

Kartik Madhira

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Fields of Interests: Multiview geometry, Camera calibration, Image and Point Cloud processing, Detection and Segmentation algorithms, Object tracking, and SLAM.

EDUCATION

- **University of Maryland** College Park, MD
Masters in Robotics August 2018 – present
- **Nirma University** Ahmadabad, India
Bachelors in Instrumentation and Control Engineering 2013–2017

EXPERIENCE

- **Research Assistant** Sept. 2019 - present
RAAS Lab, University of Maryland
Deploying and testing of SLAM algorithms for an autonomous bridge inspection UAV. The sensor module consists of a stereo camera and a 3D lidar.
- **Perception Intern** May 2019 – August 2019
Aeva Inc., Mountain View
Quantifying object tracking and detection in the perception pipeline. Implemented and integrated end to end metrics to set benchmarks for tracker and classifier improvements.
- **Research Assistant:** August 2018 – April 2019
Computer Vision Lab, University of Maryland
Implementation of supervised deep learning model for optical flow for use on edge inference devices such as Intel Neural Compute Stick.
- **Trainee Data Analyst** (Machine Learning) June 2017 – February 2018
Mu Sigma Inc., India
Part of the machine learning team that implemented ARIMA models for predictions of monthly and yearly sales using past inventory data. The client was an E-commerce major in the US specializing in footwear.
- **Research Intern** April 2016 - July 2016
Tethrbox Technologies
Pedestrian Flow Counter Contributed to research on effective traffic estimator by developing a people counter prototype using a downward facing camera. The counter used object tracking using background subtraction and minimum weight assignment algorithm for data association to achieve the up and down counts.

PUBLICATIONS

- **Self balancing robot using complementary filter: Implementation and analysis of complementary filter on SBR:** Kartik Madhira, Ammar Gandhi and Aneesha Gujral, 2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT), Chennai, 2016, pp. 2950-2954. ([Link](#))

SELECTED PROJECTS

- **Supervised and Unsupervised HomographyNet:** Implementation of [supervised](#) and [unsupervised](#) deep learning approaches in estimating planar homography on TensorFlow. ([Link](#))
- **Clerkbot - A Butler Robot:** Built a prototype of office friendly Autonomous Fetch and Carry UGV (ROS Based) ([Link](#))
- **SnapCut/Rotobrush:** Implemented Adobe After Effects segmentation pipeline SnapCut, a robust video object cutout using localized classifiers ([Link](#))
- **Structure from Motion (SfM):** A 3D reconstruction of a scene from a set of several snaps from a Quadrotor flying over a mat of AprilTags. ([Link](#))
- **Self Balancing Robot with Complimentary filter:** A self-balancing robot based on Complimentary Filter for the IMU Sensor(MPU-6050). ([Link](#))

SKILLS

Computer Languages: Python, C/C++, MATLAB, R, \LaTeX

Operating System: Linux, Mac OSX, Windows XP/7/8/10

Softwares/Libraries: ROS, TensorFlow, PyTorch, Numpy, Matplotlib, Keras, RStudio

REFERENCES

Yiannis Aloimonos
Professor,
University of Maryland

Dr. Waseem A. Malik,
Adjunct Professor,
University of Maryland

Dr. Pratap Tokekar,
Professor,
University of Maryland