ISAR '01

The Second
IEEE and ACM International Symposium on
Augmented Reality

October 29–30, 2001
Columbia University, New York, NY
http://www.cs.columbia.edu/graphics/isar2001
http://www.augmented-reality.org/isar2001

Symposium Program

MONDAY October 29, 2001

Davis Auditorium,
Schapiro Center for Engineering and Physical Science Research, Columbia University
530 W. 120th Street, New York, NY 10027

7:15 – 8:30: Registration

8:30 – 8:50: Opening Remarks
8:50 – 9:50: Invited Talk
David Hawkes, Guy's Hospital, King's College London School of Medicine.
Microscope Assisted Guided Interventions (MAGI) – An Application of Augmented Reality in Image Guided Surgery
Session chair: Nassir Navab, Siemens Corporate Research

9:50 – 10:20: Coffee Break

10:20 – 12:00: Medical Augmented Reality
Session chair: Henry Fuchs, UNC Chapel Hill

Dynamic Superimposition of Synthetic Objects on Rigid and Simple-deformable Real Objects
Yann Argotti, Larry Davis, Valerie Outters and Jannick Rolland
University of Central Florida

Real Time Tomographic Reflection: Phantoms for Calibration and Biopsy
George Stetten, Vikram Chib, Daniel Hildebrand and Jeannette Bursee
University of Pittsburgh, Carnegie Mellon Robotics Institute

Current status of the Varioscope AR, a head-mounted operating microscope for computer-aided surgery
M. Figl, W. Birkfellner, J. Hummel, R. Hanel, P. Homolka, F. Watzinger, F. Wanschitz, R. Ewers, H. Bergmann, *University of Vienna, Vienna General Hospital*

Augmented Reality Visualization of Ultrasound Images: System Description, Calibration, and Features
Frank Sauer, Ali Khamene, Benedicte Bascle, Lars Schimmang, Fabian Wenzel and Sebastian Vogt, *Siemens Corporate Research*

12:00 – 1:30 Lunch Break

1:30 – 2:30: Invited Talk
Ulrich Neumann, University of Southern California.
AR Out of the Box
Session chair: Ronald Azuma, HRL Laboratories

2:30 – 3:20: Components and Gestures
Session chair: Reinhold Behringer, Rockwell Scientific

Design of a Component-Based Augmented Reality Framework
Martin Bauer, Bernd Brügge, Gudrun Klinker, Asa MacWilliams, Thomas Reicher, Stefan Riß, Christian Sandor, and Martin Wagner
Munich University of Technology (TU München)

Finger tracking for interaction in augmented environments
Klaus Dorfmüller-Ulhaas and Dieter Schmalstieg
Vienna University of Technology (TU Wien)

3:20 – 3:50: Coffee Break

3:50 – 5:30: Indoor and Outdoor Tracking
Session chair: Stefan Müller, Fraunhofer IGD

A Hybrid Registration Method for Outdoor Augmented Reality
Kiyohide Satoh, Mahoro Anabuki, Hiroyuki Yamamoto and Hideyuki Tamura
Canon Inc., and Mixed Reality Systems Laboratory

Augmented Reality in a Wide Area Sentient Environment
Joseph Newman, David Ingram and Andy Hopper
AT&T Laboratories Cambridge

Markerless Augmented Reality with a Real-time Affine Region Tracker
Vittorio Ferrari, Tinne Tuytelaars and Luc Van Gool
ETH Zurich and University of Leuven

Extendible Tracking by Line Auto-Calibration
Bolan Jiang and Ulrich Neumann
University of Southern California

7:00 – 11:00: Evening Banquet at the *Teatro* of the Italian Academy at Columbia University
Invited talk:
Henry Fuchs, University of North Carolina, Chapel Hill
Immersion and Tele-immersion in the Office of the Future
Video presentation:
Hiroyuki Yamamoto, Mixed Reality Systems Laboratory, Inc.
Mixed Fantasy: Experience-Based Simulation and Entertainment
Music: Eric Haltmeier Trio
Session chair: Steve Feiner, Columbia University

TUESDAY October 30, 2001

Roone Arledge Auditorium
Alfred Lerner Hall, Columbia University
2920 Broadway, New York, NY 10027

7:45 – 8:30: Registration

8:30 – 9:45: Mobile Augmented Reality
Session chair: Tobias Höllerer, Columbia University

Distributed Low-latency Rendering for Mobile AR
W. Pasman
Delft University of Technology

