

MARCH 8-14 RENO, NEVADA, USA

IEEE VIRTUAL REALITY 08

IEEE Haptics Symposium

IEEE Symposium on 3D User Interfaces

CONFERENCE PROGRAM



Sponsored by IEEE Computer Society Visualization and Graphics Technical Committee



WELCOME

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Welcome to the 2008 IEEE conference on Virtual Reality. We are looking forward to a great conference and related symposia covering 3D user interfaces and haptic interfaces.

The week starts off with a great weekend lineup, and some tough decisions to make, though for attendees who share an interest in the haptic side of things, the difficulty is somewhat lessened because this year the IEEE Haptics Symposium will follow the VR conference. For the main IEEE VR program, we've managed to keep most of the program in a single session, so you won't have to miss too much. One change this year from previous VR conferences is the mixing of the long and short paper presentations, now based solely on topic.

Something else that is new this year is a posters committee to allow those who are in the early stages of a project to submit their work directly to this forum. The newness of this committee led to the overlooking of the chairs when the proceedings were being assembled. So our thanks (and apologies) go to Patrick O'Leary (Desert Research Institute) and Miguel A. Otaduy (URJC Madrid) for spearheading this effort.

We also look forward to our keynote address from Scott Fisher, one of the early experimenters in using virtual reality as a medium. As we continue to evaluate the user interface qualities of virtual reality, it is also important to keep in view the end goal of VR, which is to put it to good use as a medium of human communication, and we look forward to Scott's presentation.

This year the nascent IEEE.TV team will be on site to capture a glimpse of the conference, with a synopsis video to follow, and also many of the sessions will be available at the computer.org website.

And finally, when the conference is over, or perhaps before it began, we hope everyone will have the opportunity to enjoy some of the unique blend of activities that Reno has to offer. Perhaps going to see a show or two, the National Auto Museum, attempting to beat the house, or enjoying the natural wonders of the Sierra Mountains (especially while gliding through on white powder).

Bill & Doug



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VR CONFERENCE COMMITTEE

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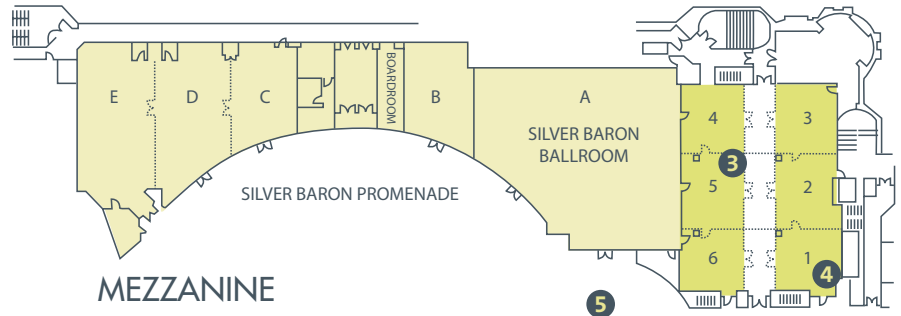
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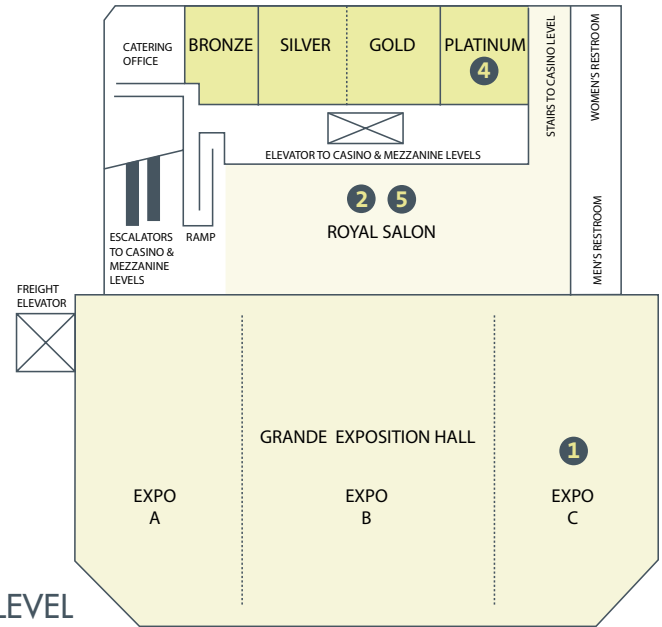
MAP

SILVER LEGACY RESORT CASINO

- 1** VR & Haptics exhibition & research demonstrations
Exposition Hall C
- 2** VR & Haptics poster displays
Royal Salon
- 3** 3DUI poster displays & demonstrations
Silver Baron 4, 5, 6
- 4** Speaker prep
*Silver Baron 1, Saturday and Sunday
Platinum Rm, Monday - Friday*
- 5** Breakfast
*Rum Bullion's Patio, Saturday and Sunday
Royal Salon, Monday - Friday*



