Workshop on Industrial Augmented Reality

Session 1: Real-World Requirements for Industrial Augmented Reality Applications

9:00 Applying MR Technologies to Product Exhibition at Canon
Ohshika Toshihazu, Human Machine Perception Laboratory, Canon Inc

9:15 AR Applications for the Car Development Process at Volkswagen – Lessons Learned
Stefan Wille, Volkswagen AG

9:30 Augmented Reality Applications in Experimental Vehicle Construction at BMW
Stephan Huber, BMW AG

9:45 Report on the Post-ARVIKA Industry-based AR Interest Group
Werner Schreiber, Volkswagen AG

10:00 Applications of AR in Broadcasting
Graham Thomas, BBC

Session 2: Existing Toolkits / Solutions: Tracking

10:30 History and Roadmap of InterSense Tracker Development for Industrial AR and Automation
Eric Foxlin, InterSense Inc.

10:45 AR-Browser: an Application Based on the Mixed Reality System VR-AVALON
Jens Weidenhausen, Harald Wüst and Didier Stricker, IGD

11:00 Potential of the ARToolKit for Use in Industrial AR Applications
Hirotaku Kato, Osaka University and Mark Billinghurst, HIT Lab NZ

Konrad Zürl, A.R.T. GmbH

11:30 Rapid Prototyping of Augmented Reality Applications with the STUDIERSTUBE Framework
Dieter Schmalstieg, TU Graz

Peter Mayer, metaio Augmented Solutions

12:00 Industrial Applications of D’Fusion Software
Bruno Uzzan, Total Immersion

12:15 ARTag Rev2 Fiducial Marker System: Vision based Tracking for AR
Mark Fiala, National Resarch Council of Canada

Session 3: Current Applications

13:30 Future Research Directions for Markerless Augmented Reality at the Example of an Aircraft’s Landing Gear
Dieter Langer, EADS

13:45 Augmented Reality Applications at Daimler Chryslers
Axel Hildebrand, Daimler Chryslers

14:00 AR-based Analysis of Interfering Edges between
Real and Virtual Objects
Fabian Daxl, Volkswagen AG

14:15 AMRA: Augmented Reality Assistance in Train Maintenance
Tasks
Jean-Yves Didier, Laboratoire Systemes Complexes

14:30 AR for Plant Service – Applications, Challenges, Future Directions
Miko Appel, Siemens AG, Corporate Technologies

14:45 Augmented Reality in Rockwell Corporate Research
Reinhold Bahringer, RSC

15:00 Vehicle in the Loop – Augmented Reality Application for Collision Mitigation
Thomas Bock, AUDI AG

Session 4: Existing Toolkits / Solutions: Authoring

15:30 Authoring the Impossible?
AMIRE toolkit, Michael Halter, FH Hegensburg

15:45 The DART Project: Building Real Tools for Real People
Maribeth Gandy and Blair MacIntyre, Georgia Institute of Technology

16:00 Authoring – A Key Element to Efficient Creation of VR/AR Content
Marco Schumann, IFI FHG Magdeburg

Program

Wednesday Oct 5
8:30-17:00 Workshop on Industrial Augmented Reality

Thursday Oct 6
8:00 Registration
8:45-9:00 Opening Comments
9:00-10:00 Keynote Presentation: Mixed Reality Research: The European Dimension by Eric Badiqué, European Comission
10:30-12:00 Rendering and Displays
14:00-15:30 Applications and Authoring
16:00-17:00 Vision-based tracking 1
17:00-17:30 Demo teaser session
17:30-18:00 Poster Teaser Session
18:00-19:30 Poster Session

Friday Oct 7
6:30-10:00 Panel: Hand-held Augmented Reality
10:30-11:50 Collaboration
14:00-15:00 Demo session
15:00-16:00 Interaction techniques
16:00-17:00 Keynote presentation: The Art of Technology and the Future of MR, Christopher Stapleton, University of Central Florida
19:00-on Conference Dinner

Saturday Oct 8
9:00-10:10 Vision-based tracking 2
10:45-12:05 Tracking and calibration
14:00-16:00 Demo Session
16:00-16:40 View generation and modeling
16:40-17:00 Concluding remarks

Conference Location
The main conference will be held at the Österreichische Akademie der Wissenschaften; the workshop takes place at the Siemens Forum Wien.

