

# Aseem Saxena

aseem.bits@gmail.com aseembits93.github.io

## Experience

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### Engineer

**Panasonic, Singapore**

Jan '19–Current

*Technology innovation team*

- Multi Modal Affect Recognition from Videos.
- Multi Task Learning for Facial Attributes Classification.
- Edge Deployment of Deep Learning Models.

### Research Assistant

**National University of Singapore**

Sep '17–Jul '18

*Adaptive Computing Lab, Prof David Hsu*

- Implementation of a feature rich visualization tool based on Python Tkinter to visualize and debug QMDPNet, a deep learning algorithm for solving POMDPs.
- Robot infrastructure setup for executing actions output by QMDPnet reliably and safely. Implementation of a robust position controller on the Fetch robot.
- Imitation Learning for autonomous driving in an unstructured environment.

### Active Participant

**Stanford Scholar Initiative**

Dec '16–Dec '18

- Led and actively participated in the creation of research talks on influential research papers viz. Deep Residual Learning, FRAUDAR, Rovables, Real-Time 3D Reconstruction and 6-DoF Tracking with an Event Camera and Bayesian Active Learning for Posterior Estimation.

### Research Assistant

**Robotics Research Center, International Institute of Information Technology**

**Hyderabad, India**

Apr '17–Jul '17

*Mahindra Driverless Car Challenge*

- Worked on developing a robust system for traffic sign detection, recognition and tracking.

### Computer Vision Engineer

**Ducere Technologies Pvt Ltd**

**Hyderabad, India**

Jul '16–Apr '17

- Worked on developing a low cost LiDAR system using a Teraranger One ToF sensor on a pan tilt unit for 3D scanning.
- Experimented with various depth perception techniques such as structured light, stereo, ToF for implementing obstacle detection for a visually challenged person.

### Research Assistant

**Robotics Research Center, International Institute of Information Technology**

**Hyderabad, India**

Jun '15–Jul '16

- Research into an End-to-end learning based approach for visual servoing in diverse scenes.
- Implementation of 'Guess from Far Recognise when Near', a system for object search in unknown environments via frontier based navigation, far object recognition using 2D image segmentation and near object recognition using a bag of words model trained on 3D point clouds.
- Deep Learning for Table Interest Point Detection - Research to find interest points or corner points of tables in a scene using cues from semantic segmentation and vanishing lines. Availability of semantic information such as interest points can help mobile robots navigate in a better way.

- Automating GrabCut for Multilabel Image Segmentation - Implementing multi label Image Segmentation without user guidance by learning a Gaussian mixture model for each label and performing alpha expansion algorithm using MRF2.2 Library.

### Research Intern

**Strand Life Sciences Pvt. Ltd.**

**Bangalore, India**

May '14–Jul '14

- Applied Decision Trees and Support Vector Machines and other classification algorithms for classifying mutations as cancerous.

## Publications

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### Exploring Convolutional Networks for End-to-End Visual Servoing

Aseem Saxena, Harit Pandya, Gourav Kumar, K. Madhava Krishna

IEEE ICRA (International Conference on Robotics and Automation), 2017 (Accepted)

### LeTS-Drive: Driving in a Crowd by Learning from Tree Search

Panpan Cai, Yuanfu Luo, Aseem Saxena, David Hsu, Wee Sun Lee

RSS (Robotics Science and Systems) 2019 (Accepted)

## Education

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### B.E(Hons) in Electrical and Electronics Engineering

Aug '11–May '16

Birla Institute of Technology and Science Pilani

Pilani, India

CGPA: 7.34/10.00

### M.Sc(Hons) in Biological Sciences

Aug '11–May '16

Birla Institute of Technology and Science Pilani

Pilani, India

CGPA: 7.34/10.00

## Scholarships and Certificates

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Kishore Vaigyanik Protsahan Yojana Fellowship

Department of Science and Technology, Government of India.

2011–2016

All India Rank 1 in National Cyber Olympiad

2010

## Skills

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### Deep Learning

Pytorch, Tensorflow, Caffe

### Computer Vision

OpenCV, Point Cloud Library

### Robotics Platforms

Robot Operating System(ROS), Unity, Gazebo, OpenRAVE

### Programming Languages

Python, C/C++, JAVA, MATLAB

### Audio and Video Editing

Cubase, Kdenlive

## Academic Projects

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Object avoidance on Firebird V and E-puck Robots

Problems in current best protein model assessment measures

Application of Genetic Algorithms to Robot Locomotion

## Extra-Cirrucular Activities

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Member of INSPIRE robotics lab at BITS Pilani.

Guitarist, Bassist, Vocalist and Keyboardist at Music Club BITS Pilani.

Avid Marathon runner

Keen Swimmer