SIDDHARTH TELANG

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EDUCATION

University of Maryland, College Park, USA **Jan 2021 – Dec 2022**

M. Eng, Robotics (GPA 3.9/4)

Courses: **Perception** and **Planning** for Autonomous Robots, **Statistical Pattern Recognition, Deep Learning,** Robot **Learning, Control** of Robotic Systems, Building a Manufacturing Robot Software system, **Software Development** for Robotics, Robot Modelling

Dr D.Y. Patil Institute of Engineering and Technology, University of Pune, India **Aug 2011 – May 2015**

Bachelor of Engineering, Electronics Engineering (First Class with Distinction)

SKILLS

Programming Languages: C, C++, Java, Python, MATLAB, UML
Libraries: PyTorch, PyTorch Lightning, PyTorch3D, TensorFlow, Keras, NumPy, OpenCV, Open3D, PCL, pandas, sklearn, GTest, GMock
Tools and framework: Blender, ROS, Gazebo, MoveIT, RViz, AWS, GIT, Gerrit, Pytest, Unit test, Docker, CMake, CI/CD, CUDA, MeshLab
Domain Skills: Classical Computer vision, Motion planning, Bayesian Statistics, Machine learning, Deep learning, Control theory
Software Practices: Agile, Scrum, SDLC, Atlassian tools (JIRA, Confluence), Jenkins
Deep Learning Architectures: CNN, RNN, LSTM, GAN, Transformers, NeRF

WORK EXPERIENCE

Path Robotics, Columbus | *Computer Vision Software Engineer* **Feb 2023 – Jan 2024**

- **Segmentation**, Object **detection**, and **6D Pose estimation** using neural networks for **Bin-Picking** parts.
- **Improved** the **accuracy of pose estimation models** for seamless bin picking by making the models more **robust on real-world data** when trained on synthetic/simulated data.
- Conducted various **calibrations** during the setup phase, including robot-robot, camera, **hand-eye**, and **eye-in-hand**.
- Oversaw **end-to-end pipeline** workflow of AF-1 from bin picking to final welding and **reduced the cycle time** by caching.
- Developed code suitable for **production**, including thorough **unit tests** and comprehensive **code coverage**.

Dexai Robotics, Boston | *Robotics Intern* **May 2022 – Aug 2022**

- **Visual Calibration** of robot joints using April-Tag: **Planned motion** for the **9DOF** robot at various waypoints, capturing the **April-Tag** images through on-board **camera** to calculate the **joint offsets** by **optimizing** a **loss** function.

University of Maryland | *Graduate Research Assistant* **May 2021 – May 2022**

- **Self-Driving e-Scooter** – Successfully incorporated autonomy in the e-Scooter to drive it from point A to point B.
- Through the usage of ROS packages for **Perception** & **Path Planning**, **map** generation, visual **odometry**, **EKF**, **SLAM**, **obstacle avoidance** and various on-board sensors- **IMU**, **GPS**, **Zed-2i** Camera on **NVIDIA Jetson** Nano drove the e-Scooter autonomously.

OnePlus Software R&D Center, India | *Sr. Software Engineer* **Aug 2019 – Dec 2020**

- Developed Android telephony framework and customized network software for OnePlus 6,7,8,9,Nord mobile phones series.

L&T Technology Services, India | *Software Engineer* **June 2016 – July 2019**

- Developed Android telephony framework for various **Zebra Technologies** smartphones and tablets (**QUALCOMM** chipsets)

AWARDS AND ACHIEVEMENTS

- Worked on-site with client in Shenzhen, China and received **Annual Employee Award for Valuable Contribution** (2018)**.**
- **OnePlus Rookie Award** (April 2020)**.**

PROJECTS

Structure from Motion (SfM) – Reconstructed a 3D scene and obtained camera poses given images from various viewpoints by using feature points correspondences, **triangulation, Bundle adjustment,** and **non-linear optimization** *GitHub*.

Depth estimation - studied the principles of **Multiple-view Geometry, epipolar geometry, and Stereo vision** to estimate depth from two images, given the baseline distance of the cameras *GitHub*.

Panorama Stitching – Feature point extraction, matching, outlier rejection, and warping to blend multiple images *GitHub*.

Lane Detection and **turn prediction –** Detected lanes using curve-fitting approach and estimated road curvature for **self-driving car** *GitHub*

April-Tag Detection, tracking - superimposed an image and cube on top of the tag using **Homography** and **Projective geometry** *GitHub*.

Semantic Segmentation using Contrastive Loss – Improved results of ICCV'21 Region-Aware Contrastive Learning on HubMap Kidney and Camelyon16 datasets for segmentation of cancerous regions *GitHub*.

Fully connected neural network from scratch (no libraries) – implemented the following layers from scratch for forward pass and backprop: linear, bias, ReLU, sigmoid, square loss, cross entropy softmax for **regression** & **classification** *GitHub*.

Hand-written Digits Recognition and Transfer Learning – implemented Logistic **regression** (own implementation), **SVMs**, **CNNs** for digits recognition, and **transfer learning** using **VGG-16** for data sets having very few images *GitHub*.

Face Recognition – Implemented classifiers from scratch – **Bayes'**, **k-NN**, **Kernel SVM**, and **AdaBoost** with dimensionality reduction techniques PCA, and **MDA** and training a **Siamese Network** to identify **subject label and facial expressions** *GitHub*.

Human Detector and Tracker – used **HOG** feature descriptor and SVM to detect and track humans in a frame *GitHub*.