MEZZANINE



LOWER LEVEL

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PROGRAM AT-A-GLANCE

	SATURDAY			SUNDAY			MONDAY	
7:00	Breakfast <i>Rum Bullion's Patio</i>			Breakfast <i>Rum Bullion's Patio</i>			Breakfast <i>Royal Salon</i>	
7:30								
8:00								
	TUTORIALS	WORKSHOPS		TUTORIALS	WORKSHOPS		VR	
8:30	<i>Silver Baron B</i>	<i>Silver Baron D</i>	3DUI	<i>Silver Baron B</i>	<i>Silver Baron C</i>	3DUI	<i>Exposition Hall B</i>	
9:00	Tutorial 1: Virtual Reality Technology - An Introduction (full day 8:30am-5pm)	Workshop 1: Virtual Cityscapes: Key Research Issues in Modeling Large-Scale Immersive Urban Environments (full day 8:30am-5pm, day 1 of 2)	<i>Silver Baron A</i> Introduction & 3D Interaction from Desktop to Immersion	Tutorial 3: Designing multi-projector VR systems: from bits to bolts (half day 8:30am-12pm)	Workshop 4: VR 2008 work- shop on Future Standards for Immersive VR (half day 8:30am-12pm)	<i>Silver Baron A</i> Keynote: 3D world between Virtual and Real	<i>Exposition Hall B</i> Opening Remarks	
9:30			<i>RB's Patio</i> Break			<i>RB's Patio</i> Break	<i>Exposition Hall B</i> Augmented & Mixed Reality	
10:00			<i>Silver Baron A</i> Devices		<i>Silver Baron D</i> Workshop 1: Virtual Cityscapes: Key Research Issues in Modeling Large-Scale Im- mersive Urban Environments (full day 8:30am-5pm, day 2 of 2)	<i>Silver Baron A</i> Haptics	<i>Exposition Hall C</i> Break	
10:30						<i>Exposition Hall C</i> VR	<i>Exposition Hall C</i> Break	
11:00						<i>Exposition Hall C</i> Posters Fast Forward	<i>Expo Hall B</i> Panel: User Studies in VR	<i>Expo Hall A</i>
11:30		<i>Silver Baron C</i> Workshop 2: MMVE'08: Workshop on Massively Mul- tiuser Virtual Environment (full day 8:30am-5pm)						<i>Exposition Hall C</i>
12:00			Lunch Break					
12:30						<i>Exposition Setup</i>		
1:00					<i>Silver Baron E</i> Workshop 3: SEARIS - Software Engineering and Architectures for Interactive Systems (full day 8:30am-5pm)			<i>Exposition</i>
1:30			<i>Silver Baron A</i> Panel: 3D User Interfaces: Pres- ent and Future	<i>Silver Baron C</i> Tutorial 2: Integration of Haptics in Virtual Environ- ments: from Perception to Rendering (half day 1:30pm-5pm)		<i>Silver Baron A</i> 3D Navigation and Locomotion	<i>Exposition Hall B</i> User Studies of AR/ MR/VR Systems	
2:00			<i>Silver Baron A</i> Posters Fast Fwd					
2:30			<i>SB 4,5,6</i> Posters			<i>RB's Patio</i> Break		
3:00			<i>RB's P</i> Break					
3:30				<i>Silver Baron B</i> Tutorial 4: Virtual Reality in the Physical Sciences (half day 1:30pm-5pm)		<i>Silver Baron A</i>	<i>Exposition Hall C</i> Break	
4:00			<i>Silver Baron A</i> Input Techniques			Augmented Reality and Multimodality	<i>Exposition Hall B</i> Multiplayer & Collaborative VE/MR	
4:30								
5:00						Best Paper Award & Closing		
5:30								
6:00				VR			<i>Buses to DRI at hotel valet</i>	
6:30				VR Welcome Reception Exhibits & Demos			DRI Open House and Live Demos Reception (food provided)	
7:00								
7:30								
8:00								
8:30								
9:00								

TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		
Breakfast <i>Royal Salon</i>		Breakfast <i>Royal Salon</i>		Breakfast <i>Royal Salon</i>		Breakfast <i>Royal Salon</i>		7:00
								7:30
VR		VR		HAPTICS		HAPTICS		8:00
<i>Exposition Hall B</i> Industrial Applications		<i>Exposition Hall B</i> Display and Rendering		<i>Exposition Hall B</i> Opening Remarks Perception I		<i>Exposition Hall B</i> Perception II		8:30
								9:00
<i>Exposition Hall B</i> Keynote: Story in Virtual Environments, Scott Fisher								9:30
<i>Exposition Hall C</i> Break		<i>Exposition Hall C</i> Break		<i>Exposition Hall C</i> Break		<i>Exposition Hall B</i> Poster Teaser II		10:00
<i>Expo Hall B</i> Virtual Human and Avatars	<i>Expo Hall A</i> Panel: Getting around in Virtual Environ- ments	<i>Exposition Hall B</i> 3D Interfaces and Tangible Space				<i>Expo Hall C & Royal Salon</i> Poster/Demo Session II & Break		10:30
								11:00
Lunch Break		Lunch Break		Lunch Break		Lunch Break		11:30
								12:00
								12:30
								1:00
				HAPTICS				1:30
<i>Exposition Hall B</i> Perception and Evaluation		<i>Exposition Hall B</i> Training & Education		<i>Expo Hall C & Royal Salon</i> Poster/demo/ exhibit setup		<i>Exposition Hall B</i> Applications		2:00
								2:30
				VR Exposition take-down		<i>Exposition Hall B</i> Awards & Closing		3:00
<i>Exposition Hall C</i> Break		<i>Royal Salon</i> Break						3:30
<i>Expo Hall B</i> Tracking & 3D Recon- struction	<i>Expo Hall A</i> Student Panel: Future & Careers for VR	<i>Exposition Hall B</i> Award Ceremony & Closing						4:00
								4:30
Posters <i>Royal Salon</i>								5:00
								5:30
				<i>Expo Hall C</i> Welcome Reception (food provided)				6:00
				Location TBA Dinner Banquet				6:30
								7:00
<i>Exposition Hall B</i> Dinner Banquet								7:30
								8:00
								8:30
								9:00

PROGRAM DETAILS

▶ SATURDAY MARCH 8

7:00 am - 8:30 am

Breakfast

Rum Bullion's Patio

TUTORIALS

8:30 am - 5:00 pm

Tutorial 1: Virtual Reality Technology - An Introduction (p.311)
Presenter: Grigore Burdea

Silver Baron B

WORKSHOPS

8:30 am - 5:00 pm

Workshop 1: Virtual Cityscapes: Key Research Issues in Modeling Large-Scale Immersive Urban Environments (p.313) (day 1 of 2)
Organizers: Ming C. Lin, Peter G. Selfridge

Silver Baron D

Workshop 2: MMVE'08: Workshop on Massively Multiuser Virtual Environment (p.314)

Organizers: Daniel Weiskopf, Ben Leong, Sun-Yun Hu, Gregor Schiele

Silver Baron C

3DUJ SYMPOSIUM

9:00 am - 9:10 am

Introduction

Silver Baron A

9:10 am - 10:00 am

3D Interaction from Desktop to Immersion
Withindows: A Framework for Transitional Desktop and Immersive User Interfaces (p.3), A. Hill, A. Johnson
Tangible User Interfaces Compensate for Low Spatial Cognition (p.11), J. Quarles, S. Lamportang, I. Fischler, P. Fishwick, B. Lok

