Abhishek **Venkataraman**

SENIOR ROBOTICS ENGINEER

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Experience

May Mobility   *Ann Arbor, Michigan*
SENIOR ROBOTICS ENGINEER   *Jun 2018 - Present*
- Product lead, reposonsible for software development and deployment for classification of traffic lights with vehicle camera
- Developed GUI tools for supporting development and operations team: Camera Calibrator, traffic light mapper, health monitor, etc.)
- Shipped production quality software for traffic light classification on fixed infrastructure nodes, running real-time vision algorithms on a Pi
- Supported new and existing deployments by providing on-site support for vehicle hardware and software

University of Michigan   *Ann Arbor, Michigan*
GRADUATE STUDENT RESEARCH ASSOCIATE   *May 2017 - Apr 2018*
- Kinematically-informed Interactive perception [Link], enables robots to classify objects by building 3D models through observations from a RGBD camera while manipulating the object. Method was validated on Toyota's HSR Robot
- SPARE [Link], extendable articulated object RGBD dataset. Method could randomize configurations on Gazebo and provide simulated observation from multiples viewpoints. Implemented DNN (Conv3D/Conv+LSTM, FC) to count links and estimate link lengths on Tensorflow

GRADUATE STUDENT INSTRUCTOR, MATHEMATICS FOR ROBOTICS, (WITH PROF. JESSY W. GRIZZLE)   *Sep 2017 - Dec 2017*
- Covered topics in linear algebra including, vector spaces, orthogonal basis, SVD, QR Factorization, BLUE, MVE and Kalman Filters

GRADUATE STUDENT INSTRUCTOR, ADVANCED TOPICS IN COMPUTER VISION (WITH PROF. JASON J. CORSO)   *Jan 2017 - Apr 2017*
- Covered pictorial structures, graphical models, CNN, GAN, RNN, LSTM, auto-encoders. Created weekly in-class and programming assignments

Ather Energy Pvt. Ltd.   *Bangalore, India*
SENIOR ENGINEER, ELECTRONICS INTEGRATION   *Jul 2015 - Jul 2016*
- Headed a team of 6, responsible for designing electrical (signal and power) interface between all subsystems, waterproof housings for vehicle dashboard and power distribution unit
- Performed system level DFMEA and incorporated hardware changes to accommodate on-board diagnostics

Schlumberger Asia Services Ltd.   *Mumbai, India*
SENIOR FIELD ENGINEER, WIRELINE   *Jul 2012 - May 2015*
- Lead Engineer for ONGC offshore wireline operations; carried out over 80 logging jobs as the engineer in charge
- Planned and executed many high profile ($400K revenue/job) operations in offshore oil rigs, lasting over 150 hours while keeping quality and safety as priority, taking critical decisions while operating with limited connectivity to base
- Worked in culturally diverse teams with varied nationality, heading teams consisting up to 8 crew members

Education

University of Michigan   *Ann Arbor, Michigan*
MASTER'S IN ROBOTICS (GPA: **3.96** / 4.0)   *2016 - 2018*
Indian Institute of Technology Madras   *Chennai, India*
B.TECH IN MECHANICAL ENGINEERING AND M.TECH IN PRODUCT DESIGN   *2007 - 2012*

Academic Projects

Directed Research, (Prof. Jason Corso)   *Sep 2017 - Dec 2017*
- Developed a ROS node for object detection using point cloud data from RGBD camera on Fetch Robot
- Implemented voice commands for Fetch Robot on ROS by creating an Amazon Echo skill

Robotics Systems Laboratory   *Jan 2017 - Apr 2017*
- Arm Lab: Implemented forward and inverse kinematics of a 6 DoF arm to manipulate blocks. Used Kinect for detection and 3D position estimate
- Flight Lab: Implemented position controller for drone with input from OptiTrack. Performed position hold, waypoint navigation and pick/place.

Digitization of a Chess game using a moving camera   *Sep 2016 - Dec 2016*
- Isolated chess board from background by detecting ArUco markers and applying 2D homographic transformations
- Identified moves using template matching, distance based clustering, color clustering and color histograms

Skills

Programmming	C++, C, Python, MATLAB, Tensor-flow, OpenCV, ROS, Gazebo, Linux OS, Git, LCM
Courses	Advanced / Foundations Computer Vision, Mobile Robotics (SLAM), Machine Learning, Artificial Intelligence
Hardware	RGB/RGBD Cameras, Lidars, Nvidia Jetson, Arduino, GPS, IMU, Personal Robots (Fetch, HSR)