

Program for World Haptics 2009

Tuesday, March 17

15:00-17:00 Tours of haptics labs at the University of Utah

18:00-20:00 Conference reception at the hotel

Wednesday, March 18

09:00-09:15 Opening and Welcome

WeA1	Room
Tactile Displays 1 (Oral)	
09:15-09:30	WeA1.1
<i>Realization of Button Click Feeling by Use of Ultrasonic Vibration and Force Feedback</i>	
Tashiro, Kaoru	Keio Univ.
Shiokawa, Yuta	Keio Univ.
Aono, Tomotake	Kyocera
Maeno, Takashi	Keio Univ.
09:30-09:45	WeA1.2
<i>A Body-conforming Tactile Jacket to Enrich Movie Viewing</i>	
Lemmens, Paul M. C.	Philips Res. Europe
Crompvoets, Floris	Philips Res. Europe
Brokken, Dirk	Philips Res. Europe
Van den Eerenbeemd, Jack	Philips Res. Europe
De Vries, Gert-Jan	Philips Res. Europe
09:45-10:00	WeA1.3
<i>Development of a Miniature Pin-Array Tactile Module Using Elastic and Electromagnetic Force for Mobile Devices</i>	
Yang, Tae-Heon	KAIST
Kim, Sang-Youn	Korea Univ. of Tech. and Education
Kim, Chong Hui	Agency for Defense Development
Kwon, Dong-Soo	KAIST
Book, Wayne	Georgia Inst. of Tech.
10:00-10:15	WeA1.4
<i>ShiverPad: A Device Capable of Controlling Shear Force on a Bare Finger</i>	
Chubb, Erik Christopher	Northwestern Univ.
Colgate, J. Edward	Northwestern Univ.
Peshkin, Michael A.	Northwestern Univ.
10:15-10:45 Morning break	
10:45-11:45 Neuroscience and Haptics (invited session)	
10:45-10:55	
<i>Introduction to Neuroscience Research in Haptics</i>	
Jones, Lynette	MIT
10:55-11:20	
<i>Neural Mechanisms of Haptic Size and Shape Perception</i>	
Hsiao, Steven	Johns Hopkins University
11:20-11:45	
<i>Haptic Motor Control: Comparing Actual and Expected Somatosensory Feedback</i>	
Martha Flanders	University of Minnesota

11:45-13:15 Lunch

13:15-14:15 Poster Teasers 1

14:15-15:45 Poster Session 1

WeC1	Room
Haptic Modeling and Rendering 1 (Poster)	
14:15-15:45	WeC1.1

<i>On-Line Precomputation Algorithm for Real-Time Haptic Interaction with Non-Linear Deformable Bodies</i>	Masaryk Univ. Masaryk Univ. Masaryk Univ.
Filipovic, Jiri Peterlik, Igor Matyska, Ludek	
14:15-15:45	WeC1.2
<i>PhyNeSS: A Physics-Driven Neural Networks-Based Surgery Simulation System with Force Feedback</i>	Rensselaer Pol. Inst. Rensselaer Pol. Inst.
Deo, Dhanannjay De, Suvranu	
14:15-15:45	WeC1.3
<i>Data-Driven Haptic Modeling Using Polynomial Hypersurfaces,</i>	Brigham Young Univ. Brigham Young Univ.
Theodosis, Paul Colton, Mark	
14:15-15:45	WeC1.4
<i>Computationally Efficient Techniques for Data-Driven Haptic Rendering</i>	ETH Zurich Max Planck Inst. for Biological Cybernetics ETH Zurich ETH Zurich
Hoever, Raphael Di Luca, Massimiliano Szekely, Gabor Harders, Matthias	
WeC2	Room
Collaboration and Control (Poster)	
14:15-15:45	WeC2.1
<i>Homotopy Switching Model for Dyad Haptic Interaction in Physical Collaborative Tasks</i>	CNRS/AIST JRL CNRS
Evrard, Paul Kheddar, Abderrahmane	
14:15-15:45	WeC2.2
<i>Role Determination in Human-Human Interaction</i>	Tech. Univ. München Tech. Univ. München Tech. Univ. München
Stefanov, Nikolay Peer, Angelika Buss, Martin	
14:15-15:45	WeC2.3
<i>Maneuverability of Master Control Devices Considering the Musculo-Skeletal Model of an Operator</i>	Kyoto Univ. Kyoto Univ.
Ito, Sho Yokokohji, Yasuyoshi	
14:15-15:45	WeC2.4
<i>Control Strategies and Perception Effects in Co-Located and Large Workspace Dynamical Encountered Haptics</i>	Scuola Superiore S. Anna Scuola Superiore S. Anna Scuola Superiore S. Anna Scuola Superiore S. Anna
Tropicchio, Paolo Ruffaldi, Emanuele Avizzano, Carlo Alberto Bergamasco, Massimo	
WeC3	Room
Tactile Displays 2 (Poster)	
14:15-15:45	WeC3.1
<i>Small and Lightweight Tactile Display and Its Application</i>	KAIST KAIST KAIST Agency for Defense Development KIST Korea Inst. of Science & Tech. KAIST
Kim, Seung-Chan Yang, Tae-Heon Han, Byung-Kil Kim, Chong Hui Yang, Gi-Hun Kang, Sungchul Kwon, Dong-Soo	
14:15-15:45	WeC3.2
<i>Determining Appropriate Parameters to Elicit Linear and Circular Apparent Motion Using Vibrotactile Cues</i>	Osaka Univ. Worcester Pol. Inst. Osaka Univ. Osaka Univ.
Niwa, Masataka Lindeman, Robert Itoh, Yuichi Kishino, Fumio	
14:15-15:45	WeC3.3
<i>Vibrotactile Display for Hand-Held Input Device Providing Spatial and Directional Information</i>	KIST KIST KIST
Yang, Gi-Hun Ryu, Dongseok Kang, Sungchul	
14:15-15:45	WeC3.4
<i>Piezoelectric Actuator for a Force-Feedback Application: Preliminary Evaluation</i>	IRCICA IRCICA IRCICA
M'Boungui, Gaston Lemaire-Semail, Betty Giraud, Frederic	

