

■ Science & Technology Paper

October 14, 2010

09:00-10:00 **Keynote Address 1** **Room 402**

Augmenting Reality for Medicine, Training, Presence and Telepresence

Henry Fuchs (University of North Carolina, Chapel Hill)

10:00-10:20 **Coffee Break**

10:20-12:25 **S2: Tracking** **Room 402, 403**

- Chair: To be announced

Determining the Point of Minimum Error for 6DOF Pose Uncertainty Description

Daniel Pustka, Jochen Willneff, Oliver Wenisch, Peter Lükewille, Kurt Achatz (Advanced Realtime Tracking GmbH), Peter Keitler, Gudrun Klinker (Technische Universität München)

Accurate Real-time Tracking Using Mutual Information

Amaury Dame (CNRS, IRISA, INRIA Rennes Bretagne-Atlantique), Eric Marchand (Université de Rennes 1, IRISA, INRIA Rennes Bretagne-Atlantique)

Point-and-Shoot for Ubiquitous Tagging on Mobile Phones

Wonwoo Lee, Youngmin Park (GIST U-VR Lab.), Vincent Lepetit (CVLab., EPFL), Woontack Woo (GIST U-VR Lab.)

Foldable Augmented Maps

Sandy Martedi, Hideaki Uchiyama, Guillermo Enriquez, Hideo Saito (Keio University), Tsutomu Miyashita, Takenori Hara (Dai Nippon Printing Co., Ltd.)

Management of Tracking for Industrial AR Setups

Peter Keitler (Technische Universität München), Benjamin Becker (EADS Innovation Works), Gudrun Klinker (Technische Universität München)

12:25-13:00 **1 Minute Madness Poster and Demo Teasers** **Room 402, 403**

13:00-14:30 **Lunch**
Demo **Room 314, 315**
Poster **Lobby (4F)**
Tracking Competition **Room 310**

14:30-16:10 **S1: Perception in AR: Issues and Solutions (1)** **Room 402**

- Chair: To be announced

Perceptual Issues in Augmented Reality Revisited

Ernst Kruijff (Institute for Computer Graphics and Vision Graz University of Technology), J. Edward Swan II (Mississippi State University), Steve Feiner (Columbia University)

The Effect of Out-of-Focus Blur on Visual Discomfort When Using Stereo Displays

Tobias Blum, Matthias Wieczorek, André Aichert, Radhika Tibrewal, Nassir Navab (Computer Aided Medical Procedures & Augmented Reality, Technische Universität München)

Image-Based Ghostings for Single Layer Occlusions in Augmented Reality

Stefanie Zollmann, Denis Kalkofen, Erick Mendez, Gerhard Reitmayr (Graz University of Technology)

An Augmented Reality X-Ray System Based on Visual Saliency

Christian Sandor, Andrew Cunningham, Arindam Dey (University of South Australia, Magic Vision Lab), Ville-Veikko Mattila (Nokia, Nokia Research Center)

16:10-16:30 Coffee Break

16:30-17:20 S3: AR for User Guidance

Room 402

- Chair: To be announced

Task Support System by Displaying Instructional Video onto AR Workspace

Michihiko Goto, Yuko Uematsu, Hideo Saito (Keio University), Shuji Senda, Akihiko Iketani (NEC Corporation)

Evaluation of the Virtual Mirror as a Navigational Aid for Augmented Reality Driven Minimally Invasive Procedures

Christoph Bichlmeier (Computer Aided Medical Procedures & Augmented Reality, TUM), Ekkehard Euler (Trauma Surgery Department, Klinikum Innenstadt, LMU), Tobias Blum, Nassir Navab (Computer Aided Medical Procedures & Augmented Reality, TUM)

17:20-18:10 S3: Handling Interactions between Real and Virtual

Room 402

- Chair: To be announced

Differential Instant Radiosity for Mixed Reality

Martin Knecht, Christoph Traxler, Oliver Mattausch, Werner Purgathofer, Michael Wimmer (Institute of Computer Graphics and Algorithms Vienna University of Technology)

Foreground and Shadow Occlusion Handling for Outdoor Augmented Reality

Boun Vinh Lu, Tetsuya Kakuta, Rei Kawakami, Takeshi Oishi, Katsushi Ikeuchi (the University of Tokyo)

