# Sahib Singh **Dhanjal**

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| *University* | *Major* | *GPA* | *Completion* |
|---|---|---|---|
| ***University of Michigan, Ann Arbor*** | *Master's in Robotics & Automation* | *3.70 / 4* | *Sept '17 - present* |
| ***Birla Institute of Technology & Science*** | *B.E.(Hons) Mechanical Engineering* | *9.05 / 10* | *July '12 – May '16* |

## Skills

Programming: Python, C/C++, JavaScript (Proficient); MATLAB, Java, HTML, CSS, Latex (Working Knowledge)

Technologies: Git, Machine Learning (ConvNetJS, SciKit, TensorFlow), Robot Operating System (Indigo, Hydro), OpenCV

## Work Experience

### ExxonMobil Chemicals | PP Sales Assistant – South Asia — Jun '16 – Jul '17

- Handled India and subcontinent operations for EM's largest global distributor
- Managed portfolio of 12 customers through-out India
- Implemented custom dashboard which led to increase in sales performance by 15% and the analytics efficiency by 65%

## Projects

### SLAM in autonomous maritime systems — Dec'17 – Current

- SLAM stack being implemented on top of ROS Hydro for the RobotX Competition held in Dec '18
- Sensor fusion algorithm being implemented for Velodyne VLP-16, Ladybug-5 and GPS/IMU module based on open-source Apollo library

### SLAM and autonomous exploration in differential drive robot — Oct '17 – Dec '17

- Implemented the occupancy gird mapping algorithm, robot odometry action model, LiDAR sensor model, and particle filter for the Mapping/ Monte Carlo localization on the robot in C++
- Implemented Yamauchi's autonomous exploration algorithm on the robot

### Vision based autonomous 4-DOF dynamixel robotic manipulator — Sep '17 – Oct '17

- Used a Microsoft Kinect and a 4-DOF dynamixel arm to develop an autonomous arm capable of completing tasks such as block stacking based on color and building 5-level pyramids

### Path planning and multi-robot autonomous exploration on Turtlebot — Dec'15 – May '16

- Path Planning / Navigation stack developed for Turtlebot on ROS Indigo
- Python simulator developed for simulation of multi-robot autonomous exploration and path planning algorithms
- Simulation of autonomous multi-robot exploration in Gazebo

### Formula Student – FSAE Italy — Oct '12 – Sep '14

- Responsible for design and fabrication of a suspension package for a formula student prototype
- Worked on bell crank geometry, double wishbone suspension design, dynamic roll center migration, spring and roll rates for the car, anti-dive and anti-squat parameters for the car

## Coursework

Graduate/ Undergraduate: Design & Analysis of Algorithms, Computer Vision, Mobile Robotics, Machine Learning, Robot Kinematics & Dynamics

Online/ Self: Deep Learning in Self-Driving Cars, Data Structures and Algorithms, Intro to Networks, Artificial Intelligence for Robotics

## Leadership

- *CoStAA (Techfest Coordinator)*, APOGEE'15, Annual tech fest of BITS Pilani
- *Coordinator*, Department of Visual Media, BITS Pilani
- *Marketing Head*, Inspired Karters, BITS Pilani

## Extra – Curricular

- Placed 8$^{th}$ in ACM ICPC Amritapuri Regional '13 and 6$^{th}$ in ACM ICPC Calcutta Regional '14
- Won Track-O-Mania (a line following bot competition), iStrike (Vision based autonomous bot competition), APOGEE '14
- Lead front-end developer for the main site of APOGEE '16 and webmaster for OASIS' 15, APOGEE'15 and Aarohan '15
- Won iBOSM '14 soccer and volleyball tournament and represented East Singhbhum district soccer team