WeC4	Room
Haptic Device Design 1 (Poster)	
14:15-15:45	WeC4.1
<i>Compact MR-Brake with Serpentine Flux Path for Haptics Applications</i>	
Senkal, Doruk	Washington State Univ. Vancouver
Gurocak, Hakan	Washington State Univ. Vancouver
14:15-15:45	WeC4.2
<i>Efficient Object Exploration and Object Presentation in TeleTA, Teleoperation System with Tactile Feedback</i>	
Tsetserukou, Dzmitry	The Univ. of Tokyo
Tachi, Susumu	The Univ. of Tokyo
14:15-15:45	WeC4.3
<i>Ergonomics of Exoskeletons: Objective Performance Metrics</i>	
Schiele, Andre	European Space Agency
14:15-15:45	WeC4.4
<i>System Improvements in Mobile Haptic Interface</i>	
Lee, In	POSTECH
Hwang, Inwook	POSTECH
Han, Kyung Lyong	POSTECH
Choi, Oh Kyu	POSTECH
Choi, Seungmoon	POSTECH
Lee, Jin S.	POSTECH
WeC5	Room
Perception 1 (Poster)	
14:15-15:45	WeC5.1
<i>Effects of Haptic Device Attributes on Vibration Detection Thresholds</i>	
Salisbury, Curt	Stanford Univ.
Gillespie, Brent	Univ. of Michigan
Tan, Hong	Purdue Univ.
Barbagli, Federico	Stanford Robotics Lab.
Salisbury, Kenneth	Stanford Univ.
14:15-15:45	WeC5.2
<i>Stiffness Discrimination with Visual and Proprioceptive Cues</i>	
Gurari, Netta	Johns Hopkins Univ.
Kuchenbecker, Katherine J.	Univ. of Pennsylvania
Okamura, Allison M.	Johns Hopkins Univ.
14:15-15:45	WeC5.3
<i>Measurement of the Detection Thresholds of Hair on Human Hairy Skin Using Direct Vibrotactile Stimulation</i>	
Furukawa, Masahiro	The Univ. of Electro-Communications
Nagaya, Naohisa	The Univ. of Electro-Communications
Hashimoto, Yuki	The Univ. of Electro-Communications
Kajimoto, Hiroyuki	The Univ. of Electro-Communications
Inami, Masahiko	Keio Univ.
14:15-15:45	WeC5.4
<i>Signal Manipulation Based on Perceptual Thresholds Enhances Surface Experience with Common Haptic Device</i>	
Vicentini, Marco	Univ. of Verona
Botturi, Debora	Univ. of Verona
WeC6	Room
Perception 2 (Poster)	
14:15-15:45	WeC6.1
<i>How Is Tactile Timing Information Integrated: Somatotopically or Spatiotopically?</i>	
Kuroki, Shinobu	The Univ. of Tokyo
Watanabe, Junji	NTT Communication
Kawakami, Naoki	The Univ. of Tokyo
Tachi, Susumu	The Univ. of Tokyo
14:15-15:45	WeC6.2
<i>Evidence for Haptic Iconic Memory</i>	
Shih, Ron	Univ. of Waterloo
Dubrowski, Adam	Univ. of Toronto
Carnahan, Heather	Univ. of Toronto
14:15-15:45	WeC6.3
<i>Effects of Sounds on Tactile Roughness Depend on the Congruency between Modalities</i>	
Suzuki, Yuika	Tohoku Univ.
Gyoba, Jiro	Tohoku Univ.
14:15-15:45	WeC6.4
<i>The Impact of Feedback Design in Haptic Volume Visualization</i>	
Lundin Palmerius, Karljohan	Linköping Univ.
Forsell, Camilla	Linköping Univ.

15:45-16:15 Coffee break

WeD1	Room
Perception 3 (Oral)	
16:15-16:30	WeD1.1
<i>Tactile Displays for Multitask Environments: The Role of Concurrent Task Processing Code</i>	
Ferris, Thomas	Univ. of Michigan
Hameed, Shameem	Univ. of Michigan
Sarter, Nadine	Univ. of Michigan
16:30-16:45	WeD1.2
<i>ERP Evidence of Tactile Texture Processing: Effects of Roughness and Movement</i>	
Ballesteros, Soledad	Univ. Nacional de Educación a Distancia
Muñoz, Francisco	Univ. Nacional de Educación a Distancia
Sebastián, Manuel	Univ. Nacional de Educación a Distancia
García, Beatriz	Univ. Nacional de Educación a Distancia
Reales, José Manuel	Univ. Nacional de Educación a Distancia
16:45-17:00	WeD1.3
<i>Communication of Direction through Lateral Skin Stretch at the Fingertip</i>	
Gleeson, Brian	Univ. of Utah
Horschel, Scott	Univ. of Utah
Provancher, William	Univ. of Utah
17:00-17:15	WeD1.4
<i>Morphing in Periodic Tactile Signals</i>	
MacLean, Karon E.	Univ. of British Columbia
Enriquez, Mario J.	Univ. of British Columbia
Lim, Wei Tian	Telus

