Our presentations at the congress

**Tuesday 23 October 2012, 16.00-17.30**
Schubert 5 Room
Matthias Körner, Determination of turning rates using Floating Car Data

**Tuesday 23 October 2012, 16.00-17.30**
Business Suite 2 Room
Klaus-Peter Döge, Experiences with video-based parking space surveillance

**Wednesday 24 October 2012, 11.00-12.30**
Business Suite 1 Room
Andreas Kretschmer, Mobile services of social networks and their potential for traffic management and real time traffic information

**Wednesday 24 October 2012, 14.00-15.30**
Stolz 2 Room
Andreas Kretschmer, The traffic management system VAMOS - from research to regular operation

**Wednesday 24 October 2012, 14.00-15.30**
Schubert 1 Room
Christian Gassel, Cooperative traffic signals for energy efficient driving in tramway systems

**Thursday 25 October 2012, 14.00-15.30**
Stolz 1 Room
Robert Oertel (co-author Mario Krumnow), Microscopic real-time simulation of Dresden using data from the traffic management system VAMOS

**Friday 26 October 2012, 11.00-12.30**
Business Suite 1 Room
Matthias Körner, 3x benefit by local competence – direct use of Taxi-FCD to generate road traffic messages

Meet us at the exhibition

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[http://tu-dresden.de/vlp](http://tu-dresden.de/vlp)
Introduction
Today, video cameras are widely used to monitor the state and level of traffic. However, three major problems are still obvious. Most commercial image processing software depends on a particular camera model, and it must be calibrated by a professional. In addition, the diverse and sometimes severe environmental conditions are still a challenge for most algorithms. The goal of our work was to resolve these problems with a novel in-house development. The methods developed for incident detection and parking space surveillance do not disclose vehicle-specific characteristics. Only stochastic and non-specific characteristics are used for image processing. Significant results are a remarkable robustness against weather and lighting conditions as well as minimal requirements regarding camera height and direction. The latter leads to low procurement costs as existing infrastructure can be used for the camera installation.

AVISTAS: Incident detection on highways and motorways
In our system, we are using existing infrastructure with a camera height of about 7.5 m – which is rather low when compared to a common truck at 4 m. This causes a rapid change of the vehicle shape, size and details in an image sequence (Fig. 1). We solved this problem by using non-specific stochastic features of the traffic stream as a whole.

Fig. 1. A camera installation with example images. The camera uses the power supply of a meteorological station.

VISTA: Parking-space-analysis
As in the case of incident detection, it might also be possible to consider the vehicles as a whole for parking space surveillance. The disadvantage of this is that only the total number of free parking spaces – but not their location – is ascertainable. Therefore the system works with individual (single) parking space detection and had to take into account the large variety of vehicle types as shown in Fig. 3. To solve this problem, the identification and analysis of non-specific stochastic features of the single vehicle will be practiced.

Fig. 2. Automatic switched alarm images for the Level of Service “traffic congestion” under different conditions. Left image: occlusion in driving direction, middle image: occlusion sideways, right image: fog and snow.

Fig. 3. The use of non-specific vehicle features is necessary to consider different types and sizes of vehicles. Small vehicles can be anywhere on the parking space, so an analysis of the whole area is necessary.

Fig. 4. Programmed information board with the amount of free parking-spaces. The result can be verified by the image in real-time. The right image shows an example for triggering an alarm image while someone was parking in the exit of the parking area.

Benefits
- Camera-calibration is not necessary
- Analogue and digital cameras are available
- Almost occlusion-independent
- Low camera high about 8 m possible
- Robust against fog, rain and day/night differences
- Real time ability

Video-Based Parking-Space-Surveillance and Incident-Detection