Parth K. Vasoya

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Education

University of Florida, Gainesville, USA — 2023 – Present
Master of Science in Computer Science -

G H Patel College of Engineering and Technology, Anand, India — 2018 – 2022
Bachelor of Engineering in Information Technology — CGPA: **8.95/10**

K.D. Ambani Vidyamandir (KDAV), Jamnagar, India — 2016 – 2018
AISSCE — Percentage: **91.0**

Publications

Dr. Falgun N. Thakkar, Dev Vaghani, **Parth Vasoya**, Dhruv Desai. Bandwidth Efficient Digital Image Watermarking Scheme Using a Concatenation of Three Transforms. In International Conference on Interdisciplinary Research(ICIR), 2020 [Paper]

Experience

Research Intern — February 2022 – November 2022
Indian Institute of Science(IISc) — Bangalore, India

- Proposed and designed a novel recurrent neural network for lane detection based on **LSTM**, achieving **2%** improvement in accuracy on TuSimple dataset over CRF-based methods; Compared performance of YOLO single-stage object detectors on Indian Driving Dataset **10k** images for state-of-the-art object detection.

Web Development Intern — March 2021 – August 2021
Reliance Industries Limited (RIL) — Jamnagar, India

- Spearhead development of Carpool Management System utilizing **Node.js** for core trip execution engine and **Express.js** for web server; Served **24k** users across a **300 sq. km** area. Reduced ETA by **30%** using Dijkstra's algorithm with heuristics, saving **$560k** in annual fuel costs; Implemented data visualization tool using **react-map-gl** monitoring **1480** vehicles.

Machine Learning Engineer — November 2020 – April 2021
DevTown — Bangalore, India

- Trained YOLOv3 object detector on OpenImageV6 **1.6M** images; Generated synthetic dataset for pedestrian detection and tracking with **114** pedestrian attributes, rendered using the open-world video game Grand Theft Auto 5. Implemented multi-object tracking using **YOLOv5** and DeepSORT with human flow counting and trajectory retention, collision avoidance, and cross-mirror **ReID** to achieve **39.6 MODA**.

Projects

High-Conflict Driving Scenario Negotiation — January 2022 – May 2022

- Implemented multi-agent reinforcement learning **(MARL)** approach for robust negotiation of Bi-directional Lane Usage with Discrete Asymmetric Soft Actor-Critic **(DASAC)** algorithm. Used threshold and reachability-based baselines with reward function parametrization to incentivize interaction; Achieved **99.5%** success rate at **0.3** cooperativeness parameter value.

Robust Visual Place Recognition — December 2021 – March 2022

- Developed a **place recognition** algorithm with CNN feature extraction for scene matching and description to handle perception, appearance changes. Utilized a modified **Dijkstra** method for computing best image matches between two sequences through minimum cost sequence in the graph; Achieved **12%** increase in **RP 100** on the Nordland dataset.

Real-Time Drowsiness Detection (IIT Bombay) — December 2019 – August 2020

- Developed a **CNN**-based drowsiness detector with Dlib facial feature extractor with **91.6%** accuracy; Crafted sub-network based on lightweight architectures for yawn detection. Ideated a CNN based **eye gaze estimation** model using attention mechanism to achieve **0.5 deg** best-case accuracy across the same FOV on NVGaze **2M** images.

Skills

Technical Skills : Computer Vision, Machine Learning, Deep Learning, Full-Stack development
Programming Languages : C, C++, Python, Java, JavaScript, HTML, MySQL
Frameworks/Libraries : Tensorflow, Pytorch, Keras, Scikit-learn, OpenCV, Numpy, Pandas, ROS, Django, Flask
Other Software/Tools : Git, MatLab, Visual Cryptography, Ubuntu, Microsoft Office, Heroku

Certifications

Machine Learning — Stanford University - Coursera
Data Science Math Skills — Duke University - Coursera
Statistics for Machine Learning — Live Training - ShapeAI
The Complete Self-Driving Car Course - Applied Deep Learning — Online course - Udemy