

Kartik Madhira

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Research Interests: Planning under uncertainty and perception of the environment for robot interaction

EDUCATION

- **University of Maryland** College Park, MD
Master of Engineering in Robotics, GPA: - 2018 –
- **Nirma University** Ahmadabad, India
Bachelor in Instrumentation and Control Engineering, CGPA- 7.7/10 2013–2017

EXPERIENCE

- **Research Assistant:** *with Prof. Yiannis Aloimonos*
Computer Vision Lab, University of Maryland August 2018 – Present
- **Trainee Decision Scientist**
Mu Sigma Inc., India June 2018 – February 2018
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 Assistant** *with Dr. Dilip Kothari and Dr. Jignesh Patel*
Nirma University August 2016 - August 2017
Clerkbot, a butler Robot: Developed a research platform for butler robot named Clerkbot. Researched on comparison of various out of the box ROS localization and mapping packages using the Clerkbot.
- **Research Intern**
Tethrbox Technologies April 2016 - July 2016
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 euclidean distances between blobs in consecutive frames to achieve the up and down counts.

PUBLICATIONS

- **A quantitative study of mapping and localization algorithms on ROS based differential robot:** Kartik Madhira, Jignesh Patel, Dilip Kothari, Dipesh Panchal and Dhruv Patel, 2017 Nirma University International Conference on Engineering (NUICONE), Ahmadabad, 2017, pp. 1-5 ([Link](#))
- **Pedestrian flow counter using image processing:** Kartik Madhira, Aditya Shukla, 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS), Chennai, 2017, pp. 1911-1915. ([Link](#))
- **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](#))

PREVIOUS PROJECTS

- **Clerkbot - A Butler Robot:** Built a prototype of office friendly Autonomous Fetch and Carry UGV (ROS Based)
- **Automatic Wall Painter - AGWallP:** Fully automatic slave Wall painting machine with directions to paint given from a dedicated Mobile App. Basic Structure contains a horizontal 2D plotter with pneumatic sprayer running at 12V.
- **Self Balancing Robot with Complimentary filter:** A self-balancing robot based on Complimentary Filter for the IMU Sensor(MPU-6050).
- **Line Follower Robot using PID algorithm:** A line following Robot, based on PID algorithm with online PID tuning with the help of push-buttons. Won 2 competitions using the robot.

RELEVANT COURSES

- **CMSC 426 - Computer Vision:** Fall 2018 *by Prof. Yiannis Aloimonos*
- **ENPM 667 - Control of Robotic Systems :** Fall 2018 *by Prof. Waseem Malik*

SKILLS

Computer Languages: C, C++, Python, R, L^AT_EX

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

Softwares: CLion, PyCharm, Jupyter, Eclipse IDE, Eagle, Matlab, RStudio, OpenCV(library), ROS (middleware)

REFERENCES

Yiannis Aloimonos
Professor,
University of Maryland

Dr. Dilip Kothari,
Professor,
Nirma University

Prof. Sandip Mehta,
Associate Professor,
Nirma University