Thursday March 19

ThA1	Room
Haptically-Enhanced Applications 1 (Oral)	
09:00-09:15	ThA1.1
<i>Wind Display Device for Locomotion Interface in a Virtual Environment</i>	
Kulkarni, Sandip	Univ. of Utah
Fisher, Charles	Univ. of Utah
Pardysak, Eric	Univ. of Utah
Minor, Mark	Univ. of Utah
Hollerbach, John	Univ. of Utah
09:15-09:30	ThA1.2
<i>Gait Enhancing Mobile Shoe (GEMS) for Rehabilitation</i>	
de Groot, Allison	Virginia Commonwealth Univ.
Decker, Ryan	Johns Hopkins Univ.
Reed, Kyle Brandon	Johns Hopkins Univ.
09:30-09:45	ThA1.3
<i>Haptic Interface for Perceiving Remote Object Using a Laser Range Finder</i>	
Yano, Hiroaki	Univ. of Tsukuba
Miyamoto, Yuichi	Univ. of Tsukuba
Iwata, Hiroo	Univ. of Tsukuba
09:45-10:00	ThA1.4
<i>Precise Manipulation of GUI on a Touch Screen with Haptic Cues</i>	
Kyung, Ki-Uk	Electronics and Telecommunications Res. Inst.
Srinivasan, Mandayam	MIT
Lee, Jun-Young	KIST

10:00-10:30 Morning break

ThB1	Room
Telemanipulation and Telepresence (Oral)	
10:30-10:45	ThB1.1
<i>Perceptual Coding of Haptic Data in Time-Delayed Teleoperation</i>	
Vittorias, Iason	Tech. Univ. München
Kammerl, Julius	Tech. Univ. München
Hirche, Sandra	Tech. Univ. München
Steinbach, Eckehard	Tech. Univ. München
10:45-11:00	ThB1.2

Robust Perception-Based Data Reduction and Transmission in Telehaptic Systems

Sakr, Nizar
Zhou, Jilin
Georganas, Nicolas D.
Zhao, Jiying
Petriu, Emil M.

Univ. of Ottawa
Univ. of Ottawa
Univ. of Ottawa
Univ. of Ottawa
Univ. of Ottawa

ThB1.3

11:00-11:15

Least Conservative Robust Stability Condition for Linear Bilateral Teleoperation Control Systems

Haddadi, Amir
Hashtrudi-Zaad, Keyvan

Queen's Univ.
Queen's Univ.

ThB1.4

11:15-11:30

Position and Force Augmentation in a Telepresence System and Their Effects on Perceived Realism

Weber, Carolina
Nitsch, Verena
Unterhinninghofen, Ulrich
Färber, Berthold
Buss, Martin

Tech. Univ. München
Univ. der Bundeswehr München
Tech. Univ. München
Univ. der Bundeswehr München
Tech. Univ. München

11:30-13:00 Lunch

13:00-14:00 Poster Teasers 2

14:00-15:30 Poster Session 2 and Demo Session 1

ThC1

Room

Haptically-Enhanced Applications 2 (Poster)

14:00-15:30

ThC1.1

Haptical Exploration of an Unsteady Flow

Menelas, Bob
Ammi, Mehdi
Pastur, Luc
Bourdot, Patrick

CNRS-LIMSI
Univ. of Paris-XI
CNRS-LIMSI
CNRS-LIMSI

14:00-15:30

ThC1.2

Development of Tremor-Suppression Filter for Meal-Assist Robot

Ohara, Eiichi
Yano, Ken'ichi
Horihata, Satoshi
Aoki, Takaaki
Nishimoto, Yutaka

Gifu Univ.
Gifu Univ.
Nihon Univ.
Gifu Univ.
Gifu Univ.

14:00-15:30

ThC1.3

Method for Presenting Virtual Objects to Multiple Fingers on Two-Hands Using Multiple Single-Point Haptic Devices

Handa, Takuya
Sakai, Tadahiro
Morita, Toshiya

NHK (Japan Broadcasting Corp.)
NHK (Japan Broadcasting Corp.)
NHK (Japan Broadcasting Corp.)

14:00-15:30

ThC1.4

Pneumatic Haptic Interface Fuzzy Controller for Simulation of Abdominal Palpations During Colonoscopy

Cheng, Mario
Riek, Stephan
Ourselin, Sebastien
Watson, Marcus
Passenger, Josh
Salvado, Olivier

The Univ. of Queensland
The Univ. of Queensland
Univ. Coll. London
Royal Brisbane and Women's Hospital
Royal Brisbane and Women's Hospital
Royal Brisbane and Women's Hospital

ThC2

Room

Device Design and Applications (Posters with demos)

14:00-15:30

ThC2.1

Non-Contact Tactile Sensation Synthesized by Ultrasound Transducers

Hoshi, Takayuki
Iwamoto, Takayuki
Shinoda, Hiroyuki

Univ. of Tokyo
Canon
Univ. of Tokyo

14:00-15:30

ThC2.2

A High Fidelity Ungrounded Torque Feedback Device: The Itorqu 2.0

Winfrey, Kyle N.
Gewirtz, Jamie
Mather, Thomas
Fiene, Jonathan
Kuchenbecker, Katherine J.

