Vanshil Shah

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Education

- **University of Pennsylvania** — Philadelphia, USA
  MS in Robotics | GPA 4.0/4.0 — *Aug. 2021 - May 2023*

  Relevant coursework: Machine Learning, Geometric Computer Vision, Modern Convex Optimization

- **Nirma University** — Gujarat, India
  Bachelor of Technology in Mechanical Engineering | CGPA 8.12/10.0 — *Aug. 2015 - May 2019*

Publications

- Prashant Kumar*, Sabyasachi Sahoo*, **Vanshil Shah**, Vineetha Kondameedi, Abhinav Jain, Akshaj Verma, Chiranjib Bhattacharyya, Vinay V. **"DSLR : Dynamic to Static LiDAR scan Reconstruction using adversarially trained autoencoder"** (***Proceedings of the AAAI Conference on Artificial Intelligence 2021)***

Work Experience

- **Ford Motors, Autonomous vehicles LLC** — May 2022 - August 2022
  Autonomous vehicles intern, Perception Team — *Dr. Punarjay Chakravarthy*
  - Explored NERF's for synthetic data generation .
  - Achieved comparable performance of image reconstruction metrics like PSNR,LPIPS and SSIM on both real world and simulated dataset ***[Project Report]***

- **Indian Institute of Science(IISc), Bangalore** — Nov 2019 - Sept 2020
  Research Intern, Machine Learning Lab | Collaboration: Ati Motors — *Sabyasachi Sahoo*
  - Integrated Google Cartographer SLAM algorithm with our model DSLR for improving navigation in a dynamic setting.
  - Devised a novel dataset generation pipeline to create a first of its kind LiDAR based static-dynamic frame dataset.
  - Achieved ***4 times better reconstruction*** on Chamfer Distance over state of the art baselines.

- **Robert Bosch Center for Cyber Physical Studies(RBCCPS), Bangalore** — June 2019 - Nov 2019
  Perception Team, MBZIRC 2020 | Collaboration: TCS Innovation Labs — *Dr. Raghu Krishanpuram*
  - Benchmarked visual SLAM algorithms for facilitating quad copter autonomy in degraded environments ***[Video]***

- **Defence Research and Development Organisation(DRDO), Bangalore** — Jan 2019 - May 2019
  Research Intern, Center for Artificial Intelligence and Robotics — *Dr. Shubhashisha Sahoo*
  - Deployed the navigation stack on autonomous tracked robots used by Indian Defence Forces.
  - Reduced Localisation error(ATE/RPE) by ***2 percent*** by fusing GPS sensor data.

Projects

- ***Particle filter based SLAM for humanoid***
  - Implemented a localisation and mapping framework for estimating the state of humanoid robot using LiDAR and inertial data ***Project***
- ***MEAM 520: Pick and Place Challenge 2021***
  - Developed a modular library for facilitating dexterous manipulation of Franka Panda arm. ***[Video](Hardware) [Video](Simulation)***
- ***UKF based orientation tracking algorithm***
  - Implemented UKF based quaternion tracking algorithm using Inertial data ***Project***

Skills

Deep Learning Framework: PyTorch
Simulator: Carla, Gazebo, V-REP
Languages: C++, Python
ROS
Software tools: Git, LaTeX, CMake
Misc: Azure