Aseem Saxena

Personal Data

Place and Date of Birth:	Delhi, India | 24 April 1993
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Work Experience

Current — Computer Vision Engineer at Ducere Technologies Pvt Ltd Hyderabad, India

July 2016

Indigenous low cost LiDAR system

Currently working on developing a low cost LiDAR system using a Teraranger One ToF sensor on a pan tilt unit for 3D scanning.

Online Handwriting Recognition System

Currently working on developing an online handwriting system for user gesture recognition on an embedded device.

June 2015- July 2016 — Research Assistant at Robotics Research Center, International Institute of Information Technology, Hyderabad, India

Exploring Convolutional Networks for End-to-End Visual Servoing

Paper Link: ICRA17Paper

Video Link: ICRA17Video

Accepted at IEEE ICRA 2017

We present an end-to-end learning based approach for visual servoing in diverse scenes where the knowledge of camera parameters and scene geometry is not available apriori. This is achieved by training a convolutional neural network over color images with synchronised camera poses.

Guess from Far Recognise when Near

Video Link: Guess from Far Recognise when Near

Object recognition is achieved using 3-D Point Cloud data from Kinect sensors and constructing a Bag of Words Model on it. It is trained using a Support Vector Machine Classifier. Object Detection is achieved using segmentation of 2-D images by Markov Random Fields. The implementation is done on a Turtlebot with a Kinect Sensor mounted on top of it.

Deep Learning for Table Interest Point Detection

Report: Deep Learning for Table Interest Point Detection

I attempt to find interest points or corner points of tables in a scene using cues from semantic segmentation and vanishing lines. Availabilty of semantic information such as interest points can help mobile robots navigate in a better way.

Automating GrabCut for Multilabel Image Segmentation

Report: Automating GrabCut for Multilabel Image Segmentation

Performing Image Segmentation for 3 labels without user guidance by learning a GMM for each label and performing alpha expansion algorithm using MRF2.2 Library.

Summer 2014 — Research Intern at Strand Life Sciences Pvt. Ltd., Bangalore, India

Somatic Germline Classification using Decision Trees

I worked in the Strand Next Generation Sequencing Team under Mahesh Nagarajan and Dr. Vamsi Veeramachaneni on applying Decision Trees and Support Vector Machines and other classification algorithms to biological data. The main purpose was to be able to predict if a certain mutation was cancer induced without having any knowledge of the cancer tissue beforehand by training the model with existing data. The results obtained were substantial. I used Python for file handling, data cleaning and data preparation. I used R and the legacy software provided by Strand for applying Classification Algorithms.

Education

May 2016	Master of Science in Biological Sciences, **Birla Institute of Technology and Science**, Pilani, Rajasthan, India CGPA: 7.34/10
May 2016	Bachelor of Engineering in Electrical and Electronics Engineering, **Birla Institute of Technology and Science**, Pilani, Rajasthan, India CGPA: 7.34/10
April 2011	Class 12th, **Cambridge School**, Noida, Uttar Pradesh, India Marks: 90.6/100
April 2009	Class 10th, **Cambridge School**, Noida, Uttar Pradesh, India Marks: 91.8/100

Scholarships and Certificates

2011 Kishore Vaigyanik Protsahan Yojana Fellowship
Department of Science and Technology, Government of India.
2010 All India Rank 1 in National Cyber Olympiad, 2010.

Skills

Deep Learning	Caffe, Torch
Computer Vision	OpenCV, Point Cloud Library
Robotics Platforms	Robot Operating System (ROS)
Programming Languages	C/C++, JAVA, Python, MATLAB, R.
Robots Worked on	:Turtlebot Robots, e-PuckRobots, FireBird V Robots, Parrot Bebop 2.
Audio and Video Editing	Cubase, KdenLive.
Miscellaneous	Simulink, Verilog HDL, Proteus, MASM.

Academic Projects

OBJECT AVOIDANCE ON FIREBIRD V AND E-PUCK ROBOTS : I implemented various object avoidance algorithms in C++ such as bug-0, bug-1 on the FireBird V and e-puck robots and tested it on a variety of obstacles.
PROBLEMS IN CURRENT BEST MODEL ASSESSMENT MEASURES : I worked on protein structure prediction and different drawbacks of current metrics being used and hypothesizing own metrics to solve current problem.
APPLICATION OF GENETIC ALGORITHMS IN ROBOT LOCOMOTION : Conceptualization of a robot with different interchangeable modules which can climb a stair using genetic algorithms for optimizing sequence of motion.
miRNA EXPRESSION PROFILING of LIVER HEPATOCELLULAR CARCINOMA : I worked on modelling of miRNA data. I calculated differential expression using Volcano Plots.
SOBRIETY CHECKER USING INTEL 8086 MICROPROCESSOR : I made a virtual sobriety checker on Proteus and MASM using Intel 8086 microprocessor, Timer, Buttons and LEDs to calculate response time between two button presses.

Extra curricular Activities

Member of INSPIRE robotics lab at BITS Pilani.
Guitarist, Bassist, Vocalist and Keyboardist at Music Club BITS Pilani.
Avid Marathon runner; Regularly participate in Half Marathons.
Keen Swimmer; Awarded Silver in Inter Hostel Swimming competition.