Univ. of Pennsylvania
Univ. of Pennsylvania
Univ. of Pennsylvania
Univ. of Pennsylvania
Univ. of Pennsylvania

14:00-15:30

ThC2.3

Toward Iconic Vibrotactile Information Display Using Floor Surfaces

Visell, Yon

McGill Univ.

Law, Alvin	McGill Univ.
Cooperstock, Jeremy R.	McGill Univ.
14:00-15:30	ThC2.4
<i>The Ultimate Haptic Device: First Step</i>	
Millet, Guillaume	Univ. Pierre et Marie Curie-Paris 6
Haliyo, Dogan Sinan	Univ. Pierre et Marie Curie-Paris 6
Régnier, Stéphane	Univ. Pierre et Marie Curie-Paris 6
Hayward, Vincent	Univ. Pierre et Marie Curie-Paris 6
14:00-15:30	ThC2.5
<i>Toward Tactilely Transparent Gloves: Collocated Slip Sensing and Vibrotactile Actuation</i>	
Romano, Joseph M.	Univ. of Pennsylvania
Gray, Steven R.	Univ. of Pennsylvania
Jacobs, Nathan T.	Univ. of Pennsylvania
Kuchenbecker, Katherine J.	Univ. of Pennsylvania

ThC3	Room
Tactile Displays 3 (Poster)	

14:00-15:30	ThC3.1
<i>Good Vibrations: Asymmetric Vibrations for Directional Haptic Cues</i>	
Tappeiner, Hanns	Carnegie Mellon Univ.
Klatzky, Roberta	Carnegie Mellon Univ.
Unger, Bertram	Carnegie Mellon Univ.
Hollis, Ralph	Carnegie Mellon Univ.
14:00-15:30	ThC3.2
<i>Dielectric Elastomer Actuators for Tactile Displays</i>	
Matysek, Marc	Tech. Univ. Darmstadt
Lotz, Peter	Tech. Univ. Darmstadt
Winterstein, Thomas	Tech. Univ. Darmstadt
Schlaak, Helmut F.	Tech. Univ. Darmstadt
14:00-15:30	ThC3.3
<i>Tactile Object Exploration Using Cursor Navigation Sensors</i>	
Kraft, Dirk	Univ. of Southern Denmark
Bierbaum, Alexander	Univ. of Karlsruhe (TH)
Kjaergaard, Morten	Univ. of Southern Denmark
Ratkevicius, Jurgis	Univ. of Southern Denmark
Kjær-Nielsen, Anders	Univ. of Southern Denmark
Ryberg, Charlotte	Univ. of Southern Denmark
Petersen, Henrik Gordon	Univ. of Southern Denmark
Asfour, Tamim	Univ. of Karlsruhe (TH)
Dillmann, Rüdiger	Univ. of Karlsruhe (TH)
Krüger, Norbert	Univ. of Southern Denmark
14:00-15:30	ThC3.4
<i>Vibrotactile Score: A Score Metaphor for Designing Vibrotactile Patterns</i>	
Lee, Jaebong	POSTECH
Ryu, Jonghyun	POSTECH
Choi, Seungmoon	POSTECH

ThC4	Room
Dynamics and Control 1 (Poster)	

14:00-15:30	ThC4.1
<i>An Adaptive Controller for Bilateral Teleoperation under Time Delay</i>	
Shahdi, Ali	McMaster Univ.
Sirouspour, Shahin	McMaster Univ.
14:00-15:30	ThC4.2
<i>Control of an Actuated Car Door Providing Outstanding Haptic Interaction</i>	
Strolz, Michael	Tech. Univ. München
Mörtl, Alexander	Tech. Univ. München
Graef, Michael	BMW Forschung und Tech. GmbH
Buss, Martin	Tech. Univ. München
14:00-15:30	ThC4.3
<i>An Energy Bounding Approach for Directional Transparency in Multiple Degree-Of-Freedom Haptic Interaction,</i>	
Kim, Jaeha	Gwangju Inst. of Science and Tech.
Kim, Jong-Phil	Korea Inst. of Science and Tech.
Seo, Changhoon	Gwangju Inst. of Science and Tech.
Ryu, Jeha	Gwangju Inst. of Science and Tech.
14:00-15:30	ThC4.4
<i>Recovering Haptic Performance by Relaxing Passivity Requirements</i>	
Griffiths, Paul	Johns Hopkins Univ.
Gillespie, Brent	Univ. of Michigan

