



Helsinki (Kirkkonummi), Finland
14-15 October, 2010

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The International Conference on

Ubiquitous Positioning, Indoor Navigation and Location-Based Service UPINLBS 2010

Finnish Geodetic Institute

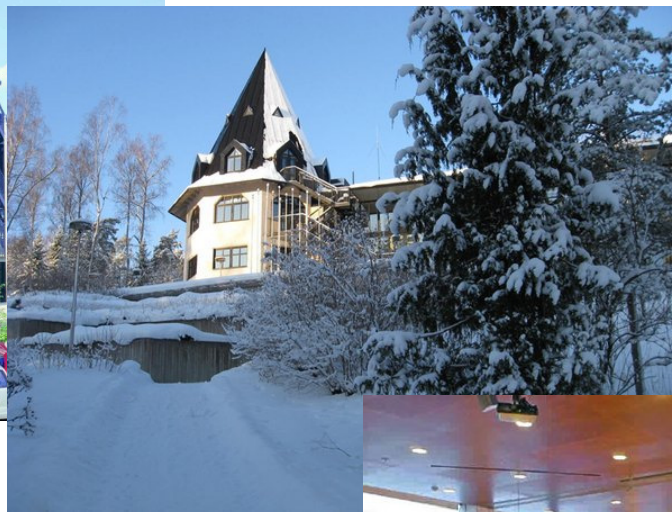


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The UPINLBS 2010 conference will be held at Congress Hotel Majvik, www.majvik.fi, in Kirkkonummi, Finland, close to the Finnish Geodetic Institute. There is a local train connection from near the hotel to downtown Helsinki.



Preliminary programme at a glance

Wednesday 13 Oct. 2010

16:00-18:30: Registration at the Finnish Geodetic Institute , Kirkkonummi

18:30-20:30: Cocktail reception at the Finnish Geodetic Institute (www.fgi.fi)

Thursday 14 Oct. 2010

08:00-17:30: Registration, opening session, keynote speeches, technical sessions, industry demonstrations, poster sessions. Conference Hotel Majvik, Kirkkonummi

Session 1: GNSS for Degraded and Denied Signal Environments

Session 2: Locating Sensor and GNSS Receiver Technologies

Session 3: Wireless Network Based Positioning

Session 4: Location-Based Services and Applications

18:00-21:00: Conference Dinner, Conference Hotel Majvik, Kirkkonummi

Friday 15 Oct. 2010

09:00-14:00: Technical sessions, industry demonstrations, poster sessions, closing session. Conference Hotel Majvik, Kirkkonummi

Session 5: 3D Modeling for Navigation Applications

Session 6: Visual-Aided Navigation

Session 7: Pedestrian and Indoor Navigation

Session 8: Integration Algorithms for Multi-Sensor and Multi-Network Positioning

The opening session of the conference on the 14th of October presents the following keynote speakers:

Dr. Günter Hein, European Space Agency

Dr. Gérard Lachapelle, University of Calgary, Canada

Dr. Jari Syrjärinne, Nokia Inc., Finland

Dr. Dorota Grejner-Brzezinska, The Ohio State University, USA



Session 1: GNSS for Degraded and Denied Signal Environments

Global Navigation Satellite Systems (GNSS) face usually serious problems in dense urban and indoor environments: attenuated signals, multipath propagation, echo-only signal reception without the line-of-sight signal present, navigation data decoding problems, or totally unacquirable signals due to the low power levels. This session will address various topics of GNSS for degraded and denied signal environments – for example, weak GNSS signal processing (e.g. acquisition and tracking), assisted GNSS, long-term orbits, multipath mitigation efforts, measurement error detection and exclusion, reliability measures, and modernized and new GNSS signals/codes (Galileo, modernized GPS, Glonass) and their benefits for degraded signal areas in urban environments.

Session 2: Locating Sensor and GNSS Receiver Technologies

This session discusses locating sensor technologies and also introduces new locating sensors - inertial navigation sensors based on for example micro electro mechanical system (MEMS) technology, RF identification (RFID) tags, Bluetooth and wireless local area network (WLAN) approaches for localization, ultra-wideband (UWB) technology for positioning, and cellular network positioning. In addition, GNSS receiver technology and design, both hardware and software implementations, are included. Issues related to signal processing methods for the locating sensors and the GNSS receiver will also be addressed in this session. Hardware design related to optimizing the sensor size, power, cost, and other issues are also within the scope of this session.

Session 3: Wireless Network Based Positioning

New concepts, applications, and advanced algorithms related to positioning and navigation technologies in the wireless infrastructures such as, but not limited to, WLAN/Wi-Fi, Bluetooth, cellular, UWB, RFID, ultrasound, infrared, WiMAX, and ZigBee. Network-based assisted-GNSS methods and other integration applications with wireless network assistance, innovative solutions for radio map creation, and wireless fingerprint database maintenance are also included. In addition, topics for handling communication security issues in wireless positioning are also within the scope of this session.

Session 4: Location-based Services and Applications

In this session, novel ideas, applications, technologies, and theories for various location-based services (LBS) are addressed, such as, but not limited to, mobile and ubiquitous mapping, virtual and augmented reality, geospatial information retrieval and maps, personalization and adaptive methods, location based sensor networks, wayfinding and navigation, location-based collaboration, location-based media technologies, LBS and Web 2.0, LBS and cloud computing, LBS and Mobile 2.0, LBS course system and teaching experiences, LBS in security and safeguard, LBS and usability, ubiquitous advertising, location-awareness with landmark and point-of-interest handling, location-based gaming, context awareness, location-based social networks, and so on.



