TARANG SHAH

412-692-0675 | tarangs@cmu.edu | tarangshah.com | linkedin.com/in/t27 | github.com/t27

Education

Carnegie Mellon University - School of Computer Science (Robotics Institute) — *Pittsburgh, PA*
MASTER OF SCIENCE IN ROBOTIC SYSTEMS DEVELOPMENT — Aug 2019 - May 2021
Courses: Computer Vision, Deep Learning, Visual Learning & Rec, Computer Graphics; 4.05 GPA

BITS Pilani (Birla Institute of Technology & Science, Pilani) — *Pilani, India*
BACHELOR OF ENGINEERING IN ELECTRONICS AND INSTRUMENTATION — Aug 2011 - May 2015

Work Experience

CMU – Argo AI Center for Autonomous Vehicle Research– Prof. John Dolan — *Pittsburgh, PA*
RESEARCH ASSISTANT — **Sep 2020 - Present**
- Building datasets and prototyping modeling approaches for scenario level anomaly detection
- Developing pipelines for data collection, visualization in the CARLA Simulator. Including custom controllers and scenarios.

Argo AI — *Pittsburgh, PA*
SOFTWARE ENGINEER INTERN — **Jun 2020 - Aug 2020**
- Developed pipeline for associating external map data with internal HD Map format at the Data Science team (geospatial matching)
- Enhanced object-detection pipeline to extract raw results on unlabeled data to estimate data importance (cloud data retrieval and inference)

CMU – General Motor Autonomous Driving Collaborative Research Labs — *Pittsburgh, PA*
RESEARCH ASSISTANT — **Nov 2019 - May 2020**
- Worked on curb detection using ultrasonic sensors and road boundary detection to improve LIDAR based methods

HERE Technologies — *Mumbai, India*
SENIOR DATA SCIENTIST — Jul 2019 - **Aug 2019**
SENIOR SOFTWARE ENGINEER — Oct 2018 - Jun 2019
- Built deep learning based vision models and tools to automate extraction of map data from street images at the Map Creation team
- Trained and deployed object detection models for detecting 300+ traffic signs in street images using TensorFlow Object Detection framework (based on Faster-RCNN, SSD). Helped increase Recall and Precision to 80%+.
- Designed and built cloud-based pipelines for data sampling, detection model training and evaluation, using cost optimized cloud infra (AWS)
- Developed mobile object detection models for hazard detection as 20%-Time project, now launched as a new product HERE LiveSense SDK

SOFTWARE ENGINEER II — **Apr 2017** - Sep 2018
- Developed tools and systems for building image datasets, used for annotation and training, including design for active learning with feedback
- Designed, built, and deployed a service for highway sign parsing (OCR, scene text and icon extraction) and reduced human effort by 5X per user
- Recognized multiple times with 'Star of the Month' and 'Innovation Awards'

Octoloop Systems — *Gurgaon, India*
CO FOUNDER — **Apr 2016 – Mar 2017**
- Octoloop Systems built robots for industries and warehouses. Involved in all aspects of an early stage technology startup.
- Built an industrial robotic arm for automated Pick and Place tasks in factories and warehouses. Y-Combinator W2017 onsite interviewee

Hullo Inc — *Mumbai, India*
SOFTWARE ENGINEER — **Oct 2015 - Mar 2016**
- Implemented server with audio routing, and a parse-server like datastore (improving call latencies by 5x)

Projects

MRSD Capstone Project – Simulation of Realistic Behavior for Traffic Agents — *Pittsburgh, PA*
SOFTWARE ENGINEERING & PROJECT MANAGER — **Jan 2020 - Dec 2020**
- Extracting behavior parameters for learning behaviors from real world video data and simulation in the Carla Simulator
- Built computer vision pipeline for detecting and tracking vehicles from traffic camera videos to bird's eye view
- Managing and tracking the project progress as project manager for 5-member team

Team AcYut, CRIS, BITS Pilani — *Pilani, India*
SENIOR MEMBER AND LEAD (SOFTWARE SYSTEMS AND ELECTRONICS) — **Sep 2011 - Dec 2014**
- Team AcYut built India's 1st Autonomous Humanoid robot. Represented India at Robocup 2013. Sponsored by Govt of India for **INR 4.5M**

Publications & Awards

PUBLICATIONS

Robust gesture recognition using Kinect: A comparison between DTW and HMM, Optik - International Journal for Light and Electron Optics – 2015

AWARDS

2019 - **Significant Development IP Award**, Award from Patent board for POC on map and image hybrid deep learning models. *Here Technologies*

2018 - **Innovation Award**, For successful approval of mobile vision deep learning POC to production *Here Technologies*

Skills

Vision/ML/Data Science: Pandas, PyTorch, TensorFlow, Jupyter, SQL, OpenCV, Carla Simulator
Cloud: Compute, Storage, Autoscaling infra (EC2, EC2 Spot, S3, Lambda, ECS)
Programming: Python, C++, JavaScript, JAVA, C **Web:** HTML, CSS, NodeJS, Express