Annual Report of the Commission III, Working Group III/5

WG III/5 Image Sequence Analysis

Chair: Uwe Stilla, Germany
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Goals of Commission III:
The goal of Commission III is to develop mathematical, image processing and computer vision methods and tools to fully automate 3D data collection from satellite, aerial, streetlevel or close-range remote sensing data (mainly optical and Lidar). The key topics which are addressed by this commission are:

- Sensor pose estimation
- Surface reconstruction
- Pattern recognition
- Image indexation and image retrieval
- Interpretation of images of complex scenes
- 3D reconstruction
- Image sequence analysis

This commission is in the continuity of the previous Commission III organizations with some slight changes: two previous working groups on “Automatic Interpretation for City Modeling” and “object extraction for Road Modeling” have been fused in one working group called “Complex Scene Analysis and 3D reconstruction”. A dedicated “pattern recognition in Remote Sensing” inter-commission working group has been created, this field being particularly active and innovative in the last few years. Another working group on “Image Analysis for Image Indexation and Retrieval” has also been created, this field being a particularly hot topic, for the processing of, and the navigation within, huge data sets and image archives acquired from satellite, aerial and street-level platforms. All working groups of Commission III will address the topics of benchmarking, performance evaluation, and self diagnosis of algorithms. Indeed, these subjects are a good way to promote our field and also a way to bring together researchers of different fields.

Goals of Working Group III/5:
Image sequence analysis has been playing an important role in many close-range applications of computer vision, machine vision and robot vision and is also gaining interest in several fields of close-range and aerial photogrammetry as well as remote sensing. Examples of the application of image sequence analysis in photogrammetry and remote sensing are 2D/3D object tracking, the analysis of dynamic processes, deformation measurements, monocular or stereoscopic mapping of the environment of a UAV or an autonomous robot, mobile mapping systems, biomedical motion analysis, and many others.

Terms of Reference:

- Studying camera and camera network calibration from image sequences including cameras with non-standard geometry and variable framerate
- Studying ego-motion determination for navigation, georeferencing and object reconstruction
- Studying detection, reconstruction, classification and tracking of single and multiple objects in image sequences
- Studying event reconstruction from image sequences as well as single and multiple video streams
- Investigating the quality assessment of calibration, orientation and object detection using image sequences
- Benchmarking of calibration, orientation and object detection techniques using image sequences

Planned events of Working Group III/5:

- 2009, May
  Organization of session at IEEE / ISPRS URBAN 2009, Shanghai.
- 2009, June
  Co-organize a session on object detection and characterization using passive and active sensors at Hannover Workshop, 2009.
- 2009, September
  Co-organize Joint ISPRS Workshop CMRT09 together as follow-up of the successful CMRT05 Workshop.
- 2010
  Reviews and co-organizing of Commission III Symposium in Paris, France.
- 2011, September
  Organize a conference on Photogrammetric Image Analysis (PIA11) in conjunction with the other working groups of Commission III, follow up of the PIA07 conference in 2007 to be held in Munich, Germany
- 2012
  Organize sessions at the ISPRS congress in Sidney, Australia..