Mobile Collaborative Augmented Reality
Gerhard Reitmayr and Dieter Schmalstieg
Vienna University of Technology (TU Wien)

Augmented maintenance of powerplants: A prototyping case study of a mobile AR system
Gudrun Klinker, Oliver Creighton, Allen Dutoit, Rafael Kobylinski, Christoph Vilsmeier and Bernd Brügge
Munich University of Technology (TU München)

9:45 – 10:15: Coffee Break

10:15 – 11:30: Video and Optical See-through HMD
Session chair: Kiyoshi Kiyokawa, Communications Research Laboratory

Dynamic Virtual Convergence for Video See-through Head-mounted Displays: Maintaining Maximum Stereo Overlap throughout a Close-range Work Space
Andrei State, Jeremy Ackerman, Gentaro Hirota, Joohi Lee, and Henry Fuchs.
University of North Carolina at Chapel Hill

Optical See-Through Calibration with Vision-Based Trackers: Propagation of Projection Matrices
Yakup Genc, Mihran Tuceryan, Ali Khamene and Nassir Navab
Siemens Corporate Research, and Indiana University Purdue University Indianapolis

A New System for Online Quantitative Evaluation of Optical See-Through Augmentation
Erin McGarrity, Yakup Genc, Mihran Tuceryan, Charles Owen and Nassir Navab
Michigan State University, Siemens Corporate Research, and Indiana University Purdue University Indianapolis

11:30 – 12:00: Posters & Demo Teasers
Session chair: Mihran Tuceryan, Indiana University – Purdue University

12:00 – 1:00: Lunch break

1:00 – 3:00: Poster & Demo Session

Posters:
MR^2 (MR Square): A Mixed-Reality Meeting Room
Kiyoshi Kiyokawa, Makoto Niimi, Tsuyoshi Ebina, and Hiroyuki Ohno
Communications Research Laboratory, Yokogawa Electric Corporation

Testing Information Delivery Methods Using Augmented Reality
Paul Jackson, Joan Ealey-Sawyer, I-Li Lu, and Stephen Jones
Boeing, Morris Brown College

A Quick Method for Synthesizing Photorealistic Color Images under Various Illumination Conditions
Li Shen, Noboru Babaguchi, and Tadahiro Kitahasi
Osaka University

Real-Time 3D Object Recognition for Automatic Tracker Initialization
Gábor Blaskó and Pascal Fua
Swiss Federal Institute of Technology (EPF Lausanne)

Tinmith-evo5: An Architecture for Supporting Mobile Augmented Reality Environments
Wayne Piekarski and Bruce Thomas
University of South Australia

Taking AR into Large Scale Industrial Environments:
Localization and Data Navigation with Mobile Computers
Xiang Zhang, Yakup Genc, and Nassir Navab
Siemens Corporate Research

Mobile AR4ALL
Christian Geiger, Bernd Kleinnjohann, Christian Reimann, and Dirk Stichling
University of Paderborn C-LAB

Linear Solutions for Visual Augmented Reality Registration
Adnan Ansar and Kostas Daniilidis
GRASP Lab, University of Pennsylvania

Augmented Reality (AR)for Assembly Processes – An Experimental Evaluation
Stefan Wiedenmaier, Olaf Oehme, Ludger Schmidt, and Holger Luczak
Rheinisch-Westfälische Technische Hochschule Aachen

Illuminating the Mixed Reality Stage - Applying Complex Lighting Conditions to AR
Michael Wittkämper, Eckhard Meier, and Wolfgang Broll,
GMD-FIT

Outdoor Augmented Reality: From Scene Preparation to Markerless Vision-based Tracking On-Site
Didier Stricker, Thomas Kettenbach, Fraunhofer IGD/ZGDV

3D reconstruction of the operating field for image overlay in 3D-endoscopic surgery
Fabien Mourgues, Frédéric Devernay, Ève Coste-Manière
INRIA Sophia-Antipolis

Demos:

