

# Aseem Saxena

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## 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.

### Writer

#### thegradient.pub

Aug '19–Current

- Blog posts related to Artificial Intelligence.

### Researcher

#### 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

Udacity Deep Reinforcement Learning Nanodegree

2019

### 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, Audacity

### 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