

# Kartik Madhira

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## EDUCATION

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

## EXPERIENCE

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- **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.
- **Research Contract Engineer** March 2018 - May 2018  
*Indian Space Research Organization(ISRO)*  
Contributed in laying out the foundation for deploying CCD image sensors on payloads and testing the sensor characteristics.
- **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 background subtraction and minimum weight assignment algorithm for data association to achieve the up and down counts.

## PUBLICATIONS

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- **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

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- **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

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**Computer Languages:** Python, C/C++,MATLAB, R,  $\text{\LaTeX}$

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

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

## REFERENCES

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Yiannis Aloimonos  
Professor,  
University of Maryland

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

Dr. Dilip Kothari,  
Professor,  
Nirma University