October 15, 2010

9:00-10:40 S4: Perception in AR: Issues and Solutions (2) Room 402

- Chair: To be announced

The Importance of Eye-Contact for Collaboration in AR Systems

Erik Prytz (Santa Anna IT Research Institute), Susanna Nilsson (Swedish Defence Research Institute), Arne Jönsson (Santa Anna IT Research Institute)

Experiences with an AR Evaluation Test Bed: Presence, Performance, and Physiological Measurement

Maribeth Gandy, Richard Catrambone, Blair MacIntyre, Chris Alvarez, Elsa Eiriksdottir, Matthew Hillimire, Brian Davidson (GVU Center Georgia Institute of Technology), Anne Collins McLaughlin (North Carolina State University)

Effects of a Retroreflective Screen on Depth Perception in a Head-Mounted Projection Display

Rui Zhang, Hong Hua (3DVIS Lab, College of Optical Sciences, University of Arizona)

A Practical Multi-viewer Tabletop Autostereoscopic Display

Gu Ye, Andrei State, Henry Fuchs (The University of North Carolina at Chapel Hill)

10:40-11:20 1 Minute Madness Poster and DemoTeasers Room 402, 403

11:20-11:40 Coffee Break

11:40-12:30 Keynote Address 2 Room 402, 403

Augmented Dreams

Boris Debackere (Lab Manager at V2)

12:30-14:30 Lunch	
Demo	Room 314, 315
Poster	Lobby (4F)
Tracking Competition	Room 310

14:00-15:40 S5: Tracking and Reconstruction Room 402

- Chair: To be announced

The City of Sights: Design, Construction, and Measurement of an Augmented Reality Stage Set

Lukas Gruber (Graz University of Technology), Steffen Gauglitz, Jonathan Ventura (University of California, Santa Barbara), Stefanie Zollmann (Graz University of Technology), Manuel Huber, Michael Schlegel, Gudrun Klinker (Technische Universität München), Dieter Schmalstieg (Graz University of Technology), Tobias Hollerer (University of California, Santa Barbara)

Build Your World and Play In It: Interacting with Surface Particles on Complex Objects

Brett R. Jones, Rajinder Sodhi, Roy H. Campbell, Guy Garnett, Brian P. Bailey (University of Illinois at Urbana-Champaign)

Positioning, Tracking and Mapping for Outdoor Augmentation

Jayashree Karlekar, Steven Zhiying Zhou, Weiquan Lu, Zhi Chang Loh, Yuta Nakayama, Daniel Hii (National University of Singapore)

Towards Real Time 3D Tracking and Reconstruction on a GPU Using Monte Carlo Simulations

Jairo R. Sánchez, Hugo Álvarez, Diego Borro (CEIT and Tecnun)

16:00-17:00 Special "AR Standards" report session (by Chritine Perey) Room 402

16:00-17:00 Special "TrakMark" Q&A Session (by Kiyoshi Kiyokawa) Room 403

18:30-20:00 Banquet & Award Ceremony (Sponsored by Qualcomm) Ramada Seoul Hotel

October 16, 2010

09:00-10:05 S6: Interactive Modelling Room 402

- Chair: To be announced

Keyframe-based Modeling and Tracking of Multiple 3D Objects

Kiyoung Kim (GIST U-VR Lab.), Vincent Lepetit (EPFL CVLab.), Woontack Woo (GIST U-VR Lab.)

Real-time Modelling for AR Applications

John Bastian, Benjamin Ward, Rhys Hill, Anton van den Hengel, Anthony Dick (School of Computer Science)

Advanced Self-contained Object Removal for Realizing Real-time Diminished Reality in Unconstrained Environments

Jan Herling, Wolfgang Broll (Ilmenau University of Technology)

10:05-10:30 Coffee Break

10:30-12:10 Panel Discussion & Closing Ceremony Room 402, 403

13:30-17:00 Place Tour Gyeongbok Palace

■ Poster

October 14, 2010

Science & Technology

Lobby (4F)

PP14-01 k-MART: Authoring Tool for Mixed Reality Contents

Jinhyuk Choi, Youngsun Kim, Myonghee Lee, Gerard J. Kim (Digital Experience Laboratory Korea University), Yanghee Nam (Dept. of Digital Media Ewha Womans University), Yongmoo Kwon (Imaging Media Research Center Korea Institute of Science and Technology)

PP14-02 An Automatic Parallax Adjustment Method for Stereoscopic Augmented Reality Systems

Wen-Chao Chen, Fu-Jen Hsiao, Chung-Wei Lin (Electronics & Optoelectronics Research Laboratories, Industrial Technology Research Institute)