Silver Baron A

10:00 am - 10:40 am

Break

Rum Bullion's Patio

10:40 am - 12:00 pm

Devices
A Haptic Virtual Borescope for Visual Engine Inspection Training (p.19), D. Vembar, A. Duchowski, S. Sadasivan, A. Gramopadhye
TubeMouse - A Two-Handed Input Device for Flexible Objects (p.27), C. Geiger, O. Rattay
Tech Note: Digital Foam (p.35), R. Smith, W. Piekarski, B. Thomas
Tech-note: Strain-based User Interface Using a Wooden Balance Beam (p.39), S. Amano, M. Iida, T. Naemura, H. Ota

Silver Baron A

12:00 pm - 1:30 pm

Lunch Break

1:30 pm - 2:30 pm

Panel: 3D User Interfaces: Present and Future
Chair: Michitaka Hirose, University of Tokyo
Panelists: Doug Bowman, *Virginia Tech*, Yoshifumi Kitamura, *Osaka University*, Wolfgang Stuerzlinger, *York University*

Silver Baron A

2:30 pm - 3:00 pm

Posters Fast Forward

Silver Baron A

3:00 pm - 4:05 pm

Posters

Sliding Viewport for Head Mounted Displays in Interactive Environments (p.135)

A study on EEG oscillations for BCI during standing (p.137)

ARLIST - An Augmented Reality Environment for Life Support Training (p.139)

A Framework for Interaction Interoperability in Virtual Environments (p.141)

Evaluation of Wayfinding Aid Techniques in Multi-Level Virtual Environments (p.143)

The NetEyes Collaborative, Augmented Reality, Digital Paper System (p.145)

Generic Redirected Walking & Dynamic Passive Haptics: Evaluation and Implications for Virtual Locomotion Interfaces (p.147)

Tangible Controllers for 3D Widgets (p.149)

A Software Framework for Easy Integration of Speech Recognition into 3D Browsers (p.151)

Authoring tool for intuitive editing of avatar pose using a virtual puppet (p.153)

Effects of Head Tracking and Stereo on Non-Isomorphic 3D Rotation (p.155)

Toward an Interactive Box-shaped 3D Display: Study of the Requirements for Wide Field of View (p.157)

Free Form Projection Display: Virtual Image Located Inside Real Object (p.159)

Image-Based 3D Display with Motion Parallax using Face Tracking (p.161)

Evolution of a Theremin-Based 3D-Interface for Music Synthesis (p.163)

3-D Display Using Motion Parallax for Outdoor User Interface (p.165)

An Approach to Study of Hypermedia Information Navigation in Virtual Environments (p.167)

Evaluation of an Approach for Remote Object Manipulation Utilizing Dynamic Magnifying Lenses (p.169)

4:05 pm - 5:00 pm

Input Techniques

Assessing the Effects of Orientation and Device on (Constrained) 3D Movement Techniques (p.43), R. Teather, W. Stuerzlinger

Tech-note: Dynamic Dragging for Input of 3D Trajectories (p.51), D. Keefe, R. Zeleznik, D. Laidlaw

Tech-note: rapMenu: Remote Menu Selection Using Freehand Gestural Input (p.55), T. Ni, R. McMahan, D. Bowman

Silver Baron A

SUNDAY MARCH 9 ◀

7:00 am - 8:30 am

Breakfast

Rum Bullion's Patio

TUTORIALS

8:30 am - 5:00 pm

Tutorial 3: Designing multi-projector VR systems: from bits to bolts (p.312)

Luciano P. Soares, Miguel S. Dias, Joaquim A. Jorge, Alberto B. Raposo, Bruno R. de Araujo

Silver Baron B

1:30 pm - 5:00 pm

Silver Baron C

Tutorial 2: Integration of Haptics in Virtual Environments: from Perception to Rendering (p.311)
Matthias Harders, Anatole Lécuyer, Dinesh Pai

Silver Baron B

Tutorial 4: Virtual Reality in the Physical Sciences (p.312)
Presenters: Oliver Kreylos, Eric Cowgill, Magali Billen

WORKSHOPS

8:30 am - 12:00 pm

Silver Baron C

Workshop 4: VR 2008 workshop on Future Standards for Immersive VR (p.316)
Organizers: Nicholas F. Polys, Anthony Steed, Johannes Behr, Don Brutzman

8:30 am - 5:00 pm

Silver Baron D

Workshop 1: Virtual Cityscapes: Key Research Issues in Modeling Large-Scale Immersive Urban Environments (p.313) (day 2 of 2)
Organizers: Ming C. Lin, Peter G. Selfridge

Silver Baron E

Workshop 3: SEARIS - Software Engineering and Architectures for Interactive Systems (p.315)
Organizers: Marc Erich Latoschik, Dirk Reiners, Roland Blach, Pablo Alejandro Figueroa Forero, Raimund Dachselt

3DUJ SYMPOSIUM

8:45 am - 10:00 am

Silver Baron A

Keynote Speaker
3D World Between Virtual and Real, Michitaka Hirose

10:00 am - 10:45 am

Rum Bullion's Patio

Break

10:45 am - 12:00 pm

Silver Baron A

Haptics
HEMP – Hand-Displacement-Based Pseudo-Haptics: A Study of a Force Field Application (p.59), A. Pusch, O. Martin, S. Coquillart
3D Virtual Haptic Cone for Intuitive Vehicle Motion Control (p.67), B. Horan, Z. Najdovski, S. Nahavandi, E. Tunstel
Real-Time 3D Fluid Interaction with a Haptic User Interface (p.75), J. Mora, W.S. Lee

12:00 pm - 1:30 pm

Lunch Break

1:30 pm - 3:00 pm

Silver Baron A

3D Navigation and Locomotion
Navidget for Easy 3D Camera Positioning from 2D Inputs (p.83),
Elastic Control for Navigation Tasks on Pen-based Handheld Computers (p.91), M. Hachet, F. Declé, S. Knödel, P. Guitton
LLCM-WIP: Low-Latency, Continuous-Motion Walking-in-Place (p.97), M. Hachet, A. Kulik
Tech-note: 4Record – Recording and Controlling Spatiotemporal Paths in Virtual Environments (p.105), M. Doulis, M. Rietmann, J. Pflueger