Österreichische Akademie der Wissenschaften (ÖAW)
Dr. Ignaz Seipel-Platz 2
A-1010 Wien
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Siemens Forum Wien
Dietrichgasse 25
1030 Wien
Tel.: (+43 5) 1707 37200

Sponsors

Fourth IEEE and ACM International Symposium on Mixed and Augmented Reality
Sponsored by IEEE Computer Society and the Österreichische Akademie der Wissenschaften

October 5-8, 2005
Vienna, Austria

www.ismar05.org
**Thursday Oct 6**

**10:30-12:00 Rendering and Displays**

*Session Chair: Steven Feiner*

- Enabling View-Dependent Stereoscopic Projection in Real Environments
  Oliver Bimber, Gordon Wetzelstein, Andreas Emminger, Christian Nitschke, Bauhaus-University Weimar

- ASTOR: An Autostereoscopic Optical See-through Augmented Reality System
  Alex Oelwe, Christoffer Lindors, Jonny Gustafsson, Torsten Kjellberg, Lars Mattsson, KTH, Royal Institute of Technology

- Simulation-Based Design and Rapid Prototyping of a Parallax-Free, Orthoscopic Video See-Through Head-Mounted Display
  Andree Stadel, Kurtis Keller, Henry Fuchs, UWC Chapel Hill and InnerOptic Technology, Inc.

- A Polarized Head-Mounted Projective Display
  Hong Hua, Chunya Gao, University of Arizona and University of Illinois

**14:00–15:30 Applications and Authoring**

*Session Chair: Dieter Schmalstieg*

- Synchronizing 3D movements for quantitative comparison and simultaneous visualization of actions
  Tobias Sie behold, Tobias Boll, Nassir Navab, TU Munich

- Authoring and User Interaction for the Production of Wave Field Synthesis Content in an Augmented Reality System
  Frank Melckh, Tobias Laubach, Diemer de Vries, Fraunhofer IDMT and TU Delft

- ARvino - Outdoor Augmented Reality Visualisation of Viliculture GIS Data
  Gary King, Wayne Piekarski, Bruce Thomas, University of South Australia

- Experimental Evaluation of an Augmented Reality Visualization for Directing a Car Driver’s Attention
  Marcus Tönnis, Christian Sander, Gudrun Klinker, Christian Lange, Heiner Bubb, TU Munich

**16:00–17:00 Vision-based tracking 1**

*Session Chair: Tom Drummond*

- Adaptive Line Tracking with Multiple Hypotheses for Augmented Reality
  Harold Wuest, Florent Vial, Didier Stricker, Fraunhofer IGD

- A Balanced Approach to 3D Tracking from Image Streams
  Raghab Subbarao, Peter Meer, Yaku Genc, Rutgers University and Siemens Corporate Research

**Friday Oct 7**

**10:30-11:50 Collaboration Session Chair: Wayne Piekarski**

- Face to Face Collaborative AR on Mobile Phones
  Anders Henriages, Mark Billingham, Mark Ollila, Linköping University and HITLab NZ

**Saturday Oct 8**

**9:00–10:10 Vision-based tracking 2**

*Session Chair: Eric Foxlin*

- Localisation and Interaction for Augmented Maps
  Gerhard Reitmayr, Ethan Eade, Tom Drummond, University of Cambridge

- Lens Model Selection for a Markerless AR Tracking System
  Birger Streckel, Jan-Friso Evers-Senne, Reinhard Koch, Kiel University

- Augmenting Deformable Objects in Real-Time
  Julien Pilet, Vincent Lepetit, Pascal Fua, EPFL

**10:45–12:05 Tracking and calibration**

*Session Chair: Hideo Saito*

- A Hybrid and Linear Registration Method Utilizing Inclination Constraint
  Daisuke Takake, Kiyoshi Sejima, Shinji Ichihara, Hirokazu Yamamoto, Canon, Inc.

- Encoded LED System for Optical Trackers
  Leonid Nainmark, Eric Foxlin, Intersense

- Calibration Errors in Augmented Reality: a Practical Study
  Jason-Francisco Vargas Gomez, Gilles Simeny, Marie-Odile Berger, LORIA – INRIA Lorraine and LORIA – University of Nancy

- 16:00–16:40 View generation and modeling

*Session Chair: Gudrun Klinker*

- Novel View Generation from Multiple Omni-directional Videos
  Tomoya Ishihara, Masataka Kagawa, Nakaizuru Yoko, Nara Institute of Science and Technology

- A Pipeline for Rapidly Incorporating Real Objects into a Mixed Environment
  Xiuyong Wang, Ailan Kolomr, John Quarles, Benjamin Lue, B. Danette Allen, University of Florida and NASA LaRC

- Evaluation of Mixed-Space Collaboration
  Raphael Grassl, Philo Lamb, Mark Billingham, HITLab NZ

- Enhanced Eyes for Better Gaze-Awareness in Collaborative Mixed Reality
  Keisuke Taten, Masayuki Takemura, Yuko Ota, University of Tsukuba