ThC5	Room
Human Performance 1 (Poster)	
14:00-15:30	ThC5.1
<i>Progressive Shared Control for Training in Virtual Environments</i>	
Li, Yanfang	Rice Univ.
Huegel, Joel C.	Rice Univ.
Patoglu, Volkan	Sabanci Univ.
O'Malley, Marcia	Rice Univ.
14:00-15:30	ThC5.2
<i>Performance Related Energy Exchange in Haptic Human-Human Interaction in a Shared Virtual Object Manipulation Task</i>	
Feth, Daniela	Tech. Univ. München
Groten, Raphaela	Tech. Univ. München
Peer, Angelika	Tech. Univ. München
Hirche, Sandra	Tech. Univ. München
Buss, Martin	Tech. Univ. München
14:00-15:30	ThC5.3
<i>Effects of Magnitude and Phase Cues on Human Motor Adaptation</i>	
Israr, Ali	Rice Univ.
Kapson, Hakan	Sabanci Univ.
Patoglu, Volkan	Sabanci Univ.
O'Malley, Marcia	Rice Univ.
14:00-15:30	ThC5.4
<i>Vibrotactile Perception Assessment for a Rowing Training System</i>	
Ruffaldi, Emanuele	Scuola Superiore S. Anna
Filippeschi, Alessandro	Scuola Superiore S. Anna
Sandoval, Oscar	Scuola Superiore S. Anna
Frisoli, Antonio	Scuola Superiore S. Anna
Avizzano, Carlo Alberto	Scuola Superiore S. Anna
Bergamasco, Massimo	Scuola Superiore S. Anna
ThC6	Room
Human Performance 2 (Poster)	
14:00-15:30	ThC6.1
<i>Haptics As an Aid to Copying for People with Williams Syndrome</i>	
Lee, Jin	Johns Hopkins Univ.
Okamura, Allison M.	Johns Hopkins Univ.
Landau, Barbara	Johns Hopkins Univ.
14:00-15:30	ThC6.2
<i>Improving Haptic Experience through Biomechanical Measurements</i>	
Kocherry, John	SUNY, Univ. at Buffalo
Srimathveeravalli, Govindarajan	SUNY, Univ. at Buffalo
Chowriappa, Ashirwad	SUNY, Univ. at Buffalo
Kesavadas, Thenkurussi	SUNY, Univ. at Buffalo
Shin, Gwanseob	SUNY, Univ. at Buffalo
14:00-15:30	ThC6.3
<i>Toward a Robot-Assisted Assessment of the Control Processes of the Motor System</i>	
Méary, David	San Raffaele Vita-Salute Univ.
Baud-bovy, Gabriel	San Raffaele Vita-Salute Univ.
14:00-15:30	ThC6.4
<i>An HMM Approach to Realistic Haptic Human-Robot Interaction</i>	
Wang, Zheng	Tech. Univ. München
Peer, Angelika	Tech. Univ. München
Buss, Martin	Tech. Univ. München
ThCT1	Room
Demos 1 (Demo)	
14:00-15:30	ThCT1.1
<i>Intravascular Palpation and Haptic Feedback During Angioplasty</i>	
Meiss, Thorsten	Univ. of Tech. Darmstadt
Budelmann, Christoph	Univ. of Tech. Darmstadt
Kern, Thorsten Alexander	Univ. of Tech. Darmstadt
Sindlinger, Stephanie	Univ. of Tech. Darmstadt
Werthschützky, Roland	Univ. of Tech. Darmstadt
Minamisava, Carlos	Univ. of Tech. Darmstadt
14:00-15:30	ThCT1.2
<i>A New Softness Display Based on Bi-Elastic Fabric</i>	
Bianchi, Matteo	Univ. of Pisa
Scilingo, Enzo Pasquale	Univ. of Pisa
Serio, Alessandro	Univ. of Pisa

Bicchi, Antonio	Univ. of Pisa
14:00-15:30	ThCT1.3
<i>Haptic Augmented Reality: Modulation of Real Object Stiffness</i>	
Jeon, Seokhee	POSTECH
Choi, Seungmoon	POSTECH
14:00-15:30	ThCT1.4
<i>Dynamic Touch on Friction Controlled Tactile Display</i>	
Vanbelleghem, Romuald	INRIA
Giraud, Frederic	USTL
Lemaire-Semail, Betty	USTL
14:00-15:30	ThCT1.5
<i>Graphical Authoring Tools for Vibrotactile Patterns</i>	
Lee, Jaebong	POSTECH
Ryu, Jonghyun	POSTECH
Choi, Seungmoon	POSTECH
14:00-15:30	ThCT1.6
<i>Development of a Haptic Environment for Biomedical Engineering Simulation (An Educational Software to Help Demonstrate a Virtual Human Torso Model)</i>	
Vahedi, Behrad	Univ. of Hertfordshire
Tiu, William	Univ. of Hertfordshire
14:00-15:30	ThCT1.7
<i>A User-Centered Designed FOSS Implementation of Bone Surgery Simulations</i>	
Forsslund, Jonas	Royal Inst. of Tech.
Sallnäs, Eva-Lotta	Royal Inst. of Tech.
Lundin Palmerius, Karljohan	Linköping Univ.
14:00-15:30	ThCT1.8
<i>Six-DoF Haptic Rendering of Contact between Geometrically Complex Reduced Deformable Models: Haptic Demo</i>	
Barbic, Jernej	MIT
James, Doug L.	Cornell Univ.
14:00-15:30	ThCT1.9
<i>Inverse Piano Technique for Studying Finger Interaction During Pressing Tasks</i>	
Martin, Joel	Penn State Univ.
Zatsiorsky, Vladimir	Penn State Univ.
Latash, Mark	Penn State Univ.
14:00-15:30	ThCT1.10
<i>Collaborative Haptic Environment Assessment</i>	
Hamza-Lup, Felix	Armstrong Atlantic State Univ.
LaPlant, James	Armstrong Atlantic State Univ.
Lambeth, Benjamin	Armstrong Atlantic State Univ.
14:00-15:30	ThCT1.11
<i>Visual versus Haptic Progressive Guidance for Training in a Virtual Dynamic Task</i>	
Huegel, Joel C.	Rice Univ.
O'Malley, Marcia	Rice Univ.