3:00 pm - 3:45 pm

Rum Bullion's Patio

Break

3:45 pm - 5:00 pm

Silver Baron A

Augmented Reality and Multimodality
Interactive Bits: Prototyping of Mixed Reality Applications and Interaction Techniques through Visual Programming (p.109), W. Broll, J. Herling, L. Blum

Studies on the Effectiveness of Virtual Pointers in Collaborative Augmented Reality (p.117), J. Chastine, K. Nagel, Y. Zhu, M. Hudacheck-Buswell

User needs analysis to design a 3D multimodal protein-docking interface (p.125), N. Ferey, G. Bouyer, C. Martin, P. Bourdot, J. Nelson, JM. Burkhardt

5:00 pm - 5:15 pm

Silver Baron A

Best Paper Award & Closing

VR CONFERENCE

6:00 pm - 8:00 pm

Exposition Hall C

VR Welcome Reception

MONDAY MARCH 10

7:00 am - 8:30 am

Royal Salon

Breakfast

VR CONFERENCE

8:30 am - 9:00 am

Exposition Hall B

Opening Remarks

9:00 am - 10:30 am

Exposition Hall B

Augmented & Mixed Reality

Providing a Wide Field of View for Effective Interaction in Desktop Tangible Augmented Reality (p.3), Seokhee Jeon, Gerard J. Kim

Capturing Images with Sparse Informational Pixels using Projected 3D Tags (p.11), Li Zhang, Neesha Subramaniam, Robert Lin, Ramesh Raskar, Shree Nayar

Envisor: Online Environment Map Construction for Mixed Reality (p.19), Stephen DiVerdi, Jason Wither, Tobias Höllerer

10:30 am - 11:00 am

Exposition Hall C

Break

11:00 am - 12:30 pm

Exposition Hall B

Posters Fast Forward

Exposition Hall A

Panel: User Studies in VR: What Can We Learn From Them and What Are They Good For (p.303)

Organizer: Joseph J. LaViola Jr.

12:30 am - 2:00 pm

Lunch Break

2:00 pm - 3:30 pm

Exposition Hall B

User Studies of AR/MR/VR Systems

A Mixed Reality Approach for Merging Abstract and Concrete Knowledge (p.27), John Quarles, Samsun Lampotang, Ira Fischler, Paul Fishwick, Benjamin Lok

An Empirical Study of Hear-Through Augmented Reality: Using Bone Conduction to Deliver Spatialized Audio (p.35), Robert W. Lindeman, Haruo Noma, Paulo Gonçalves de Barros

User Boresighting for AR Calibration: A Preliminary Analysis (SKETCH) (p.43), Magnus Axholt, Stephen Peterson, Stephen R. Ellis

Using an Eye-Tracking System to Improve Camera Motions and Depth-of-Field Blur Effects in Virtual Environments (SKETCH) (p.47), Sébastien Hillaire, Anatole Lécuyer, Rémi Cozot, Géry Casiez

3:30 pm - 4:00 pm

Exposition Hall C

Break

4:00 pm - 5:30 pm

Exposition Hall B

Multiplayer & Collaborative VE/MR

Object-Capability Security in Virtual Environments (p.51), Martin Scheffler, Jan P. Springer, Bernd Froehlich

Mobile Group Dynamics in Large-Scale Collaborative Virtual Environments (p. 59), Trevor J. Dodds, Roy A. Ruddle

Massively Multiplayer Online Worlds as a Platform for Augmented Reality Experiences (SKETCH) (p.67), Tobias Lang, Blair MacIntyre, Iker Jamardo Zugaza

Symmetric Model of Remote Collaborative MR Using Tangible Replicas (SKETCH) (p.71), Shun Yamamoto, Hidekazu Tamaki, Yuta Okajima, Yuichi Bannai, Kenichi Okada

6:00 pm - 9:00 pm

Buses to DRI at the hotel valet

DRI Open House and Live Demos Reception (food provided)

► TUESDAY MARCH 11

7:00 am - 8:30 am

Royal Salon

Breakfast

VR CONFERENCE

8:30 am - 9:30 am

Exposition Hall B

Industrial Applications

The Two-User Seating Buck: Enabling Face-to-Face Discussions of Novel Car Interface Concepts (p.75), Holger Salzmann, Bernd Froehlich
Augmented Reality for Industrial Building Acceptance (p.83), Ralph Schoenfelder, Dieter Schmalstieg

9:30 am - 10:30 am

Exposition Hall B

Keynote Presentation

Story in Virtual Environments, Scott Fisher

10:30 am - 11:00 am

Exposition Hall C

Break

11:00 am - 12:30 pm

Exposition Hall B

Virtual Human and Avatars

IPSViz: An After-Action Review Tool for Human-Virtual Human Experiences (p.91), Andrew B. Raij, Benjamin C. Lok

Virtual Human + Tangible Interface = Mixed Reality Human: An Initial Exploration with a Virtual Breast Exam Patient (p.99), Aaron Kotranza, Benjamin Lok

Creating a Speech Enabled Avatar from a Single Photograph (SKETCH) (p.107), Dmitri Bitouk, Shree K. Nayar

High-Fidelity Avatar Eye-Representation (SKETCH) (p.111), William Steptoe, Anthony Steed

Exposition Hall A

Panel: Getting around in Virtual Environments (p.305)

Organizer: Betty Mohler

12:30 am - 2:00 pm

Lunch Break

2:00 pm - 3:30 pm

Exposition Hall B

Perception and Evaluation

Circular, Linear, and Curvilinear Vection in a Large-screen Virtual Environment with Floor Projection (p.115), Laura C. Trutoiu, Betty Mohler, Jorg Schulte-Pelkum, Heinrich H. Bulthoff

Evaluation of Reorientation Techniques for Walking in Large Virtual Environments (p. 121), Tabitha C. Peck, Mary C. Whitton, Henry Fuchs

Showing Users the Way: Signs in Virtual Worlds (SKETCH) (p.129), Daniel C. Cliburn, Stacy L. Rilea

