Intelligent Transportation Systems: Real-Time Automatic Traffic Accident Detection and Reporting

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Context

- Real time Traffic Accident detection
- Video processing
- EDM Emergency & Disaster management
- ITS Intelligent transportation Systems
- OpenCV
- Optical flow
- FPGA
- Embedded cameras
- Dynamically Reconfigurable Multi-Core Architecture
- V2V and V2I communication
- Traffic management
- MPSoC Multi-processors System on Chip

Motivations

- More than 80% of population will live in urban areas.
- The number of cars in traffic will increase by 20%.
- Response time to rescue injuries is critical (the golden hour).
- Provide emergency services with sufficient information.
- Avoid traffic congestion and network saturation in case of emergency.
- Accident information must be analyzed and recorded for future reference or for insurance companies.

Objectives

- Automatic detection and reporting of accidents to the authorities in a short time.
- Report to authorities might include the location of the accident, the number of injured persons, number of damaged cars, and traffic situation.
- Adapt the amount of information that should be sent according to the Vehicle to Infrastructure (V2I) network availability.
- Develop EDM applications for ITS on heterogeneous reconfigurable MPSoC architectures.

Perspectives

- Accident detection algorithm based on, for instance, optical flow
- Extract important information: number of vehicles involved, estimate severity of accident etc...
- Detection of network availability
- Send sufficient important information to infrastructure