15:30-16:00 Coffee break

ThD1	Room
Human Performance 3 (Oral)	
16:00-16:15	ThD1.1
<i>Functional Analysis of Finger Contact Locations During Grasping</i>	
Ciocarlie, Matei	Columbia Univ.
Dang, Hao	Columbia Univ.
Lukos, Jamie R	Arizona State Univ.
Santello, Marco	Arizona State Univ.
Allen, Peter	Columbia Univ.
16:15-16:30	ThD1.2
<i>Force & Torque Feedback vs Force Only Feedback</i>	
Verner, Lawton	Johns Hopkins Univ.
Okamura, Allison M.	Johns Hopkins Univ.
16:30-16:45	ThD1.3
<i>3-D Force Control on the Human Fingerpad Using a Magnetic Levitation Device for Fingernail Imaging Calibration</i>	
Grieve, Thomas	Univ. of Utah
Sun, Yu	Univ. of Utah
Hollerbach, John	Univ. of Utah
Mascaro, Stephen	Univ. of Utah
16:45-17:00	ThD1.4
<i>The Role of Item Fixation in Haptic Search</i>	
Plaisier, Myrthe	Utrecht Univ.

Kuling, Irene A.
Bergmann Tiest, Wouter
Kappers, Astrid M.L.

Utrecht Univ.
Utrecht Univ.
Utrecht Univ.

19:00-21:00 Banquet, awards

Friday March 20

FrA1	Room
Haptic Modeling and Rendering 2 (Oral)	
09:00-09:15	FrA1.1
<i>Haptic Rendering of Complex Deformations through Handle-Space Force Linearization</i>	
Garre, Carlos	URJC Madrid
Otaduy, Miguel A.	URJC Madrid
09:15-09:30	FrA1.2
<i>A Data Compression Method for Impulse Response Deformation Model</i>	
Tagawa, Kazuyoshi	The Univ. of Tokyo
Hirota, Koichi	The Univ. of Tokyo
Hirose, Michitaka	The Univ. of Tokyo
09:30-09:45	FrA1.3
<i>Toward Automated Haptic Modeling Using Commercial Haptic Interfaces: Surface Normal Estimation and Static Model Identification</i>	
Judd, Mark	Brigham Young Univ.
Colton, Mark	Brigham Young Univ.
Brown, Travis	Brigham Young Univ.
09:45-10:00	FrA1.4
<i>Real-Time Estimation of Human Impedance for Haptic Interfaces</i>	
Hill, Matthew	Stanford Univ.
Niemeyer, Gunter	Stanford Univ.

10:00-10:30 Morning break

FrB1	Room
Haptic Device Design 2 (Oral)	
10:30-10:45	FrB1.1
<i>A Whole-Arm Tactile Display System</i>	
Howe, Robert D.	Harvard Univ.
Tadakuma, Riichiro	Harvard Univ.
10:45-11:00	FrB1.2
<i>A Haptic Device DELTA-4: Kinematics and Its Analysis</i>	
Arata, Jumpei	Nagoya Inst. of Tech.
Kondo, Hiroyuki	Nagoya Inst. of Tech.
Sakaguchi, Masamichi	Nagoya Inst. of Tech.
Fujimoto, Hideo	Nagoya Inst. of Tech.
11:00-11:15	FrB1.3
<i>Five-Fingered Haptic Interface Robot: HIRO III</i>	
Endo, Takahiro	Gifu Univ.
Kawasaki, Haruhisa	Gifu Univ.
Mouri, Tetsuya	Gifu Univ.
Doi, Yasutoshi	Gifu Univ.
Yoshida, Tetunori	Gifu Univ.
Ishigure, Yasuhiko	Marutomi Seikou Co., Ltd
Shimomura, Hisayuki	Dainichi Co., Ltd.
Matsumura, Masato	e-Valley Co. Ltd
Koketsu, Kazumi	Tec Gihan Co., Ltd.
11:15-11:30	FrB1.4
<i>A Wearable Skin Stretch Device for Haptic Feedback</i>	
Bark, Karlin	Stanford Univ.
Wheeler, Jason	Stanford Univ.
Lee, Gayle	Stanford Univ.
Savall, Joan	Univ. of Navarra
Cutkosky, Mark	Stanford Univ.