An Evaluation of Immersive Displays for Virtual Human Experiences (SKETCH) (p.133), Kyle Johnsen, Benjamin Lok

3:30 pm - 4:00 pm

Exposition Hall C

Break

4:00 pm - 5:30 pm

Exposition Hall B

Tracking & 3D Reconstruction

Advanced tracking through efficient image processing and visual-inertial sensor fusion (p.137), Gabriele Bleser, Didier Stricker

Hybrid Feature Tracking and User Interaction for Markerless Augmented Reality (p. 145), Taehee Lee, Tobias Höllerer

Rapid Creation of Large-scale Photorealistic Virtual Environments (p. 153), Charalambos Poullis, Suya You, Ulrich Neumann

Exposition Hall A

Panel: Building the Future Of – and a Career in – VR (p.308)

Organizers: Gabriel Zachmann, Robert Lindeman

5:30 pm - 7:00 pm

Royal Salon

Posters

Virtual 3D World Construction by Inter-connecting Photograph-based 3D Models (p.243), Takashi Aoki, Tomohiro Tanikawa, Michitaka Hirose

An initial study into augmented inward looking exploration and navigation in CAVE-like IPT systems (p. 245), Rob Aspin

Uncertainty Boundaries for Complex Objects in Augmented Reality (p.247), Jiajian Chen, Blair MacIntyre

MIRELA: A Language for Modeling and Analyzing Mixed Reality Applications Using Timed Automata (p.249), Jean-Yves Didier, Bachir Djafri, Hanna Klauedel

EEG-based navigation of immersing virtual environment using common spatial patterns (p.251), Junya Fujisawa, Hideaki Touyama, Michitaka Hirose

Extending X3D with Perceptual Auditory Properties (p.253), Katharina Garbe, Iris Herbst

Piavca: A Framework for Heterogeneous Interactions with Virtual Characters (p.255), Marco Gillies

Redgraph: Navigating Semantic Web Networks using Virtual Reality (p.257), Harry Halpin, David J. Zielinski, Rachael Brady, Glenda Kelly

Multi-dimensional Interactive City Exploration through Mixed Reality (p.259), Iris Herbst, Anne-Kathrin Braun, Rod McCall, Wolfgang Broll

VFire: Virtual Fire in Realistic Environments (p.261), Roger V. Hoang, Joseph D. Mahsman, David T. Brown, Michael A. Penick, Frederick C. Harris Jr., Timothy J. Brown

3D Virtual Haptic Cone for Intuitive Vehicle Motion Control (p.263), B.Horan, Z.Najdovski, S. Nahavandi

Psychophysical Influence on Tactual Impression by Mixed-Reality Visual Stimulation (p.265), Akiko Iesaki, Akihiro Somada, Asako Kimura, Fumihisa Shibata, Hideyuki Tamura

The Effects of Virtual Reality, Augmented Reality, and Motion Parallax on Egocentric Depth Perception (p.267), Adam Jones, J. Edward Swan II, Gurjot Singh, Eric Kolstad

Immersive 3D Environment for Remote Collaboration and Training of Physical Activities (p.269), Gregorij Kurillo, Ruzena Bajcsy, Klara Nahrsted, Oliver Kreylos

E-MAT: The Extremities-Multiple Application Trainer for Haptic-based Medical Training (p.271), Todd Lazarus, Glenn A. Martin, Razia Nayeem Jennifer Fowlkes, Dawn Riddle

MIRAGE: A Touch Screen based Mixed Reality Interface for Space Planning Applications (p.273), Gun A. Lee, Hyun Kang, Wookho Son

Camera Parameter Estimation Method Using Infrared Markers for Live TV Production (p.275), Hideki Mitsumine, Yuko Yamanouchi, Takashi Fukaya, Hidehiko Okubo, Seiki Inoue

Vertex-preserving Cutting of Elastic Objects (p.277), Megumi Nakao, Kotaro Minato, Naoto Kume, Shin-ichiro Mori, Shinji Tomita

Bezier Surface Editing Using Marker-based Augmented Reality (p.279), David O'Gwynn, John Johnstone

Conversational Pointing Gestures for Virtual Reality Interaction: Implications from an Empirical Study (p.281), Thies Pfeiffer, Marc E. Latoschik, Ipke Wachsmuth

Integrating Gyroscopes into Ubiquitous Tracking Environments (p.283), Daniel Pustka, Manuel Huber, Gudrun Klinker

Coordination Policies for Co-located Collaborative Travel (p.285), Andreas Simon, Christian Stern

A Load Simulation and Metrics Framework for Distributed Virtual Reality (p.287), H. Lally Singh, Denis GraĐanin, Kresimir Matkovic

HOG on a WIM (p.289), Aaron Stafford, Wayne Piekarski, Bruce H. Thomas

A Universal Virtual Locomotion System: Supporting Generic Redirected Walking and Dynamic Passive Haptics within Legacy 3D Graphics Applications (p.291), Frank Steinice, Timo Ropinski, Gerd Bruder, Klaus Hinrichs, Harald Frenz, Markus Lappe

Assessing the Effects of Orientation and Device on 3D Positioning (p.293), Robert J. Teather, Wolfgang Stuerzlinger

Creating Meaningful Environment Models for Augmented Reality (p.295), Eduardo E. Veas, Dieter Schmalstieg

Identifying Motion Capture Tracking Markers with Self-Organizing Maps (p.297), Matthias Weber, Heni Ben Amor, Thomas Alexander

User-Centered Multimodal Interaction Graph for Design Reviews (p.299), Martin Witzel, Giuseppe Conti, Raffaele De Amicis

7:30 pm - 9:30 pm

Exposition Hall B

Dinner Banquet

► WEDNESDAY MARCH 12

7:00 am - 8:30 am

Royal Salon

Breakfast

VR CONFERENCE

8:30 am - 10:30 am

Exposition Hall B

Display and Rendering

Automultiscopic display by revolving flat-panel displays (p.161), Koichi Hirota, Kazuyoshi Tagawa, Yasuhiro Suzuki

Managing Visual Clutter: A Generalized Technique for Label Segregation using Stereoscopic Disparity (p.169), Stephen Peterson, Magnus Axholt, Stephen R. Ellis

