



The International Association for Automation and Robotics in Construction

Newsletter 2010

A Word from the President

I would like to invite you to attend the 27th International Symposium on Automation & Robotics in Construction (ISARC) which will be in Bratislava, Slovakia from June 24-27, 2009. We expect close to 80 presentations at ISARC 2010 which will make it again to a great event.

The annual ISARC symposium has been held since 1984. It started at Carnegie Mellon University when some visionaries from the US, Japan & Israel imagined to have an annual conference related to automation and robotics in construction. Any of the ISARCs has been a great success with typically more than 100 attendees from all over the world. ISARCs have been so successful thanks to the enthusiasm of the participants and their contributions which are of such high standard.

All ISARCs are organized by the International Association for Automation & Robotics in Construction (IAARC). IAARC is run by a Board of Directors (BOD), which draws IAARC's policies, decides about future ISARCs, maintains the growth of its membership, and controls the quality of the symposia, etc. You will find more details to IAARC and ISARC in this newsletter.

I wish you all a very fruitful & enjoyable symposium & I'm looking forward to seeing you.

Dr. Ronie Navon



**International Symposium on
Automation and Robotics in Construction**

Next ISARC Symposium

Bratislava, Slovakia, June 24-27, 2010

Find information here:

<http://www.isarc-2010-bratislava.sk/>

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News

Tucker-Hasegawa Award to Prof. Carl T. Haas

During the 26th International Symposium on Automation and Robotics (ISARC) held in June 2009 in Austin, U.S.A. Prof. Carl T. Haas received the Richard Tucker – Yokio Hasegawa highest honor award. Dr. Kamel Saidi and Dr. Ronie Navon, IAARC Award Committee and IAARC President respectively, gave Dr. Haas a plaque during the symposium dinner.



Professor Carl T. Haas is the Tier I Canada Research Chair in Construction and Management of Sustainable Infrastructure at the University of Waterloo. His research, teaching and consulting are in the areas of advanced construction and transportation technology, sustainability, and construction workforce issues. His most recent research is in the areas of sustainability, rapid local area sensing and modeling for construction automation, 3D scanning and analysis of aggregates, teleoperated robots for hazardous environments, critical construction operations planning, automated infrastructure maintenance, trenchless technologies, remote highway condition and incident detection, and construction workforce issues.

New IAARC Website Released

The new IAARC website has been released and can be found at:

<http://www.iaarc.org>

Dr. Jochen Teizer and Jonas Ahman both got the work done. “Finally!” they say. “The IAARC website overhaul was long overdue. Information has been condensed and made much easier to navigate.” Jonas Ahman has been IAARC’s webmaster for many years and together with a team of civil engineering students at the Georgia Institute of Technology they also worked on offering new features to a much more attractive website, for example:

- Online search function of all ISARC proceedings
- Membership information
- News, newsletter, and award postings

ISARC 2009 Proceedings Available Now Online!

The complete content of the official Proceedings of the 25th International Symposium on Automation and Robotics in Construction (ISARC) CD-ROM is now available online at <http://www.iaarc.org>.



International Association for
Automation and Robotics in Construction

A screenshot of the IAARC website homepage. The page has a navigation menu at the top with links for HOME, About IAARC, Membership, News and Events, IAARC Publications and Awards, Contact, and Sitemap. The main content area includes a 'How to get involved?' section, a 'Where to find the ISARC proceedings?' section with a photo of people at a meeting, and a 'Latest IAARC News' section with a list of recent events and awards. There is also a section for 'Next ISARC Symposium: 2010 in Bratislava' and a 'Browse past ISARC proceedings online' link. The footer contains the copyright notice: © Copyright 2010-2011 I.A.A.R.C.

The Visualization Technology Research Group at Chalmers University of Technology

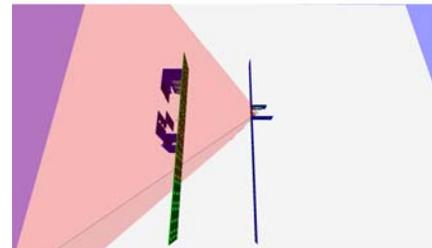
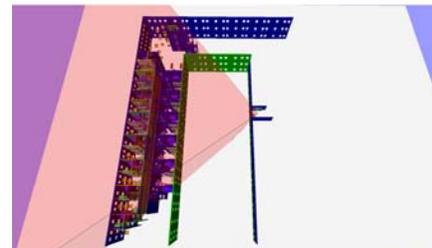
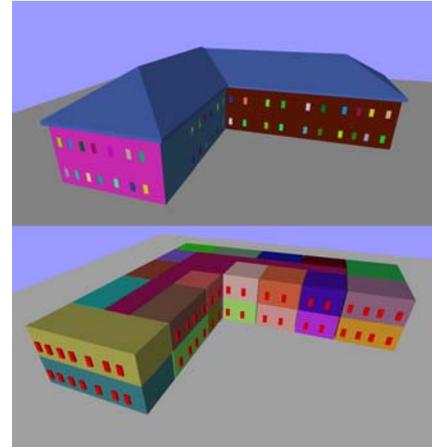
Mikael Johansson and Mattias Roupé

The Visualization Technology Group (Department of Civil and Environmental Engineering) at Chalmers University of Technology, Sweden, is a multi-disciplinary research team engaged in research related to the use of virtual reality (VR) and real-time computer graphics technology in urban planning and building design.

