

# Aseem Saxena

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

## Experience

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### 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–Current

- 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, 2017 (Accepted)

## Education

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<b>B.E(Hons) in Electrical and Electronics Engineering</b>	Aug '11–May '16
Birla Institute of Technology and Science Pilani	
Pilani, India	
CGPA: 7.34/10.00	

<b>M.Sc(Hons) in Biological Sciences</b>	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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<b>Deep Learning</b>	Caffe, Tensorflow, Pytorch
<b>Computer Vision</b>	OpenCV, Point Cloud Library
<b>Robotics Platforms</b>	Robot Operating System(ROS), Gazebo, OpenRAVE
<b>Programming Languages</b>	Python, C/C++, JAVA, MATLAB
<b>Audio and Video Editing</b>	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