



Intelligent Vehicles that (Learn to) See

Dariu Gavrilă

Daimler Research and University of Amsterdam

Abstract

At Daimler, we are developing sensor systems on-board vehicles for improved driver safety and comfort. An important capability is to recognize relevant objects in the environment, which involves the use of machine learning (ML) techniques. The presentation provides an overview of relevant applications and focuses on the topic of vision-based pedestrian detection. I present the outcome of a recent benchmark study (to appear in TPAMI) covering feature selection and pattern classifiers. The study comes with a large dataset (8.5 Gb) that is made public to allow benchmarking of ML techniques. I furthermore present our on-board pedestrian system, which involves a cascade of modules, each utilizing complementary visual criteria (e.g. stereo, shape, texture), to narrow down the search space. I conclude with some thoughts on future developments. The various topics discussed are richly illustrated with video clips.

Syllabus: Intelligent vehicles, pedestrian detection, benchmarking, multi-cue object recognition.