- "Mobile Collaborative Augmented Reality," by Gerhard Reitmayr and Dieter Schmalstieg, Vienna University of Technology, Austria.
- "Wireless inertial tracking system," by H. Krüger, P. Fischer, Physikalisches Institut, Bonn University, Bonn, Germany and by P. Henne, GMD-FIT, Sankt Augustin, Germany.
- "Door Assembly Training," by Arnold Stadtler, Matthias Baumann of Ford Forschungszentrum Aachen GmbH, by Stefan Wiedenmaier of Institute of Industrial Engineering and Ergonomics, Aachen University of Technology, and by Olaf Oehme of Institute of Industrial Engineering and Ergonomics, Aachen University of Technology.
- "AlterAquarium and AlterBeach," by Alok b. Nandi, Xavier Marichal, David Ergo, Toshiuki Umeda, Xavier Wielemans, Damien Douxchamps, Laurence Beckers, Luc Letellier, Benoît Jadinon, and Jonathan Ooghe, Alterface, c/o Laboratoire de Télécommunications et Télédétection Université catholique de Louvain, Belgium.
- "MagicCAD; an AR Scene Builder," by Hirokazu Kato, Mark Billinghurst, Kenji Imamoto, Keihachiro Tachibana, Faculty of Information Sciences, Hiroshima City University, and Human Interface Technology Laboratory, University of Washington.
- "Markerless optical tracking for mobile Augmented Reality applications," by Didier Stricker, Stefan Müller, Fraunhofer Institut for Computer Graphics IGD.
- Augmented Groove+; A Tangible AR Instrument, by Mark Fauver, Mark Billinghurst, Human Interface Technology Laboratory, University of Washington.
- "The AR Pad," by Dmitryi Mogilev, Mark Billinghurst, Kiyoshi Kiyokawa, Jarrell Pair, Human Interface Technology Laboratory, University of Washington, and Charmed Technologies, Los Angeles.
- "Real Time Tomographic Reflection - The Sonic Flashlight," by George Stetten, M.D., Ph.D. and Vikram Chib, Department of Bioengineering, University of Pittsburgh, and The Robotics Institute, Carnegie Mellon University.
- "Head tracking using the Virtual Retinal Display," by Winyu Chinthammit, Robert Burstein, Eric J. Seibel, Thomas A. Furness, The Human Interface Technology Lab, the University of Washington.
- "Mobile Augmented Reality Systems," by Steve Feiner, Blaine Bell, Sinem Guven, Drexel Hallaway, Tobias Höllerer, Simon Lok, Alex Olwal, John Tang, Navdeep Tinna, Ryuji Yamamoto, Columbia University.
- "Dynamic Shader Lamps: Painting on Real Objects," by Deepak Bandyopadhyay, Ramesh Raskar, Henry Fuchs, UNC Chapel Hill, and MERL.
- "Collaborative Mobile Augmented Reality," by Simon Julier, Yohan Baillot, Dennis Brown, Naval Research Laboratory / ITT.
- "The ImageTclAR Augmented Reality Development Environment," by Charles B. Owen, Michael Malinak, Jon Babbage, Kirit Patel, Media and Entertainment Technologies Laboratory, Michigan State University.
- "Localization, Navigation and Data Access to Industrial Settings with Mobile Computers," by X. Zhang, N. Navab, Y. Genc.
- "An Optical See-Through Augmented Reality System: A Testbed to Demonstrate Ideas for Evaluation, Calibration, etc." by Y. Genc, E. McGarrity, M. Tuceryan, N. Navab.

3:00 – 3:30: Coffee Break

3:30 – 4:30: Invited Talk

Jun Rekimoto,
Sony Computer Science Laboratories
Living in a Computer Augmented Environment

Session chair: Haruo Takemura, Nara Institute of Science & Technology

4:30 – 5:45: Experiencing, Painting, Projecting

Session chair: Gudrun Klinker, Technische Universität München

Augmented Reality as a New Media Experience
Blair MacIntyre, Jay Bolter, Emmanuel Moreno and Brendan Hannigan
Georgia Institute of Technology

Dynamic Shader Lamps : Painting on Movable Objects
Deepak Bandyopadhyay, Ramesh Raskar and Henry Fuchs
University of North Carolina at Chapel Hill, and Mitsubishi Electric Research Lab

Using a Head-Mounted Projective Display in Interactive Augmented Environments
Hong Hua, Chunyu Gao, Leonard Brown, Narendra Ahuja and Jannick Rolland
University of Illinois at Urbana-Champaign, and University of Central Florida

5:45 – 6:00: Closing Remarks

During both conference days, industrial exhibitors will showcase their technologies:

Advanced Realtime Tracking GmbH,
http://www.ar-tracking.de
Advanced Realtime Tracking GmbH are located near Munich, Germany. They develop and manufacture high precision IR-optical tracking systems for VR/AR applications, industrial and medical measurement purposes and for body tracking in animation and ergonomics.

InterSense,
http://www.isense.com
InterSense are located in Burlington, MA. They develop and market motion-tracking products that enable users to interact with 3D computer-generated environments — literally bringing 3D to life.