Advanced Multi-Frame Rate Rendering Techniques (p.177), Jan P. Springer, Christopher Lux, Dirk Reiners, Bernd Froehlich

Transparent Cockpit: Visual Assistance System for Vehicle Using Retro-reflective Projection Technology (SKETCH) (p.185), Takumi Yoshida, Kensei Jo, Kouta Minamizawa, Hideaki Nii, Naoki Kawakami, Susumu Tachi

New Rendering Approach for Composable Volumetric Lenses (SKETCH) (p.189), Christopher M. Best, Christoph W. Borst

10:30 am - 11:00 am

Exposition Hall C

Break

11:00 am - 12:30 pm

Exposition Hall B

3D Interfaces and Tangible Space

Tiered Developer-Centric Representations for 3D Interfaces: Concept-Oriented Design in Chasm (p.193), Chadwick A. Wingrave, Doug A. Bowman

VARU Framework: Enabling Rapid Prototyping of VR, AR and Ubiquitous Applications (p.201), Sylvia Irawati, Sangchul Ahn, Jinwook Kim, Heedong Ko

Case Study of Haptic Methods for Selection on CAD Models (SKETCH) (p.209), Flavien Picon, Mehdi Ammi, Patrick Bourdot

Cutting, Deforming and Painting of 3D meshes in a Two Handed Viso-haptic VR System (SKETCH) (p.213), Adam Faeth, Michael Oren, Jonathan Sheller, Sean Godinez, Chris Harding

12:30 am - 2:00 pm

Lunch Break

2:00 pm - 3:30 pm

Exposition Hall B

Training & Education

Spatial Electronic Mnemonics for Augmentation of Human Memory (p.217), Yasushi Ikei, Hirofumi Ota

GVT: a platform to create virtual environments for procedural training (p.225), Stéphanie Gerbaud, Nicolas Mollet, Franck Ganier, Bruno Arnaldi, Jacques Tisseau

Distance Education System for Teaching Manual Skills in Endoscopic Paranasal Sinus Surgery Using "HyperMirror" Telecommunication Interface (SKETCH) (p.233), Toru Kumagai, Juli Yamashita, Osamu Morikawa, Kazunori Yokoyama, Shin'ichi Fujimaki, Taku Konishi

Inexpensive Immersive Projection (SKETCH) (p.237), Nancy P. Y. Yuen, William C. Thibault

3:30 pm - 4:00 pm

Royal Salon

Break

4:00 pm - 5:00 pm

Exposition Hall B

Award Ceremony & Closing

HAPTICS SYMPOSIUM

2:00 pm - 6:00 pm

Exposition Hall C & Royal Salon

Poster/demo/exhibit setup

6:00 pm - 8:00 pm

Exposition Hall C

Welcome Reception (food provided)

▶ THURSDAY MARCH 13

7:00 am - 8:15 am

Royal Salon

Breakfast

HAPTICS SYMPOSIUM

8:15 am - 8:30 am

Exposition Hall B

Opening Remarks

8:30 am - 10:00 am

Exposition Hall B

Perception I

The Geometric Model for Perceived Roughness Applies to Virtual Textures (p.3), Bertram Unger, Ralph Hollis, Robert Klatzky

The Integration and Dissociation of Thermal and Frictional Cues During Material Identification (p.11), Daniel Shang, Heather Carnahan
Discrimination of Vowels with a Multi-finger Tactile Display (p.17), Ali Israr, Charlotte M. Reedand, Hong Z. Tan

Passive and Active Kinesthetic Perception Just-noticeable-difference for Natural Frequency of Virtual Dynamic Systems (p.25), Yanfang Li, Ali Israr, Volkan Patoglu, Marcia O'Malley

Localization and Pattern Recognition with Tactile Displays (p.33), Lynette A. Jones, Kathryn Ray

Discrimination of Virtual Square Gratings by Dynamic Touch on Friction Based Tactile Displays (p.41), Mélisande Biet, Géry Casiez, Frédéric Giraud, Betty Lemaire-Semail

10:00 am - 10:30 am

Exposition Hall C

Break

10:30 am - 12:00 pm

Exposition Hall B

Dynamics and Controls

Adaptive Control of Haptic Interaction with Impedance and Admittance Type Virtual Environments (p.145), Amin Abdossalami, Shahin Sirouspour

Haptic Solutions and Bio-Mimetically Inspired Motion Planning Strategy for Rolling-Based Locomotion (p.153), Igor Goncharenko, Mikhail Svinin, Shigeyuki Hosoe, Yutaka Kanou

Hybrid Control with Multi-Contact Interactions for 6DOF Haptic Foot Platform on a Cable-Driven Locomotion Interface (p.161), Martin J.-D. Otis, Charles du Tremblay, Francois-Michel De Rainville, Marielle Mokhtari, Denis Laurendeau, Clément M. Gosselin

Measuring and Increasing Z-Width with Active Electrical Damping (p.169), David W. Weir, J. Edward Colgate, Michael A. Peshkin

Stability Analysis and Design of Multi-dimensional Haptic Systems (p. 177), Gianni Bianchini, Marcello Orlandesi, Domenico Prattichizzo

Large Workspace Haptic Devices - A New Actuation Approach (p.185), Michael Zinn, Oussama Khatib, Bernard Roth, J. Kenneth Salisbury

12:00 pm - 1:00 pm

Lunch Break

1:00 pm - 2:30 pm

Exposition Hall B

Rendering and Modeling

Haptizing Surface Topography with Varying Stiffness Based on Force Constancy: Extended Algorithm (p.193), Jaeyoung Cheon, Inwook Hwang, Gabjong Han, Seungmoon Choi

Data-Driven Haptic Rendering of Visco-Elastic Effects (p.201), Raphael Höver, Matthias Harders, Gábor Székely

Modeling Realistic Tool-Tissue Interactions with Haptic Feedback: A Learning-based Method (p.209), Zachary Pezzementi, Daniel Ursu, Sarthak Misra, Allison M. Okamura