11:30-13:00 Lunch

13:00-14:00 Poster Teasers 3

14:00-15:30 Poster Session 3 and Demo session 2

FrC1	Room
Tactile Modeling (Poster)	
14:00-15:30	FrC1.1
<i>Influence of Contact Conditions on Thermal Responses of the Hand</i>	
Galie, Jessica	MIT
Ho, Hsin-Ni	NTT
Jones, Lynette	MIT
14:00-15:30	FrC1.2
<i>Providing Two-Dimensional Tactile Directional Information with One-Dimensional Movement</i>	
Lylykangas, Jani Kristian	Univ. of Tampere
Surakka, Veikko	Univ. of Tampere
Rantala, Jussi	Univ. of Tampere
Raisamo, Roope	Univ. of Tampere
14:00-15:30	FrC1.3
<i>A 2D Haptic Glyph Method for Tactile Arrays : Design and Evaluation</i>	
Borst, Christoph	Univ. of Louisiana at Lafayette
Baiyya, Vijay	Univ. of Louisiana at Lafayette
14:00-15:30	FrC1.4
<i>Virtual Active Touch: Perceived Roughness through a Pointing-Stick-Type Tactile Interface</i>	
Yamauchi, Takahiro	Tohoku Univ.
Konyo, Masashi	Tohoku Univ.
Okamoto, Shogo	Tohoku Univ.
Tadokoro, Satoshi	Tohoku Univ.
FrC2	Room
Haptic Modeling and Rendering 3 (Poster)	
14:00-15:30	FrC2.1
<i>Designing 6DOF Haptic Transfer Functions for Effective Exploration of 3D Diffusion Tensor Fields</i>	
Ogawa, Yuta	Tohoku Univ.
Fujishiro, Issei	Tohoku Univ.
Suzuki, Yasuko	Tohoku Univ.
Takeshima, Yuriko	Tohoku Univ.
14:00-15:30	FrC2.2
<i>Improved Feature Detection Over Large Force Ranges Using History Dependent Transfer Functions</i>	
Bivall Persson, Petter	Linköping Univ.
Höst, Gunnar E.	Linköping Univ.
Cooper, Matthew David	Linköping Univ.
Tibell, Lena Anna Elisabet	Linköping Univ.
Ynnerman, Anders	Linköping Univ.
14:00-15:30	FrC2.3
<i>Dynamic Coupling Haptic Suturing Based on Orthogonal Decomposition</i>	
Sepulveda-Cervantes, Gabriel	CIDETEC-IPN
Parra Vega, Vicente	Cinvestav
Dominguez-Ramirez, Omar Arturo	Hidalgo State Univ.
14:00-15:30	FrC2.4
<i>Bilateral Energy Transfer for High Fidelity Haptic Telemanipulation</i>	
Artigas, Jordi	DLR - German Aerospace Center
Borghesan, Gianni	Univ. of Bologna
Preusche, Carsten	DLR - German Aerospace Center
Melchiorri, Claudio	Univ. of Bologna
Hirzinger, Gerd	DLR - German Aerospace Center
FrC3	Room
Perception and Design (Poster)	
14:00-15:30	FrC3.1
<i>Assessment of Haptics-Based Interaction for Assembly Tasks in Virtual Reality</i>	
Vo, Dao	Iowa State Univ.
Vance, Judy	Iowa State Univ.
Marasinghe, Mervyn	Iowa State Univ.
14:00-15:30	FrC3.2
<i>Multidimensional Visual Aid Enhances Haptic Training Simulations</i>	
Halabi, Osama	Iwate Univ.
Chiba, Norishige	Iwate Univ.
14:00-15:30	FrC3.3
<i>Perceptually Augmented Simulator Design through Decomposition</i>	
Edmunds, Timothy	Rutgers Univ.
Pai, Dinesh K.	University of British Columbia

14:00-15:30		FrC3.4
<i>Performance Improvement with Haptic Assistance: A Quantitative Assessment</i>		
Gunn, Chris	Commonwealth Scientific Industrial Res. Org.	
Datta, Amitava	Univ. of Western Australia	
Muller, Warren	Commonwealth Scientific Industrial Res. Org.	

FrC4		Room
Haptic Device Design 3 (Poster)		
14:00-15:30		FrC4.1
<i>Extending the Motion Ranges of Magnetic Levitation for Haptic Interaction</i>		
Berkelman, Peter	Univ. of Hawaii-Manoa	
Dzadovsky, Michael	Univ. of Hawaii-Manoa	
14:00-15:30		FrC4.2
<i>Design and Modeling of a Novel Haptic Device</i>		
Tang, Zhouming	Simon Fraser Univ.	
Payandeh, Shahram	Simon Fraser Univ.	
14:00-15:30		FrC4.3
<i>Variable Resistance Hand Device Using an Electro-Rheological Fluid Damper</i>		
Weinberg, Brian	Northeastern Univ.	
Khanicheh, Azadeh	Northeastern Univ.	
Sivak, Mark	Northeastern Univ.	
Unluhisarcikli, Ozer	Northeastern Univ.	
Morel, Guillaume	Univ. Pierre et Marie Curie - Paris 6	
Shannon, James	WGI Inc.	
Kelliher, John	WGI Inc.	
Sabadosa, Michael	WGI Inc.	
Bonmassar, Giorgio	Massachusetts General Hospital	
Patriiti, Benjamin	Spaulding Rehabilitation Hospital	
Bonato, Paolo	Spaulding Rehabilitation Hospital	
Mavroidis, Constantinos	Northeastern Univ.	
14:00-15:30		FrC4.4
<i>Design of a New Fmri Compatible Haptic Interface</i>		
Li, Siqiao	Scuola Superiore S. Anna	
Frisoli, Antonio	Scuola Superiore S. Anna	
Borelli, Luigi Federico	Scuola Superiore S. Anna	
Bergamasco, Massimo	Scuola Superiore S. Anna	
Raabe, Markus	Univ. of Regensburg	
Greenlee, Mark W.	Univ. of Regensburg	

