Aseem Saxena

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Experience

AI Engineer
Panasonic, Singapore Jan '19–Current
Technology innovation team

- Multi Object Tracking - Using Kalman filters for state estimation and Hungarian algorithm for data association.
- Deep Learning for Gaze Estimation (Ongoing)
- Edge Deployment of Deep Learning Models - Deploying pytorch models on Android by converting to ONNX and using OpenCV as a backend for inference.

Writer
thegradient.pub Aug '19–Current

- Writing articles on recent developments and long term trends in 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. Publishing research at Robotics: Science and Systems (RSS) 2019.

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. Publishing work at International conference of Robotics and Automation (ICRA) 2019.
- 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.
- 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

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

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

Kishore Vaigyanik Protsahan Yojana Fellowship
Department of Science and Technology, Government of India. 2011–2016
All India Rank 1 in National Cyber Olympiad 2010
Deep Reinforcement Learning Nanodegree (Udacity) 2019
Advanced Product Security (Panasonic) 2019
Introduction to Reinforcement Learning (Singapore Data Science Consortium) 2019

Relevant Coursework

Optimization, Linear Algebra, Complex Analysis, Multivariate Calculus, Differential Equations, Probability and Statistics, Control Systems, Signals and Systems, Communication Systems, Object Oriented Programming

Skills

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, Ardour, Kdenlive, Audacity

Academic Projects

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

Member of INSPIRE robotics lab at BITS Pilani.
Guitarist, Bassist, Vocalist and Keyboardist at Music Club BITS Pilani.
Avid Marathon runner
Keen Swimmer