- Augmented Foam: A Tangible Augmented Reality for Product Design
  Woonho Lee, Jun Park, KAIST and Hongik University

- Immersive Mixed-Reality Configuration of Hybrid User Interfaces
  Christian Sander, Alex Oelwei, Blane Bell, Steven Feiner, TU Munich, NASA Royal Institute of Technology, and Columbia University

**Poster session Saturday Oct 8, 14:30-16:30**

**Poster teaser session Saturday Oct 8, 14:30-16:00**

- Augmented Reality Techniques in Games
  Dieter Schmalstieg, TU Graz

- The Synthetic Character Ritchie: First Steps Towards a Virtual Companion for Mixed Reality
  Klaus-Dorofmeier-Uhaaas, Elisabat Andre, University of Augsburg

- The SQUASH ‘100’ Tangible User Interface System
  Mark Fiala, National Research Council Canada

- Autocalibration of an Electronic Compass for Augmented Reality
  Yueming Yue Liu, Yongjian Wang, Hongdi Hu, Dixin Yan, Beijing Institute of Technology

- A Mediated Reality Environment using a Loose and Sketchy rendering technique
  Michael Hauer, Florian Landert, Upper Austria University of Applied Sciences

- Reality Tooning: Fast Non-Photorealism for Augmented Video Streams
  Jan Fischer, Dirk Bartz, Wolfgang Strahler, University of Tübinger

- Camera-Marker Alignment Framework and Comparison with Hand-Eye Calibration for Augmented Reality Applications
  Gérald Bériau, Christian Wengert Matthias Handers, Philippe Cattin and Gabor Székely, Swiss Federal Institute of Technology, Zurich

- Projected Augmentation II – A Scalable Architecture for Multi Projector Based AR-Systems based on ‘Projected Applications’
  Jochen Ehmke, Kotsu Hirota, Michihala Hirose, University of Tokyo

- Annotating User-Viewed Objects for Wearable AR Systems
  Ryuei Tenmoku, Masayuki Kanbara, Nakaizuru Yoko, Nara Institute of Science and Technology

- Specular Reflection Elimination for Projection-Based Augmented Reality
  Hanhoom Park, Moon-Hyun Lee, Sang-Jun Kim, Jong-II Park, Hanyang University

- ARpm: An Augmented Reality Interface for Polygonal Modeling
  Peter Failla, Nicoletta Adams-Vittori, Purdue University

- AR Storyboard: An Augmented Reality based Interactive Storyboarding Authoring Tool
  Miduem Shin, Byoung-oo Kim, Jun Park, Hongik University

- Shading and Shadowing of Architecture in Mixed Reality
  Tetsuya Kakuta, Takeaki Oishi, Katsushi Ikeuchi, University of Tokyo

- 3D Video Mosaics: A Hybrid Image-based and Model-based Telepresence Technique Using Two-Pass Video Projection onto a 3D Scene Model
  Takayoshi Ohara, Kiyoshi Kiyokawa, Haruo Takemura, sakai University

- Real-Time Rendering of Realistic Trees in Mixed Reality
  Alberto Candussi, Tobias Hollerer, Nicola Candussi, University of Padua and University of California, Santa Barbara

- A Step towards an AR Multimodal Interface: A New Handheld Device for 3D Interaction
  Raphael Grassl, Julian Looser, Mark Billingham, HIT Lab NZ

- Spatial Measurements for Medical Augmented Reality
  Bernhard Reitinger, Pascal Werlberger, Alexander Bornik, Reinhard Biecel, Dieter Schmalstieg, TU Graz

- Product Associated Displays in a Shopping Scenario
  Lidominia Spassova, Rainer Wasinger, Jörg Baus, Anton Krüger, Saarland University, DFKI, and University of Münster

- Butterfly Effect: An Augmented Reality Puzzle Game
  Marleigh Norton, Blair MacIntyre, Georgia Tech

- A Mediated Reality Environment using a Loose and Sketchy rendering technique
  Michael Hauer, Florian Landert, Upper Austria University of Applied Sciences

- Digital View Simulation Synthesizing Virtual Geometry and Real Images in an Experimental Mixed-Reality Traffic Space
  Shintaro Ono, Koichi Ogawa, Masataka Kagawa, Hiroshi Kawasaki, Masaki Onuki, Ken Honda, Katsushi Ikeuchi, University of Tokyo, Saitama University, Mitsubishi Precision Co., and Chodai Co.

- Design and Implementation of a Widget Set for Steerable Projector-Camera Units
  Dennis Reiter, Andreas Bulz, Saarland University and University of Munich