PP14-03 KHARMA: An Open KML/HTML Architecture for Mobile Augmented Reality Applications

Alex Hill, Blair MacIntyre, Maribeth Gandy, Brian Davidson, Hafez Rouzati (GVU Center, Georgia Institute of Technology)

PP14-04 3D Discrepancy Check via Augmented Reality

Svenja Kahn, Harald Wuest (Fraunhofer Institute for Computer Graphics (IGD)), Didier Stricker (German Research Center for Artificial Intelligence (DFKI), University of Kaiserslautern), Dieter W. Fellner (Fraunhofer Institute for Computer Graphics Research & TU Darmstadt)

PP14-05 Range-Finding Projectors: Visualizing Range Information without Sensors

Shingo Kagami (Graduate School of Information Sciences, Tohoku University)

PP14-06 Haptic Simulation of Breast Cancer Palpation: A Case Study of Haptic Augmented Reality

Seokhee Jeon (POSTECH), Benjamin Knoerlein, Matthias Harders (ETH, Zurich), Seungmoon Choi (POSTECH)

PP14-07 Floyd-Warshall All-Pair Shortest Path for Accurate Multi-Marker Calibration

Lejing Wang, Maximilian Springer, Hauke Heibel, Nassir Navab (Computer Aided Medical Procedures (CAMP), TU Munich)

PP14-08 Augmentation of Check in/out Model for Remote Collaboration with Mixed Reality

Ginga Kamei, Takeshi Matsuyama (Keio University), Ken-ichi Okada (Keio University Japan Science and Technology Agency)

PP14-09 SnapAR: Storing Snapshots for Quick Viewpoint Switching in Hand-Held Augmented Reality

Mengu Sukan, Steven Feiner (Columbia University)

PP14-10 MTMR: A Conceptual Interior Design Framework Integrating Mixed Reality with the Multi-Touch Tabletop Interface

Dong Wei, Steven Zhiying Zhou, Du Xie (National University of Singapore)

PP14-11 A Precise Controllable Projection System For Projected Virtual Characters And Its Calibration

Jochen Ehnes (The University of Edinburgh)

- PP14-12 Time-Domain Augmented Reality Based on Locally Adaptive Video Sampling**
Tatsuro Orikasa, Shingo Kagami, Koichi Hashimoto (Tohoku University)
- PP14-13 Camera Pose Navigation using Augmented Reality**
Jun Shingu (FujiXerox Co., Ltd.), Eleanor Rieffel, Don Kimber, Jim Vaughan, Pernilla Qvarfordt (FX Palo Alto Laboratory Inc.), Kathleen Tuite (University of Washington)
- PP14-14 EXMAR: EXpanded view of Mobile Augmented Reality**
Sungjae Hwang, Hyungeun Jo, Jung-hee Ryu (Korea Advanced Institute of Science and Technology)
- PP14-15 Designing and Comparing Two-Handed Gestures to Confirm Links between User Controlled Objects Tönnis**
Patrick Maier, Marcus Tönnis, Gudrun Klinker, Fachgebiet Augmented Reality (FAR) Technische Universität München, Fakultät für Informatik, Boltzmannstraße 3, 85748 Garching b. München
- PP14-16 ARCrowd-A Tangible Interface for Interactive Crowd Simulation**
Feng Zheng, Hongsong Li (University of North Carolina at Chapel Hill, School of Software, Beijing Institute of Technology)
- PP14-17 Various Tangible Devices Suitable for Mixed Reality Interactions**
Taichi Yoshida, Masashi Tsukadaira, Asako Kimura, Fumihisa Shibata, Hideyuki Tamura (Ritsumeikan University)

Art, Media & Humanities

Lobby (4F)

- PP14-18 A Combined User Research Process for Designing Mobile AR Guide in Cultural Heritage**
Ying-Wei Toh, Ji-Hong Jeung, Young-Hwan Pan (Interaction Design Lab, Graduate School of Techno Design, Kookmin University)
- PP14-19 A Day at The Museum: An Augmented Fine-art Exhibit**
Anne Bationo Tillon, Eric Marchand, Jean Laneurit, Fabien Servant, Isabelle Marchal, Pascal Houlier (Orange Labs - INRIA Rennes - Université de Rennes 1)
- PP14-20 AR-Enabled Wayfinding Kiosk**
Andrew Edwards, Brent Elmer, Beom Sik Kim, Katie Smith (Carnegie Mellon University)
- PP14-21 Augmented Reality Window: Digital Reconstruction of a Historical and Cultural Site for Smart Phones**
Jiyoung Kang, Jung-hee Ryu (KAIST)
- PP14-22 Reality through the Invisible Interface**
Hugh Davies (Monash University, Australian Network for Art and Technology)