With VR, architects and planners can communicate ideas regarding future projects in a way that facilitates understanding among all involved parties, despite their background or professional expertise. However, today these simulations are generally created based on architectural sketches and 2D drawings, and thus incorporate an additional, time-consuming step in the design process. In this context, the concept of Building Information Models (BIM) is interesting as it may provide a solution to make the creation more cost-efficient and integrated.

Using BIM, a single system, mastered by architects, is used to create both 2D drawings and 3D-models. This way, full control of the result is maintained while the additional creation step of the required 3D-model can be omitted. However, 3D-models generated by BIM-systems are generally far too detailed (in terms of geometric complexity and number of individual objects) to be used directly as content in a VR simulation.

The purpose of a recently completed project within the Visualization Technology Group was to develop a system that enabled real-time rendering of large BIMs without any general 3D-model, a BIM is a different kind of representation since it defines not only geometrical data but also information regarding spatial relations and semantics. In particular, it contains information regarding *spaces* (rooms) and *openings* (doors, windows). This information was used in order to automatically create a *cells-and-portals partitioning*. Using this data structure, the 3D-rendering is accelerated by rejecting objects that are not in, or can be seen from, the specific room that the viewer is currently in (For further details, see the paper [1]). Compared to traditional optimization approaches (using only frustum culling), the presented system is often 10 times faster due to its ability to reject non-visible objects. In essence, this makes it possible to directly use content created in BIM-applications for real-time rendering. Thus, the time-consuming task of creating 3D-models for use in VR simulations can be omitted. For future use of VR in urban planning and building design, this is an important property as it enables a smooth integration of the technology in the current planning process. For more information, contact Mikael Johansson (jomi@chalmers.se).



[1] M. Johansson and M. Roupé, "Efficient Real-Time Rendering of Building Information Models", In Proceedings of the 2009 International Conference on Computer Graphics and Virtual Reality (CGVR'09), Las Vegas, Nevada, USA, 2009, Pages 97-103.

“Chair for Building Realization and Building Robotics“ (br)²- new laboratory name

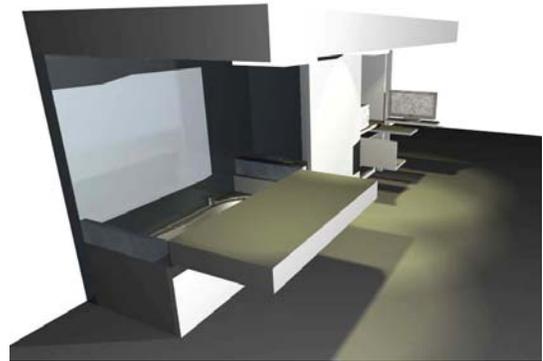
Thomas Bock

The chair for building realization and building informatics had been founded in 1997 by Prof. Dr.-Ing./Univ. Tokio T. Bock at the Technische Universität München. After more than 13 years of successful R&D, Education and Innovation the laboratory’s name has been changed towards “chair for building realization and building informatics (br)²” to underpin the laboratories dedication towards emerging technologies and robotics which are accounted as driving and transforming forces behind a multitude of emerging economic, social and ecological developments. Emerging technologies and robotics in the future will play an important role both in customized and resource saving building production and as part of our life/life-quality and thus the building/environment itself.

Research area “Ambient Integrated Robotics (AIR)” gains momentum

Thomas Bock

Today the independent and care supported living in a conventionally designed and low-tech home is often unpleasant, and in many cases not suiting to counterbalance or the ease of disabilities. Especially when entering a later stage of life, changes of habits and lifestyle occur and unforeseen disorders, multi-morbidity and disorder progresses, often make existing houses or flats inapplicable for elderly inhabitants. In many cases, a re-configuration of the existing home or the implementation of various assistive technologies as modular component systems would be needed to meet multiple needs with multiple sets of technologies. Normally, the implementation of new technologies, sensors, actors, assistance devices and robotic sub-systems needed in a certain use case normally is a complex, costly and time consuming matter often forcing elderly people to move to a new home, or to set aside the idea of being supported by advanced assistance technology. Since 2008 several seminars on ambient integrated robotics have been held through the br² lab and in 2010 two funded research projects covering the topic of high-tech assistance will start at the lab. Moreover, European alliances in which br² has been involved (“Ambient Assisted Living” and JPI “Demografic Change”) are further extending their actions and programs.



