VISTA – Traffic sign detection and recognition

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Problem definition

Detect and locate traffic signs in images or video

- the algorithm has to scan the image with windows of different sizes and determine whether the image patch contains a traffic sign or not

Recognize the detected traffic signs

- each image patch detected as a potential traffic sign has to be classified into one of known categories

Potential applications

Advanced Driver Assistance Systems

- display the recognized traffic sign as a reminder to the driver
- generate a warning if necessary

Traffic sign inventory

- periodic inspection of the state of traffic infrastructure
- mapping for building the inventory

Autonomous navigation

- additional source of information

Techniques

Image processing

- improving the input image
- extracting image features

Machine learning

- based on numerous examples of traffic signs, appropriate features are chosen and a set of classifiers is learned
- detectors – discriminate image patches containing traffic signs from background
- classifiers – recognize the detected traffic sign

Results

Traffic sign detection

proof-of-concept for traffic sign detection based on Viola & Jones detector can provide reliable true detection rates and false positives rates in real time

Traffic sign recognition

results comparable with the current state-of-the-art solutions are achieved on datasets with 43 German, 62 Belgian and 30 Croatian traffic signs from various traffic sign categories

Contact

VISTA

Computer Vision Innovations for Safe Traffic

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