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Science & Technology

Lobby (4F)

PP15-01 Light-Weight Marker Hiding For Augmented Reality

Otto Korkalo, Miika Aittala, Sanni Siltanen (VTT Technical Research Centre of Finland)

PP15-02 AR-based Visibility Evaluation for Preserving Landscapes of Historical Buildings

Nobuyoshi Yabuki (Osaka University), Kyoko Miyashita (Hyogo Prefecture), Tomohiro Fukuda (Osaka University)

PP15-03 An Immersive e-Learning System Providing Virtual Experience

SuWoong Lee, Jong-gook Ko, Seokbin Kang, Junsuk Lee (Electronics and Telecommunications Research Institute)

PP15-04 Augmented Telepresence Using Autopilot Airship and Omni-Directional Camera

Fumio Okura, Masayuki Kanbara, Naokazu Yokoya (Nara Institute of Science and Technology, NAIST)

PP15-05 Digital Diorama System for Museum Exhibition

Oribe Hayashi, Kazuhiro Kasada (University of Tokyo), Takuji Narumi (The University of Tokyo), Tomohiro Tanikawa, Michitaka Hirose (The University of Tokyo)

PP15-06 Generating Vision based Lego Augmented Reality Training and Evaluation Systems

Timo Engelke, Sabine Webel (Fraunhofer IGD, Germany), Nirit Gavish (Technion-Israel, Institute of Technology)

PP15-07 Origami Recognition System Using Natural Feature Tracking

Kening Zhu, Owen Noel Newton Fernando, Adrian David Cheok (Keio-NUS CUTE Center), Mark Fiala (Ryerson University), Theam Wei Yang (Keio-NUS CUTE Center)

PP15-08 3DOF Tracking Accuracy Improvement for Outdoor Augmented Reality

Joonsuk Park, Jun Park (Hongik University)

PP15-09 PoP-EYE Environment: Mixed Reality Using 3D Photo Collections

Frank Nagl, Paul Grimm, Bastian Birnbach (Erfurt University of Applied Sciences), Daniel F. Abawi (HTWdS - Saarbruecken University of Applied Sciences)

PP15-10 Large Area Indoor Tracking for Industrial Augmented Reality

Fabian Scheer (Daimler AG), Stefan Müller (University Koblenz)

PP15-11 Camera Motion Tracking in a Dynamic Scene

Jung-Jae Yu, Jae-Hean Kim (Electronics and Telecommunications Research Institute)

PP15-12 Color Harmonization for Augmented Reality

Lukas Gruber, Denis Kalkofen, Dieter Schmalstieg (Graz University of Technology)

PP15-13 Painterly Rendering with Coherence for Augmented Reality

Jiajian Chen, Greg Turk, Blair MacIntyre (Georgia Institute of Technology)

PP15-14 Sensor Synchronization for AR Applications

Tuomas Kantonen (VTT Technical Research Centre of Finland)

PP15-15 A Multi-Sensor Platform for Wide-area Tracking

Christian Waechter, Manuel Huber, Peter Keitler, Michael Schlegel, Gudrun Klinker (Technische Universität München), Daniel Pustka (Advanced Realtime tracking GmbH)

PP15-16 Video Stabilization To a Global 3D Frame Of Reference By Fusing Orientation Sensor And Image Alignment Data

Oscar Nestares, Yoram Gat, Horst Houssecker, Igor Kozintsev (Intel Labs, Santa Clara)

PP15-17 Extended Investigations of User-Related Issues in Mobile Industrial AR

Jens Grubert (Fraunhofer Institute for Factory Operation and Automation IFF), Daniel Hamacher (Otto-von-Guericke University Magdeburg), Rüdiger Mecke (Fraunhofer IFF), Irina Boeckelmann, Lutz Schega (Otto-von-Guericke University Magdeburg), Anke Huckauf, Mario Urbina (Ulm University), Michael Schenk (Fraunhofer IFF), Fabian Doil, Johannes Tümler (Volkswagen AG),

