of the VGG network
- Trained the neural network for 50,000 steps on the DIV2K data set and visualized the 4× upsampled images using matplotlib

Portfolio Website Development | 🌐 [Github Link](#) December 2021 - Present

- Developed a portfolio website using the Hugo static site generator framework to prioritize fast client-side rendering.
- Maintained version controlled repository of codebase and used CI/CD principles for deployment.