SIDDHARTH TELANG

LinkedIn: SiddharthTelang Github: siddharthtelang, Portfolio: Website
Email: stelang@terpmail.umd.edu | Mobile: 301-792-1823 | Address: 3413 Tulane Drive, Apartment 11, Hyattsville, MD-20783

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, TensorFlow, Keras, NumPy, OpenCV, PCL, pandas, sklearn, GTest, GMock
Tools and framework: **Drake,** ROS, Gazebo, MoveIT, RViz, CNN, AWS, GIT, Gerrit, Pytest, Unit test, Docker, CMake, CI/CD, CUDA
Domain Skills: Classical Computer vision, Motion planning, Bayesian Statistics, Machine learning, Deep learning, Control theory
Software Practices: Agile, Scrum, SDLC, Atlassian tools (JIRA, Confluence)

WORK EXPERIENCE

Dexai Robotics, Boston | *Robotics Intern*   June 2022 – Aug 2022
- Designed filter to filter out raw acceleration and velocities from joint sensors and cancel the plan if crossed threshold.
- **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 Teaching Assistant*   Aug 2021 – Dec 2022
- Collaborated with Prof. Aric Bills for developing assignments, test cases, grading and held office hours for students.

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. Telephony Framework 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** hand-held smartphones and tablets.

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,** and **non-linear optimization**.

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.

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

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

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

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.

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.**

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.

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

Lqr-Lqg Controller – for Inverted pendulum on a cart, linearization, stability, controllability, observability.

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

Automated Parallel Parking (Car) – studied **kinematic** and **non-holonomic constraints** of a **car** and implemented motion planning (**Ackermann** drive) using **RRT** and **bi-RRT** algorithms with **dynamic path planning/pruning** in simulation.

Robot Path planning – motion planning for **differential drive** robots and obstacle avoidance using **BFS, DFS, A*, Dijkstra, RRT, RRT*.**