

# Salil Dabholkar

COMPUTER VISION · DEEP LEARNING · ROBOTICS

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*"Interested in application of Vision and Deep Learning to Robotics"*

## Education

### University at Buffalo (SUNY)

Buffalo, NY

MASTER OF SCIENCE (ROBOTICS)

Aug. 2019 - Present

- **Relevant courses:** Computer Vision, Robotic Algorithms, Engineering Analysis, Machine Learning (Spring), Deep Learning (Spring)

### University of Mumbai

Mumbai, India

BACHELOR OF ENGINEERING (IT)

Aug. 2013 - Jul. 2017

- **Relevant courses:** Intelligent Systems (8/10), Data Mining and BI (9/10), Data Structures and Algorithm Analysis (9/10), Object-Oriented Programming (10/10), Structured Programming Approach (10/10)

## Skills

**Languages** Python, C++, JavaScript

**Frameworks** Keras, Tensorflow, OpenCV, Pandas

**Software** MATLAB, ROS, git, Linux, Bash,  $\text{\LaTeX}$

## Selected Projects (More on Github)

### Robotics

UDACITY VIRTUAL HIGHWAY PATH PLANNER [CODE] [DEMO]

Spline, C++

- Used the car's localization and sensor fusion data for prediction of other vehicles, decision making, and trajectory planning
- Easily drove **20+ miles** autonomously without accidents (required was 4mi) within the given restrictions of jerk and max speed

PICKING, SORTING, AND RELOCATING OBJECTS USING A PR2 ROBOT

Voxel filter, Point Cloud, RANSAC, SVM

- Developed a perception pipeline for identification of objects via voxel downsampling, RANSAC plane segmentation, and SVM
- Used the pipeline for **picking and binning** objects from a (noisy) tabletop in Gazebo

VEHICLE DETECTION AND TRACKING

HOG, SVM (RBF), sklearn, Python

### Computer Vision

GERMAN TRAFFIC SIGN RECOGNITION [CODE AND SAMPLES]

LeNet, Tensorflow, OpenCV, Python

- 99.3% validation accuracy and the **95.1% test accuracy** on The German Traffic Sign Recognition Benchmark (GTSRB)
- Could correctly classify 10 real-world images with 100% accuracy

MULTI-IMAGE PANORAMA STITCHING [CODE] [SAMPLES]

SIFT, RANSAC, OpenCV, Python

### Machine / Deep Learning

SARCASM DETECTION IN ENGLISH TWEETS [BLOG]

ULMFIT, nltk, sklearn, Python

- Played around with the idea of transfer learning in NLP (from wikitext 103 to sarcasm detection)
- 85% validation and **67% test accuracy** (highest was 73%) on the SemEval2018 task for irony detection

## Publication

2016 Automatic Document Summarization Using Sentiment Analysis

ICIA-16, ACM

## Professional Experience

### MAD Lab, University at Buffalo

VOLUNTARY ASSISTANT

Sep. 2019 - Present

- Experimenting with Regression GAN and physics-based models for trajectory prediction of UAV
- Project is being carried out in collaboration with PARC and funded by DARPA (\$1M funding)

### Media.net (Directi)

WEB APPLICATION DEVELOPER

July. 2017 - Aug. 2019

- Developed a classification algorithm to classify domains into one of the IAB categories with more than **90% accuracy**
- Developed several internal data analytics interfaces using react (redux) and laravel from scratch