

Radhakrishnan Ravi Vignesh

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EDUCATION

Texas A&M University <i>M.S in Civil Engineering; Specialization: Transportation Engineering; CGPA: 3.6/4</i>	College Station, TX Aug. 2018 – Present
Indian Institute of Technology Madras <i>B.Tech in Civil Engineering; Minor: Industrial Engineering; CGPA: 8.01/10</i>	Chennai, India Aug. 2014 – July. 2018

RELEVANT TECHNICAL SKILLS

Languages and Frameworks: C, C++, Python, R, MySQL, MATLAB, L^AT_EX, Robotic Operating System(ROS)
Libraries: Numpy, OpenCV, Scikit Learn, Pandas, Tensorflow, Keras, Pytorch

PROFESSIONAL EXPERIENCE

Texas A&M Transportation Institute <i>Graduate Research Assistant</i>	College Station, Texas Jan. 2019 - Present
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- The Transportation Modeling Team Program of TTI performs **emission inventories** to ensure the Texas transportation system attains national air quality standards. I have been involved in updating the models and computer programs used to estimate regional emissions from travel demand models, emission models and other data.
- The **python based software** we have developed has improved the speed of emission inventories by a **factor of 10**, and provides more detailed outputs that will enable more effective transportation-air quality planning

Tamil Nadu Health Systems Project <i>Software Developer Intern</i>	Government of Tamil Nadu, India May 2017 - July 2017
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- Tamil Nadu Health Systems Project is a department of the Tamil Nadu Government and is responsible for managing **health services** in the state of Tamil Nadu, India. I developed a **heuristic algorithm** to predict the victim pickup locations of medical emergencies.
- The model was used to **optimize** the location of emergency vehicles based on the location of the emergencies and the time taken to transport patients to hospital. The model was based on data describing the location of emergency calls, and used a **greedy optimization algorithm**. Based on test data, the model had an accuracy of over 90%, which enabled emergency response vehicles to be distributed more efficiently

RELEVANT PROJECTS

- **Car Following Model Using Maximum Entropy Inverse Reinforcement Learning:** Developed a **Max-Ent IRL** algorithm to predict the behavior of human vehicle behind an Autonomous Vehicle. Based on data from 20 real world cases, the model achieved improved accuracy compared to established models such as **IDM**.
- **System Integration (Udacity Self Driving Car Nanodegree Capstone):** I was part of a group that successfully programmed Carla, the autonomous vehicle of Udacity using **ROS**. I was responsible for developing traffic light detection using the best performing object detection APIs from **tensorflow** namely, **faster_rcnn** and **ssd_mobilenet**
- **Highway Driving:** Planned and implemented the behavior, path and trajectory of a simulated vehicle on a speed controlled highway. Jerk, acceleration and the travel time were optimized using a suitable cost function in the planning
- **Behavioral Cloning:** Trained a simulator to smoothly drive a car around a track using a behavioral cloning technique. An **image regression model** was developed using **Keras** after modifying NVIDIAs deep neural network architecture
- **Traffic Sign Classifier:** Developed a traffic sign classifier model using deep neural networks with an architecture similar to **LeNet** using Tensorflow library and obtained **94%** test accuracy on German Traffic sign data set.
- **Lane Detection:** The lane region and the radii of curvature of the lane boundaries were detected in a video recorded from a car. The video involved various brightness and shadow levels along with different textures on the road
- **Optimization of Network Algorithms:** Optimized the **label setting algorithm** given by D.Shier for finding the **best K elementary paths** in a directed graph and bench marked against other best known algorithms.

COURSEWORK

Texas A&M University and IIT Madras: Reinforcement Learning, Pattern Recognition, Graph Theory, Flow Algorithms, Probability and Statistics, Analytical Techniques, Operations Research, Industrial Engineering, Computer Simulation, Urban Transportation Planning, Traffic Engineering: Operations and Characteristics

Udacity Self Driving Car Engineer Nanodegree: Motion Planning, Computer Vision, Deep Learning, Sensor Fusion, Control, Localization, System Integration