Traffic Sign Recognition

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Outline

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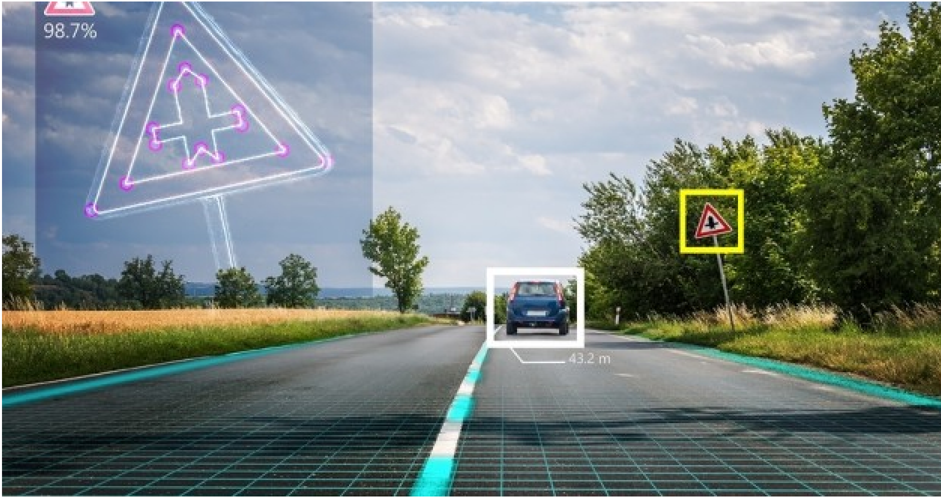
Motivation

Self Driving Car [1]

Motivation



Sign Recognition [2]

Outline

Objective

Recognize a selected subset of traffic signs from given video feed.

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Dataset - KITTI Vision Benchmark Suite [3]

The KITTI Vision Benchmark Suite

A project of Karlsruhe Institute of Technology and Toyota Technological Institute at Chicago

Karlsruhe Institute of Technology

home | setup | stereo | flow | sceneflow | depth | odometry | object | tracking | road | semantics | raw data | submit results

Andreas Geiger (MPI Tübingen) | Philip Lenz (KIT) | Christoph Stiller (KIT) | Raquel Urtasun (University of Toronto)

Welcome to the KITTI Vision Benchmark Suite!

We take advantage of our autonomous driving platform Annieway to develop novel challenging real-world computer vision benchmarks. Our tasks of interest are: stereo, optical flow, visual odometry, 3D object detection and 3D tracking. For this purpose, we equipped a standard station wagon with two high-resolution color and grayscale video cameras. Accurate ground truth is provided by a Velodyne laser scanner and a GPS localization system. Our datsets are captured by driving around the mid-size city of Karlsruhe, in rural areas and on highways. Up to 15 cars and 30 pedestrians are visible per image. Besides providing all data in raw format, we extract benchmarks for each task. For each of our benchmarks, we also provide an evaluation metric and this evaluation website. Preliminary experiments show that methods ranking high on established benchmarks such as Middlebury perform below average when being moved outside the laboratory to the real world. Our goal is to reduce this bias and complement existing benchmarks by providing real-world benchmarks with novel difficulties to the community.

To get started, grab a cup of your favorite beverage and watch our video trailer (5 minutes):

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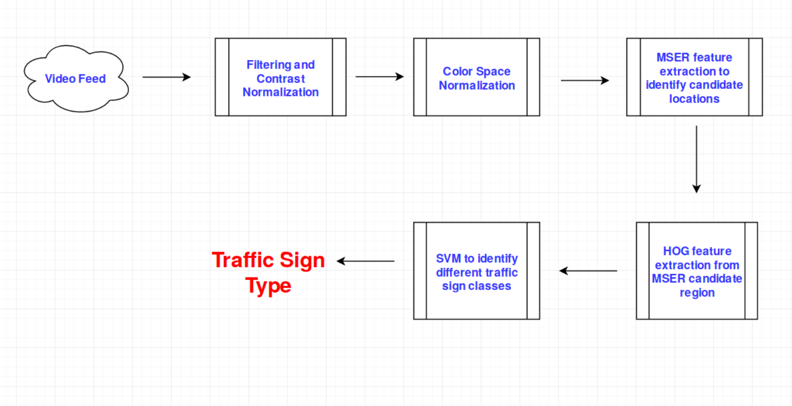
Methodology



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Results & Observations

Confusion Matrix

digit	0	1	2	3	4	5	6	7
0	0.78	0	0.22	0	0	0	0	0
1	0	0.89	0.01	0	0	0	0	0.1
2	0	0	0.99	0	0.01	0	0	0
3	0	0	0.16	0.82	0.01	0	0	0.01
4	0	0	0.01	0	0.95	0.03	0.01	0.01
5	0	0	0	0	0	1	0	0
6	0	0	0	0	0	0	1	0
7	0	0	0	0	0	0	0	1

Video Demo

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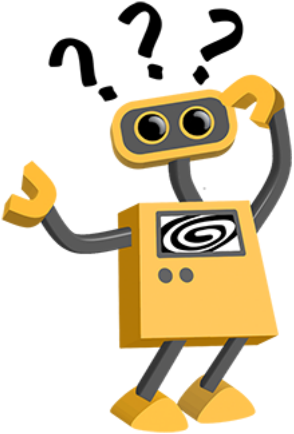
Questions



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"self driving car".
Available at: https://securityintelligence.com/news/hacking-risk-for-computer-vision-systems-in-autonomous-cars/.

"traffic sign".
Available at: https://www.vox.com/2016/4/21/11447838/self-driving-cars-challenges-obstacles.

Andreas Geiger, Philip Lenz, and Raquel Urtasun.
Are we ready for autonomous driving? the kitti vision benchmark suite.
In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2012.

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Acknowledgements Thanks

I would like to thank my teammates Gowtham Raj and Siddarth Bansal for their help and contribution. Link to Github Repo is available here

Thanks for your time!