KARTIK GUPTA

(+91) 965 116 3366 ⋄ guptak@oregonstate.edu

EDUCATION

Oregon State University *Sept 2018 - Ongoing*
Masters in Robotics

Indian Institute of Technology, Kanpur *July 2012 - June 2016*
Bachelor of Technology Overall GPA 8.3/10
Department of Civil Engineering

Delhi Public School, Vasant Kunj *April 2012*
Senior Secondary, Central Board of Secondary Education (CBSE) Overall Percentage: 94.2
Department of Civil Engineering

SCHOLASTIC ACHIEVEMENTS

- Attained **1964 rank** (99.7 Percentile) in IIT JEE (2012) amongst 0.5 million students all over India.
- Attained **269 rank** (99.8 Percentile) in AIEEE (2012) amongst 1.3 million applicants all over India.
- **Gold Medallist**, Delhi Public School,Vasant Kunj for consistent academic excellence from 2005-2012.

PROJECTS

SLAM in Reduced Vision Jan 2016 - Dec 2016
Guide : Prof. Gaurav Pandey, Dept of Electrical Engineering, IIT Kanpur

- Objective: To tackle the problem of SLAM in harsh indoor environment with fog and smoke, in minimum cost.
- Performed implementation of Single Image Haze Removal Using Dark Channel Prior, proposed by He et al, on the foggy image dataset to improve scene visibility by recovering the contrast and color fidelity.
- Processed the enhanced images through ORB SLAM, a real time feature-based monocular SLAM technique.
- Generated foggy datasets by adding synthetic fog, both homogeneous and heterogeneous,using Perlins noise.

Results: Evaluated results using TUM RGB-D fr1/desk image dataset with synthetic fog and smoke. The keyframe selection improved by upto 4.5 times. This improvement was effective over wide range of fog density.

Autonomous Ground Vehicle (AGV) Navigation in Orchards May 2015 - Jul 2015
Guide:Dr. Vason Srini,Executive Director,DataFlux Systems Inc., Berkeley, CA

- Objective: To generate the navigation plan around an orchard for an AGV using only GoogleEarth images.
- Implemented Canny Edge Detection and Contour Analysis to identify and classify the trees and obstructions.
- Performed noise filtration, least-squared error analysis and regression method to estimate the rows of trees.
- Generated shortest path around the orchard using generated waypoint. Incorporated Bezier curves created using Controlled Random Search algorithm with C2 continuity to allow for high speeds at turns.
- Integrated the entire process within a ROS node that would publish messages with navigational coordinates.

Results: Achieved upto 95% accuracy in path generation; process is effective over wide range of tree growth

ABU ROBOCON : An Annual Asian Oceanian College robotics competition
Dr. Bhaskar Dasgupta, Coordinator Centre for Mechtronics, IIT Kanpur

- **Robocon 2015** Oct 2014 - Mar 2015

Objective: To develop 2 Semi-Autonomous badminton playing robots for full sized badminton court.

- Performed blob detection and optical flow with OpenCV for shuttle localisation using a Kinect sensor.
- Implemented extended Kalman Filter with a standard equation of a shuttle projectile for trajectory prediction.

Results: Accurately predicted trajectory and landing point of incoming shuttle within error margin of 5-7 cm.

· **Robocon 2014** Oct 2013 - Mar 2014

Objective: To develop an autonomous robot capable of pole walking and a manual robot capable of lifting it.

· Implemented a stable closed-loop control system using motors, rotary encoders and multiple ultrasonic sensors to detect and grasp the poles to move the bot forward and for climbing ladders
· Developed the manual robot with a joystick-controlled holonomic drive using omni wheels and feedback loop.
· Used object oriented programming and built template libraries for all components to improve efficiency.

Results: Secured 6th place in the National Competition and bagged the award for Best Innovative Design

· **Robocon 2013** Oct 2012 - Mar 2013

Objective: To develop 2 robots,one manual and one autonomous, for pick and place tasks

· Programmed to achieve precise high speed line following and grid solving by the robot using PID algorithm.
· Created precise 3D models of the complete robot and involved in systems integration and fabrication.

RELEVANT COURSES

Academic

Probabilistic mobile robotics
Probability & Statistics
Fundamental Course on C Language
Introduction to Robotics
Linear Algebra
Numerical Methods

MOOCs on Coursera

Algorithms, Part 1 & 2 (Princeton University)
Robotics: Perception (University of Pennsylvania)
Robotics: Mobility (University of Pennsylvania)
Machine Learning (Stanford University)
Robotics:Aerial Robotics(University of Pennsylvania)
Regression Models (Johns Hopkins University)

TECHNICAL STRENGTHS

Computer Languages C, C++, Python, PostgreSQL, HTML5
Softwares & Tools ROS, OPENCV, RStudio, MATLAB, Arduino IDE, AutoDesk Inventor, Excel

PROFESSIONAL EXPERIENCE

OYO Rooms, an Indian hotel brand with 8000+ hotels spread across 200+ cities Gurgaon,India
Data Scientist Jun 2017 - Jul 2018

· Devised algorithm based on occupancy prediction & current booking trend for dynamic pricing of 2500+ hotels.
· Implemented K-means clustering and non linear regression to identify days of peak demand for each city.

Fastfox.com, Rental Service Provider Gurgaon,India
Business Analyst Sep 2016 - May 2017

· Developed KPIs for online marketing campaigns based on cost,conversion and uniqueness of users acquired.
· Performed in-depth diagnostic studies and studied app usage patterns and user engagement levels.

LEADERSHIP EXPERIENCE

Head, Science and Technology Council, IIT Kanpur, Apr 2015 - Mar 2016

· Supervised the activities of 13 clubs along with their coordinators with a total budget of USD 40K.
· Organised lectures, workshops, exhibitions and intra college competitions for campus community

Team Leader, ABU Robocon 2015 - Centre for Mechatronics, IIT Kanpur Oct 2014 - Mar 2015

· Led a 3-tier team of 32 members; conducted recruitment tests and interviews for new members.
· Planned and supervised the inter-dependent tasks of the design,sensing and programming wings of the team.