PP15-18 Validating Spatial Augmented Reality for Interactive Rapid Prototyping

Shane Porter, Michael Marner, Ross Smith, Joanne Zucco, Bruce Thomas (University of South Australia)

PP15-19 Augmented Reality in Large Environments : Application to Aided Navigation in Urban Context

Vincent Gay-Bellile, Pierre Lothe, Steve Bourgeois (CEA LIST), Eric Royer (LASMEA / UBP), Sylvie Naudet Collette (CEA LIST)

PP15-20 Augmented Reality for Board Games

Eray Molla, Vincent Lepetit (EPFL, CVLab)

PP15-21 North-centred Orientation Tracking on Mobile Phones

Gerhard Schall, Alessandro Mulloni, Gerhard Reitmayr (Graz University of Technology)

■ Art, Media & Humanities

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Augmenting Reality for Medicine, Training, Presence and Telepresence

Henry Fuchs (University of North Carolina, Chapel Hill)

10:00-10:20 **Coffee Break**

10:20-12:25 **Artist Talk** **Room 403**

12:25-13:00 **1 Minute Madness Poster and DemoTeasers** **Room 402, 403**

13:00-14:30 **Lunch**

Demo **Room 314, 315**

Poster **Lobby (4F)**

Tracking Competition **Room 310**

14:30-16:10 **S1: AR Experiences for Creative Places** **Room 403**

- Chair: To be announced

ParticipArt: Exploring Participation in Interactive Art Installations :

Giulio Jacucci (Helsinki Institute for Information Technology HIIT University of Helsinki), Mira Wagner, Ina Wagner (Institute of Design and Assessment of Technology, Vienna University of Technology), Elisa Giaccardi (Departamento de Informática Instituto de Cultura y Tecnología Universidad Carlos III de Madrid), Mauro Annunziato (Alessandro Perini, Natacha Roussel, Susanne Schuricht), Nell Breyer (Center for Advanced Visual Studies, Massachusetts Institute of Technology), Jonas Hansen (Academy of Media Arts Cologne), Kazuhiro Jo (Art Media Center, Tokyo University of the Arts), Stijn Ossevoort (Luzern University of Applied Art and Sciences)

Scenario: Co-Evolution, Shared Autonomy and Mixed Reality

Dennis Del Favero (iCinema Centre for Interactive Cinema Research, The University of New South Wales), Timothy S. Barker (iCinema Centre for Interactive Cinema Research, The University of New South Wales)

Thinking Inside the Box: Making Meaning in a Handheld Augmented Reality Experience

Evan Barba, Blair MacIntyre (Augmented Environments Lab Georgia Institute of Technology), Rebecca Rouse, Jay Bolter (Digital Performance Initiative Georgia Institute of Technology)

"Wonder Turner" and "The Amazing Cinemagician" Augmented Reality and Mixed Reality Art Installations

Helen Papagiannis (York University)

16:30-18:10 AMH-Session 2 : AR Experiences for Services

Room 403

- Chair: To be announced

OutRun: Exploring Seamless Design in the Development of an Augmented Reality Art Project

Garnet Hertz (Center for Computer Games and virtual Worlds Institute for Software Research University of California Irvine), Jong Weon Lee (Mixed Reality & Integration Laboratory Sejong University), Chris Guevara (Center for Computer Games and virtual Worlds Institute for Software Research University of California Irvine)

The Westwood Experience: Connecting Story to Locations Via Mixed Reality

Jason Wither, Rebecca Allen, Vids Samanta, Juha Hemanus, Yun-Ta Tsai, Ronald Azuma, Will Carter, Rachel Hinman, Thommen Korah (Nokia Research Center - Hollywood)

An Integrated Design Flow in User Interface and Interaction For Enhancing Mobile AR Gaming Experiences

Raymond Koon Chuan Koh, Henry Been-Lirn Duh, Jian Gu (Interactive and Digital Media Institute, National University of Singapore)

Flavor Visualization: Taste guidance in co-cooking system for coexistence

Yongsoo Choi, Adrian David Cheok and Veronica Halupka (Keio-NUS CUTE Center in Keio University) and Jose Sepulveda and Roshan Peris and Jeffrey Koh and Wang Xuan and Wei Jun and Abeyrathne Dilrukshi (Keio-NUS CUTE Center in National University of Singapore) and Yamaguchi Tomoharu and Maiko Kamata and Daishi Kato and Keiji Yamada (NEC C & C Innovation Research Laboratories)