A New Line-based Algorithm for Real Time Haptic Interactions with Virtual Environments (p.217), Anderson Maciel, Suvaranu De
Perceptual Rendering for Learning Haptic Skills (p.225), Timothy Edmunds, Dinesh K. Pai

A Multi-criteria Design Optimization Framework for Haptic Interfaces (p.231), Ramazan Unal, Gullu Kiziltas, Volkan Patoglu

2:30 pm - 3:00 pm

Exposition Hall B

Poster Teaser I

Validation of a 3-D Finite Element Human Fingerpad Model Composed of Anatomically Accurate Tissue Layers (p.101), Matt B. Wagner, Gregory J. Gerling, Jacob Scanlon

Finger Shell: Predicting Finger Pad Deformation under Line Loading (p.107), Mitsunori Tada, Dinesh K. Pai

Influences of Inter-Stream Synchronization Error on Collaborative Work in Haptic and Visual Environments (p.113), Takeshi Fujimoto, Yutaka Ishibashi, Shinji Sugawara

Force Amplitude Perception in Six Orthogonal Directions (p.121), Enkhtuvshin Dorjgotov, Gary R. Bertoline, Laura Arns, Zygmunt Pizlo, Steven R. Dunlop

Texture meets Text: On the Kinematics of Braille Reading, Barry Hughes, Arend W A Van Gemmert, George E. Stelmach

Validating the Performance of Haptic Motor Skill Training (p.129), Xing-Dong Yang, Walter F. Bischof, Pierre Boulanger

Haptic Simulation of Deformable Bodies with Consideration of the Human Sensation of Continuous Forces (p.137), Gerhard Schillhuber, Heinz Ulbrich

Perceived Magnitudes of Vibrations Transmitted Through Mobile Device (p.139), Jonghyun Ryu, Jaehoon Jung, Seungmoon Choi

Effects of Proprioceptive Motion Feedback on Sighted and Non-Sighted Control of a Virtual Hand Prosthesis (p.141), Amy Blank, Allison M. Okamura, Katherine J. Kuchenbecker

A Tactile Display Presenting Pressure Distribution and Slippage Force (p.281), Yiru Zhou, Masahiro Ohka, Tetsu Miyaoka

Haptic-enabled Collaborative Training with Generalized Force and Position Mappings (p.287), Saba Moghimi, Shahin Sirouspour, Pawel Malysz

High Bandwidth, Large Workspace Haptic Interaction: Flying Phantoms (p.295), A. L. Barrow, W. S. Harwin

Analysis of registration accuracy for collocated haptic-visual display system (p.303), Dangxiao Wang, Yuru Zhang, Yu Wang

Virtual Laboratory: a virtual distributed platform to share and perform experiments (p.311), Paolo Tripicchio, Emanuele Ruffaldi, Carlo Alberto Avizzano, Massimo Bergamasco

Voxel-Based Haptic Rendering Using Implicit Sphere Trees (p.319), Emanuele Ruffaldi, Dan Morris, Federico Barbagli, Ken Salisbury, Massimo Bergamasco

Manipulation of dynamically deformable object (p.327), Kazuyoshi Tagawa, Koichi Hirota, Michitaka Hirose

Passive Position Feedback over Packet-Switching Communication Network with Varying Delay and Packet-Loss (p.335), Dongjun Lee, Ke Huang

Mediating Time Delayed Teleoperation with User Suggested Models: Implications and Comparative Study (p.343), Probal Mitra, Günter Niemeyer

Analysis and Experimentation of a 4-DOF Haptic Device (p.351), Andy Ma, Shahram Payandeh

Tangible Images: Runtime Generation of Haptic Textures From Images (p.357), Hari Vasudevan, Manivannan Muniyandi

Evaluating ALPHAN: A Communication Protocol for Haptic Interaction (p.361), Hussein Al Osman, Mohamad Eid, Abdulmotaleb El Saddik

3:00 pm - 4:00 pm

Exposition Hall C & Royal Salon

Poster/Demo Session I & Break

All posters and demonstrations will be displayed.

4:00 pm - 5:30 pm

Exposition Hall C & Royal Salon

Taction and Teleoperation

The Touch Thimble: Providing Fingertip Contact Feedback During Point-Force Haptic Interaction (p.239), Katherine J. Kuchenbecker, David Ferguson, Michael Kutzer, Matthew Moses, Allison M. Okamura
Graphical Reproduction of Tactile Information of Embedded Lumps for MIS Applications (p.247), Mohammadreza Ramezani-fard, Saeed Sokhanvar, Javad Dargahi, Wen-Fang Xie, Muthukumar Packirisamy

Judging the Effectiveness of a Passive Haptic Device in Teleoperation Based on the Average Angular Error in Force Generation (p.253), Benjamin A. Black, Wayne J. Book

Experimental Internet Haptic Collaboration using Virtual Coupling Schemes (p.259), Ganesh Sankaranarayanan, Blake Hannaford

Telemanipulators with Sensor/Actuator Asymmetries Fail the Robustness Criterion (p.267), Lawton N. Verner, Allison M. Okamura

Characterizing Teleoperator Behavior for Feedback Design and Performance Analysis (p.273), Paul G. Griffiths, R. Brent Gillespie

6:30 pm - 8:00 pm

Location TBA

Dinner Banquet

► **FRIDAY MARCH 14**

7:00 am - 8:30 am

Royal Salon

Breakfast

HAPTICS SYMPOSIUM

8:30 am - 10:15 am

Exposition Hall B

Perception II

The Role of Choice in Longitudinal Recall of Meaningful Tactile Signals (p.49), Mario Enriquez, Karon MacLean

Haptic Rendering and Psychophysical Evaluation of a Virtual Three-Dimensional Helical Spring (p.57), Vinithra Varadharajan, Bertram Unger, Robert Swendsen, Ralph Hollis

Influence of visuomotor action on visual-haptic simultaneous perception: A psychophysical study (p.65), Zhuanghua Shi, Sandra Hirche, Werner X. Schneider, Hermann Müller

Comparison of Skin Stretch and Vibrotactile Stimulation for Feedback of Proprioceptive Information (p.71), Karlin Bark, Jason W. Wheeler, Sunthar Premakumar, Mark R. Cutkosky