Highly compact robotic service wall (P. Graab)



Concept for a mobility robot fusing to a high-performance entity with the user (G. Temelkov)

Review of ISARC 2009

*Carlos H. Caldas and William J. O'Brien
Co-Chairs of the 2009 ISARC*



Introduction

The 2009 International Symposium on Automation and Robotics in Construction was successfully held on June 24-27, 2009 in Austin, TX. The Symposium was organized under the auspices of the International Association for Automation and Robotics in Construction and was hosted by The University of Texas at Austin. It was fitting that the Symposium was held in Austin, vibrant home of many high technology companies as well as world leaders in construction and civil engineering research and practice.

Paper Reviews and Proceedings

The ISARC proceedings contain papers from around the globe with topics in five categories: Management & Social Issues, Information & Computational Technology, Robot Technology, Automation & Robot Applications, and Automated Data Acquisition & Monitoring. These papers reflect the very best of contemporary research that addresses practical challenges facing construction. All papers reflect a rigorous peer review process. More than 120 abstracts were received. Each abstract was reviewed by two peers, with only the best being invited for full submission. Each of the papers submitted then received two reviews before a final decision was made on acceptance. Reviewer comments were returned to the authors for final revision. At the end, 72 papers were selected for publication. As such, we were pleased with the high quality of the submitted papers and wish to thank both the authors and the reviewers for their efforts in ensuring a symposium and proceedings of a high standard.

Symposium Program

The symposium program was composed of plenary presentations, panel discussions, technical sessions, committee meetings, and social events. Seventy five persons attended the symposium – 59 full registrations and 16 student registrations. The large number of students participating was very encouraging, as it fostered engagement of the next generation in the automation and robotics in construction community. More details on the symposium program are presented below.

Co-Sponsors and Cooperating Organizations:

No effort is possible without the help of many, and we particularly thank the following organizations: The Department of Civil, Architectural and Environmental Engineering and the Cockrell School of Engineering at The University of Texas at Austin for their support and infrastructure to make the Symposium a success. The Construction Industry Institute provided financial and organizational support. The International Association for Automation and Robotics in Construction provided a variety of organizational assistance and their membership formed the backbone of the cadre of reviewers for the Symposium. The CIB also co-sponsored the event.

Outreach

Of special interest, the Symposium was co-located with the 2009 ASCE International Workshop on Computing in Civil Engineering. Attendees of the Symposium had complementary registration to the ASCE event. Plenary sessions were shared between the Workshop and Symposium. Attendees were able to attend all sessions. This allowed the cross fertilization between these two communities and promoted the outreach of IAARC activities. Combined, the two events had 165 attendees representing organizations from 20 countries. Many of the ASCE attendees attended the ISARC sessions.

Here can be your article!

It's free and does not take much to get done. Please submit your contribution to the next IAARC Newsletter to Dr. Jochen Teizer, Editor of ISARC Newsletter, E-Mail teizer@gatech.edu.

IAARC is the only global organization dedicated to the advancement of Automation and Robotics in Construction.

IAARC's objectives:

- To encourage, facilitate and promote the coordination of scientific and technical development in Automation and Robotics in Construction (ARC)
- To facilitate the collection, compilation, publication, exchange and dissemination of scientific ARC data and information.
- To encourage the execution of fundamental ARC studies, to advance research, laboratory investigations and field tests and to accelerate the use of ARC.
- To assist the end-user application of Automation and Robotics in the Construction Industry.

Through:

- Organizing and Participation in ISARC-events
- Participation in ISARC's
- Active membership in IAARC community committees
- Website and Newsletter
- Contribution to Elsevier's AUTCON
- Association with leading organizations such as ASCE, CIM, etc.

Member benefits are:

- Participation in a network of world class construction technology innovators
- Participation in a community of scholars, researchers and industrialists
- Opportunities to meet and interact with fellow members
- Exposure to new trends and developments

- Exchange of state of the art knowledge/ideas
- Benchmarks for research progress and quality
- Opportunities to initiate international research projects
- Opportunities to coach young people in an international environment
- Opportunities to publish in IAARC's international journal, AUTCON (Elsevier)
- Access to the latest IAARC information
- Immediate updates of news and changes
- Participation in the annual meetings (ISARC conferences)
- Participation in regional meetings and workshops
- Active membership in community committees
- Influence on IAARC's objectives and its future direction
- Web links from the IAARC site to your web site
- Discounts for IAARC-supported activities such as ISARC conferences
- Exhibition rights at the ISARC conferences
- Newsletter

Members from:

Spain, Sweden, Japan, USA, Republic of Korea, Poland, Canada, The Netherlands, Germany, Israel, Finland, India, Taiwan, Australia, Italy, Slovenia, Lithuania, Luxembourg, Kuwait, UK, Russia, etc

Membership form:

Please contact IAARC via E-Mail: secretariat@iaarc.org

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