# VISTA – Detection of roadside vegetation

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## Problem definition

It is necessary for autonomous vehicles to understand the environment in which the vehicle is located. This includes the detection of a variety of typical objects (e.g. traffic signs) using a video camera. There is very little research done in detection of other objects which are located along the road.

The purpose of detecting roadside vegetation is increasing traffic safety (detecting vegetation that is occluding traffic lights or traffic signs and off-road navigation), and also for roadside maintenance which is now done manually. The intention is to achieve a successful detection using a single color camera mounted on a vehicle.

## Potential applications

Computer vision techniques for automatic detection of vegetation and limited classification of vegetation have several usages:

- advanced driver assistance for preventing traffic accidents
- avoidance of vegetation-based obstacles
- guidance of service vehicles in maintenance tasks (mowing the grass, etc.)
- for off-road navigation as additional information in navigation systems of autonomous vehicles

The technology could be interesting to automotive industry and to the manufacturers of service vehicle

## Techniques

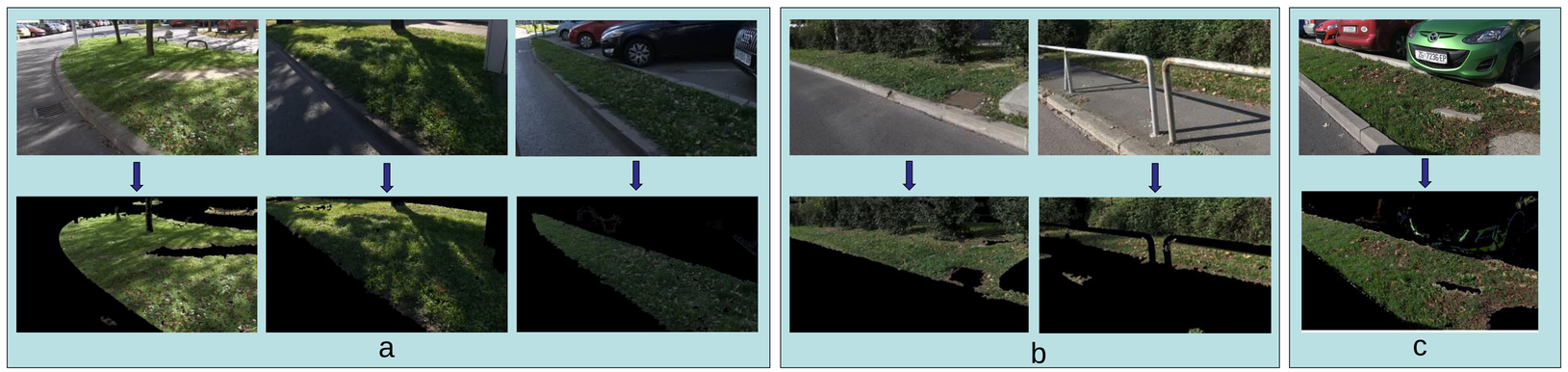
Image processing

- extracting statistically significant image features

Machine learning

- for development our manually annotated database is used
- based on carefully selected vegetation and non-vegetation examples a machine learning-based classifier is trained
- the trained classifier is used for discriminating image pixels of vegetation from non-vegetation

## Results




Different examples of vegetation detection: a) good vegetation detection in shade; b) good performance in detecting different types of vegetation (roadside grass and bushes); c) good discrimination between vegetation and objects similar to vegetation in color (green car)

## Contact

**VISTA**
Computer Vision Innovations for Safe Traffic

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