

Graduate School Course in Geomatics 2009



How to use video sequences to accurately track moving objects in air or under water

October 28–29, 2009
Otaniemi, Finland

The Helsinki University of Technology (TKK), Department of Surveying, has the pleasure of inviting you to attend a two day graduate school course in October 2009 in Espoo, Finland. The main themes of the course are the calibration of multi-camera systems and application of photogrammetric methods to the three dimensional measurements of moving objects. The course is aimed at graduate students in the field of Geomatics, but we welcome students of other fields as well. The lectures and demonstrations on October 28 and 29 are open to all interested parties, but exercises held in the afternoons (computer exercises) are limited to a maximum of 30 participants. All lectures and demonstrations are given in English.

The lecturers

Prof. Dr. Mark Shortis

Mark Shortis is Professor of Measurement Science in the School of Mathematical and Geospatial Science and Associate Dean (Program Quality) in the College of Science, Engineering and Health at RMIT University in Melbourne, Australia. Since the early 1980s he has been active in research in photogrammetry at close range, for example collaborative research with NASA on the structural dynamics of aerospace models, with the University of Western Australia on underwater assessment of fish populations, with DLR Germany on the characterisation of solar concentrators for energy generation and with CSIRO Marine Research on deep water habitat mapping. His most significant contribution has been in the development of calibration algorithms and techniques for digital cameras.

Prof. Dr. Stuart Robson

Stuart Robson is Professor of Photogrammetry and Laser Scanning in the Department of Civil, Environmental and Geomatic Engineering at University College London in the UK. His most recent research is in the field of the traceable on-line dynamic 3D co-ordination and monitoring of engineering, medical and fine art structures using photogrammetric image sequences, vision metrology techniques and laser scanning. Stuart is chair of ISPRS Working Group V / 1 - Vision metrology - best practice, systems and applications

Credits

Students are given 2 credit of attending of lectures/exercises and writing a report. There is also a possibility to get extra credits by giving a seminar presentation and writing a publication. The publication has no deadline and it can be published for example in the Photogrammetric Journal of Finland. Please check the compatibility of the subject with your own institute.

Costs

The course is free of charge, but the attendants must pay for their meals, travel and accommodation expenses.

Registration

More details and instructions for the registration can be found at our website <http://www.foto.hut.fi/graduateschool>
Please fill the above registration form if you will attend the lectures. The registration to the lectures is open until Oct 25, 2009.

Contact

graduateschool2009@foto.hut.fi



HELSINKI UNIVERSITY OF TECHNOLOGY
Department of Surveying

Program for the graduate school course 2009

Wednesday October 28, Design Factory, Stage
Day 1

9:00–10:45	Tracking applications, theory and precision
10:45–11:00	Coffee break
11:00–12:30	Image capture and introduction to VMS software
12:30–13:30	Lunch break
13:30–15:00	Camera calibration, VDE/VDI concept
15:00–15:15	Coffee break
15:15–17:00	Computer exercises, (TKK main building hall M240 second floor) Self-calibration processing and analysis

Thursday October 29, Design Factory, Stage
Day 2

9:00–10:45	Stereo-/multi-camera systems and tracking
10:45–11:00	Coffee break
11:00–12:30	Stereo system self-calibration in air / underwater
12:30–13:30	Lunch break
13:30–15:00	Demonstration of other tracking applications and data visualisation
15:00–15:15	Coffee break
15:15–17:00	Computer exercises, (TKK main building hall M240 second floor) Multi camera image processing

Materials

Participants will be provided with a copy of the presentations and some additional lecture notes. However participants are encouraged to bring their own cameras with in order to be used in demonstrations. Preferred spatial resolution of a camera sensor is $>6\text{Mpix}$ and possibly a short image sequence storage capability (movie mode with HD or 640×480 format).

How to get here?

Helsinki University of Technology is situated in Otaniemi, Espoo, 10 km from the centre of Helsinki. The street address for lectures and demonstrations is Betonimiehenkuja 5 and for computer exercises Otakaari 1 TTK main building.

You can travel to Otaniemi from Helsinki city center by bus no. 102 or 103 from Kamppi, or bus no. 194 or 195 from Elielinaukio. Timetables can be search from the web page <http://aikataulut.ytv.fi/reittiopas/en/>.

Below is a map of Otaniemi, where you can find the location of Design Factory (lectures and demonstrations) TTK main building (computer exercises).

