

2nd Panoramic Photogrammetry Workshop

**Berlin, Germany
24-25 February 2005**

The 2nd Panoramic Photogrammetry Workshop took place in Berlin-Adlershof in the Erwin Schroedinger-Zentrum (Fig. 1), which is accommodated on the Campus of the developing City of Science, Technology and Media. This ISPRS Workshop was initiated in the year 2004 by Professor Dr. Hans-Gerd Maas, Professor Dr.-Ing. Thomas Luhmann, and Professor Dr. Ralf Reulke. The Workshop, which was attended by 48 participants from eight countries, was organized by the following institutions: Humboldt University Berlin, Institute for Computer Science, Computer Vision (Ralf Reulke, Uwe Knauer), ISPRS WG V/5 'Development in image sensor technology' (Ralf Reulke, Sergei Zheltov), ISPRS WG V/1 'Industrial vision metrology system and applications' (Thomas Luhmann, Frank van der Heuvel) and Institute of Photogrammetry and Remote Sensing, TU Dresden (Hans-Gerd Maas, Danilo Schneider).



Fig. 1: Erwin-Schrödinger Zentrum in Berlin-Adlershof

In 23 presentations, participants of universities and research institutes (85%), system manufacturers (10%) and users (5%), discussed the following topics within the range of the digital panoramic cameras and terrestrial laser scanners: Geometric modelling and calibration, camera design and comparative evaluation, visualization of panoramic imagery and fusion with other data sources and processing of high resolution panoramic imagery with depth data (e.g. point clouds).



Fig. 2: Participants of the Panoramic Photogrammetry Workshop 2005

In comparison to the meeting in the year 2004 in Dresden this workshop documented that the market of panoramic cameras has increased and that these cameras, e.g. the EyeScan of DLR/KST GmbH Dresden and the HDR camera of SpheronVR AG Kaiserslautern, are increasingly tested and used in photogrammetry. The large image formats of these cameras - to almost one Gigapixel - are

particularly suitable for photographs of interiors and places in architecture and care of monuments. Thus, the cameras represent an interesting completion to digital multi image photogrammetry based on central perspective images and to terrestrial laser scanning. Sub pixel accuracies can be reached by calibration of these panoramic cameras. Nevertheless, due to the high initial costs of more than € 20000 for some specific cameras the question arises, whether digital SLR cameras, which can be rotated on a tripod by 360^0 during the image acquisition and whose photographs can be later stitched together to one panoramic image, are economical alternatives to the panoramic cameras.

With terrestrial laser scanners, e.g. Mensi GS100, Riegl LMS-Z420i, IMAGER 5003 of Zoller + Fröhlich and Leica HDS 3000 the trend moves to panoramic 3D scanning, in order to generate depth imagery, which are to a large extent complementary in their characteristics to optical pictures. Additionally, laser scanners increasingly offer integrated cameras as a basis for the texture mapping of the depth information, so that appropriate software tools can perform the on-going integration of these images or of images from hand-held cameras into 3D point clouds.

The presentations and the discussions during the workshop indicated clearly a trend towards fusion of terrestrial laser scanner data with imagery from digital cameras and the use of panorama cameras for visualization and interpretation. In addition, the automatic registration (fusion) of point clouds from different scanning stations can now be made, not only by means of targets, but also by using algorithms for merging the point clouds. The generation of CAD data from such unstructured point clouds is still performed manually today with high expenditure of time with respect to costs. Therefore an acceptance of the scanners on the market is reached only by increasing automation in the post processing of the point clouds. The universities point out the potential of innovative technologies by calibration and geometric modelling such as panoramic cameras and laser scanners and thus support the system manufacturers in establishing these systems on the market through successful practical applications.

The technical meetings had a pleasantly generous scheduling, which was used by the participants from computer vision and photogrammetry for active and interesting discussions after each presentation. Some topics could also be deepened by short demos after the sessions. Such Workshops promote the communication between photogrammetry and computer vision, in order to find a uniform terminology and to be able to better use synergies of both disciplines in the future.

A beautiful framework to the Workshop was formed by the reception in the chimney room of the WISTA - science and technology park Adlershof and the informative tour to the Einstein tower in the science park of Potsdam on Saturday after the workshop. The city of Science, Technology and Media in Berlin-Adlershof offered a modern infrastructure with high tech audio visual equipment, which allowed a pleasant sphere for a workshop that contained such interesting presentations.

Further information and direct access to the publications of the Workshop can be found on the Internet under <http://www.informatik.hu-berlin.de/sv/pr/PanoramicPhotogrammetryWorkshop2005/>. The next Panoramic Photogrammetry Workshop is due to take place in 2007, since the ISPRS symposium of commission V (President Professor Dr. Hans-Gerd Maas) will be organised in Dresden from 25.-27. September 2006, including Panoramic Photogrammetry as a scientific topic.

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