Visual-Haptic Perception of Compliance: Fusion of Visual and Haptic Information (p.79), Martin Kuschel, Martin Buss, Franziska Freyberger, Berthold Färber, Roberta L. Klatzky

Haptic Identification of Stiffness and Force Magnitude (p.87), Steven A. Cholewiak, Hong Z. Tan, David S. Ebert

Assessment of Vibrotactile Feedback in a Needle-Insertion Task using a Surgical Robot (p. 93), Sumanth Peddamatham, William Peine, Hong Z. Tan

10:15 am - 10:45 am

Exposition Hall B

Poster Teaser II

Interactive representation of virtual object in hand-held box by finger-worn haptic display (p.367), Kouta Minamizawa, Souichiro Fukamachi, Naoki Kawakami, Susumu Tachi

1DOF Sensor and Display system of Haptic and Temperature Sensation (p.369), Hiroaki Yano, Itsuro Hayashi, Hiroo Iwata

Cable-Driven Tactor for Tactile Situational Awareness Systems (p.371), Christopher R. Wagner, Amanda L. Christiana

Toward Developing a Velocity Controlled Tactile Impact Display (p.373), Brian T. Gleeson, William R. Provancher

A plate tuning fork shaped tactile display using elastic waves (p.375), Chaodong Li, Hua Yao, Jingjing Xu, Yanyan Zhang, Boqian Kuang

Haptic Implications of Tool Flexibility in Surgical Teleoperation (p.377) M. Tavakoli, Robert D. Howe

Passive Viscous Haptic Textures (p.379), Gianni Campion, Andrew H. C. Gosline, Vincent Hayward

Tactile Graphics Rendering Using Three Laterotactile Drawing Primitives (p.429), Vincent Lévesque, Vincent Hayward

Navigation Guidance Control Using Haptic Feedback for Obstacle Avoidance of Omni-directional Wheelchair (p.437), Yasumasa Kondo, Takanori Miyoshi, Kazuhiko Terashima, Hideo Kitagawa

Feel the Pressure: E-learning Systems with Haptic Feedback (p.445), Felix G. Hamza-Lup, Michele Adams

Visualizing Human Behavioral Features based on Signature Haptic Data (p.451), Rosa Iglesias, Mauricio Orozco, Julio J. Valdes, Abdulmotaleb El Saddik

Constructing and Evaluating Vibration Magnitude Models for Visualization (p.457), Yuan Wang, M.J. Turner, W.T. Hewitt

Force-Feedback Surgical Teleoperator: Controller Design and Palpation Experiments (p.465), Mohsen Mahvash, Jim Gwilliam, Rahul Agarwal, Balazs Vagvolgyi, Li-Ming Su, David D. Yuh, Allison M. Okamura

Haptic Weather (p.473), Chaehyun Lee, Bernard D. Adelstein, Seungmoon Choi

Haptic Simulation of Elbow Joint Spasticity (p.475), David I. Grow, Mengnan (Mary) Wu, Michael J. Locastro, Sugandha K. Arora, Amy J. Bastian, Allison M. Okamura

A Haptic Interface with Motor/Brake System for Colonoscopy Simulation (p.477), Evren Samur, Lionel Flaction, Ulrich Spaelter, Hannes Bleuler, David Hellier, Sebastien Ourselin

RoSS: Virtual Reality Robotic Surgical Simulator for the da Vinci Surgical System (p.479), Ankur Baheti, Sridhar Seshadri, Amrith Kumar, Govindarajan Srimathveeravalli, Thenkurussi Kesavadas, Khursid Guru

10:45 am - 12:15 pm

Exposition Hall C & Royal Salon

Poster/Demo Session II & Break

All posters and demonstrations will be displayed.

12:15 pm - 1:15 pm

Lunch Break

1:15 pm - 3:00 pm

Exposition Hall B

Applications

Haptic Characteristics of Document Conservation Tasks (p.383), Rainer Leuschke, Regina Donlin, Marc Claus, Maria Nugent, Dianne van der Reyden, Blake Hannaford

Toys in the Classroom: LEGO MindStorms as an Educational Haptics Platform (p.383), Adam M. Brandt, Mark B. Colton

Haptic Guidance Benefits Musical Motor Learning (p.397), Graham Grindlay

Full-Arm Haptics in an Accessibility Task (p.405), Matthew Frey, David E. Johnson, John Hollerbach

On the Design of a Thermal Display for Upper Extremity Prosthetics (p.413), Keehoon Kim, J. Edward Colgate, Michael A. Peshkin

Using Haptics to Convey Cause and Effect Relations in Climate Visualization, Nesra Yannier, Cagatay Basdogan, Serdar Tasiran, Omer Lutfi Sen

Modeling of the Lap-Band® for Laparoscopic Adjustable Gastric Banding Operation (p.421), Woojin Ahn, Daniel B. Jones, Doo Yong Lee, Suvaranu De

3:00 pm - 3:30 pm

Exposition Hall B

Award Ceremony & Closing

The *IEEE Transactions on Haptics (ToH)* will address the science, technology and applications associated with information acquisition and object manipulation through touch. Haptic interactions relevant to this journal include all aspects of manual exploration and manipulation by humans, machines and interactions between the two, performed in real, virtual, teleoperated or networked environments.

ToH accepts regular, short and survey papers, as well as brief communications. Papers may be submitted online via:

<https://mc.manuscriptcentral.com/th-cs>

Publication will commence in the fall of 2008, and issues will appear quarterly. Detailed information for authors may be found at:

<http://www.computer.org/toh>

Research areas of relevance to this publication will include, but not be limited to, the following topics:

- Human haptic and multi-sensory perception and action
- Haptic interactions via passive or active tools and machines
- Devices that sense, enable, or create haptic interactions locally or at a distance
- Haptic rendering and its association with graphic and auditory rendering in virtual reality
- Algorithms, controls, and dynamics of haptic devices, users, and interactions between the two
- Human-machine performance and safety with haptic feedback
- Haptics in the context of human-computer interactions
- Systems and networks using haptic devices and interactions, including multi-modal feedback
- Application of the above, for example in areas such as education, rehabilitation, medicine, computer-aided design, skills training, computer games, driver controls, simulation and visualization

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