Session 5: Pedestrian and Indoor Navigation

This session discusses pedestrian and indoor navigation methods. Pedestrian navigation related topics including, but not limited to, dead reckoning algorithms, step length estimation, heading modeling, motion mode detection and utilization, reliability monitoring, advanced map matching, and estimation and filtering are covered. The session also addresses topics of navigation methods dedicated for indoor use, for example, technology and applications for patient monitoring in hospitals, pedestrian guidance at airports or large exhibition halls and museums, floorplan utilization indoors, and so on.

Session 6: Visual-Aided Navigation

Image processing and the retrieved orientation information are being increasingly utilized for assisting navigation and motion sensors. Visual sensors can also provide situation and location assistance by feature and pattern detection approaches. This session discusses different ways to utilize visual information from cameras for positioning and localization assistance, e.g. by comparing successive images or matching an image to an existing database, map, or a floorplan. The navigation approaches using visual-based barcode readers in mobile applications are also addressed.

Session 7: Integration Algorithms for Multi-sensor and Multi-network Positioning

Multi-technology integration in positioning utilizes motion sensors for heading, velocity and location retrieval and absolute localization approaches such as GNSS, WLAN or RFID for location and velocity. Integration is performed by intelligent observation fusion. There are various methods to integrate the heterogeneous observation sources, and this session discusses these various integration algorithms available, for example, but not limited to, Kalman filtering, particle filtering, neural networks, and robust methods. Various sensor and network considerations are covered. In addition, reliability aspects of an integrated solution are addressed.

Session 8: 3D Modeling for Navigation Applications

This session focuses on three dimensional (3D) visualization techniques for navigation applications. In addition, related topics, such as but not limited to, 3D city modeling, model creation, rendering 3D scenes in real-time, 3D visualization, 3D view in location based services, 3D in an embedded system, point cloud classification methods, and mobile mapping methods and systems are covered.

Hotel Majvik



▶ **Registration:**

- ▶ 270 Euros for a non-member of the Nordic Institute of Navigation (NNF) or a non-member of IEEE
- ▶ 190 Euros for NNF or IEEE members
- ▶ 120 Euros for full-time students
- ▶ Registration fee covers:
 - ▶ welcome reception in the evening of the 13th of October
 - ▶ two lunch buffets
 - ▶ one dinner on the 14th of October (not for student registration)
 - ▶ transportation from downtown Helsinki to the conference venue Hotel Majvik, Kirkkonummi (www.majvik.fi), 25 minutes from Helsinki

▶ **Accommodation:**

- ▶ Participants can stay in the conference hotel Majvik www.majvik.fi or hotels in downtown Helsinki with special conference rates
- ▶ The local organizer will arrange bus transportations from downtown Helsinki to the conference hotel.

Helsinki downtown





- ▶ **Deadline for abstract (800-1000 words) submission:**
30th June 2010
- ▶ **Notification for abstract acceptance:**
31st August 2010
- ▶ **Deadline for full paper submission:**
15th October 2010
- ▶ **For paper contribution to UPINLBS 2010:**
 - ▶ Create and submit your extended abstract through the conference website.
 - ▶ Following abstract acceptance, a full paper can be contributed to the UPINLBS conference proceedings. Use the IEEE A4 manuscript template for conference proceedings for paper completion, since the paper will appear in IEEE Xplore digital library and should be prepared according to IEEE specifications. An IEEE copyright release form should accompany the full paper submission.
 - ▶ Register for UPINLBS 2010. At least one author of any paper must register for the conference. IEEE reserves the right to exclude a paper from IEEE Xplore, if the paper is not presented at the conference.
- ▶ Industry participants are invited to display their latest equipment, components and/or software related to the conference topics in the technical exhibition area at the conference.
- ▶ Further information, registration and abstract & paper submission:
www.fgi.fi/upinlbs
- ▶ **Scientific committee:**
 - ▶ Prof. Gérard Lachapelle (University of Calgary, Canada)
 - ▶ Prof. Börje Forssell (Norwegian University of Science and Technology, Norway)
 - ▶ Prof. Terry Moore (University of Nottingham, UK)
 - ▶ Prof. Dorota Grejner-Brzezinska (The Ohio State University, USA)
 - ▶ Dr. Jinling Wang (University of New South Wales, Australia)
 - ▶ Prof. Wu Chen (The Hong Kong Polytechnic University, Hong Kong)
 - ▶ Dr. Anna Jensen (AJ Geomatics, Denmark)
 - ▶ Dr. Alexander Mitelman (CSR, Sweden)
 - ▶ Prof. Jarmo Takala (Tampere University of Technology, Finland)
 - ▶ Dr. John Raquet (Air Force Institute of Technology, USA)
 - ▶ Dr. Jari Syrjärinne (Nokia Inc., Finland)
 - ▶ Mr. Stefan Söderholm (Fastrax Ltd., Finland)
 - ▶ Prof. Yang Gao (University of Calgary, Canada)
 - ▶ Prof. Juha Hyypä (Finnish Geodetic Institute, Finland)
 - ▶ Dr. Heidi Kuusniemi (Finnish Geodetic Institute, Finland)
 - ▶ Prof. Ruizhi Chen (Finnish Geodetic Institute, Finland)
- ▶ **Further inquiries:**
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