FrC5		Room
Dynamics and Control 2 (Poster)		
14:00-15:30		FrC5.1
<i>Passive Set-Position Modulation Approach for Haptics with Slow, Variable, and Asynchronous Update</i>		
Lee, Dongjun	Univ. of Tennessee-Knoxville	
Huang, Ke	Univ. of Tennessee-Knoxville	
14:00-15:30		FrC5.2
<i>Improving Transparency in Network-Based Haptics</i>		
Niakosari, Sina	McMaster Univ.	
Sirouspour, Shahin	McMaster Univ.	
14:00-15:30		FrC5.3
<i>Remote Dynamic Proxies for Wave-Based Peer-To-Peer Haptic Interaction</i>		
Li, Zhi	Univ. of Victoria	
Constantinescu, Daniela	Univ. of Victoria	
14:00-15:30		FrC5.4
<i>Performance of Equivalent Frequency-Dependent Damping</i>		
Lim, Yo-An	Gwangju Inst. of Science and Tech.	
Ahn, Hyo-Sung	Gwangju Inst. of Science and Tech.	
Ryu, Jeha	Gwangju Inst. of Science and Tech.	

FrC6		Room
Perception 4 (Poster)		
14:00-15:30		FrC6.1
<i>Finger Force of Exploratory Movements Is Adapted to the Compliance of Deformable Objects</i>		
Kaim, Lukas	Univ. of Giessen	
Drewing, Knut	Univ. of Giessen	
14:00-15:30		FrC6.2
<i>Quantifying Perception of Nonlinear Elastic Tissue Models Using Multidimensional Scaling</i>		
Misra, Sarthak	The Johns Hopkins Univ.	
Fuernstahl, Philipp	ETH Zurich	

Ramesh, K. T. Okamura, Allison M. Harders, Matthias	The Johns Hopkins Univ. The Johns Hopkins Univ. ETH Zurich
14:00-15:30 <i>A Model of Perception of the Center of Elastic Force Fields</i> Bocca, Francesca Baud-bovy, Gabriel	FrC6.3 San Raffaele Vita-Salute Univ. San Raffaele Vita-Salute Univ.
14:00-15:30 <i>The Equivalence of Vision and Haptics When Matched Spatiotemporally</i> Symmons, Mark Richardson, Barry	FrC6.4 Monash Univ. Monash Univ.

FrCT1	Room
Demos 2 (Demo)	
14:00-15:30 <i>A Fingertip Shear Tactile Display for Communicating Direction Cues</i> Horschel, Scott Gleeson, Brian Provancher, William	FrCT1.1 Univ. of Utah Univ. of Utah Univ. of Utah
14:00-15:30 <i>Displaying Realistic Contact Accelerations Via a Dedicated Vibration Actuator</i> McMahan, William Kuchenbecker, Katherine J.	FrCT1.2 Univ. of Pennsylvania Univ. of Pennsylvania
14:00-15:30 <i>Feasibility Study of a Rotational Haptic Display -- Rotational Action and Measuring the Rotational Moment at the Wrist</i> Sone, Junji	FrCT1.3 Tokyo Pol. Univ.
14:00-15:30 <i>Energy-Bounding Algorithm for Stable Haptic Interaction and Bilateral Teleoperation</i> Seo, Changhoon Kim, Jong-Phil Kim, Jaeha Ryu, Jeha	FrCT1.4 Gwangju Inst. of Science and Tech. (GIST) Korea Inst. of Science and Tech. (KIST) Gwangju Inst. of Science and Tech. (GIST) Gwangju Inst. of Science and Tech. (GIST)
14:00-15:30 <i>A Low Cost Vibrotactile Array to Manage Respiratory Motion</i> Israr, Ali Eng, Dillon Vedam, Sastry O'Malley, Marcia	FrCT1.5 Rice Univ. Rice Univ. The Univ. of Texas M. D. Anderson Cancer Center Rice Univ.
14:00-15:30 <i>Vibrotactile Feedback System for Intuitive Upper-Limb Rehabilitation</i> Kapur, Pulkit Premakumar, Sunthar Jax, Steven Buxbaum, Laurel Dawson, Amanda Kuchenbecker, Katherine J.	FrCT1.6 Univ. of Pennsylvania Univ. of Pennsylvania Moss Rehabilitation Res. Inst. Moss Rehabilitation Res. Inst. Moss Rehabilitation Res. Inst. Univ. of Pennsylvania
14:00-15:30 <i>Compact and Low-Cost Tendon Vibrator for Inducing Proprioceptive Illusions</i> Celik, Ozkan O'Malley, Marcia Gillespie, Brent Shewokis, Patricia A. Contreras-Vidal, Jose Luis	FrCT1.7 Rice Univ. Rice Univ. Univ. of Michigan Drexel Univ. Univ. of Maryland
14:00-15:30 <i>Haptic Interface for Perceiving Remote Object Using a Laser Range Finder</i> Yano, Hiroaki Miyamoto, Yuichi Iwata, Hiroo	FrCT1.8 Univ. of Tsukuba Univ. of Tsukuba Univ. of Tsukuba
14:00-15:30 <i>Stretchable Fingernail Sensors for Measurement of Fingertip Force</i> Abu-Khalaf, Jumana Park, Jung Woo Mascaro, Debra Mascaro, Stephen	FrCT1.9 Univ. of Utah Univ. of Utah Univ. of Utah Univ. of Utah
14:00-15:30 <i>Functionally Biarticular Control for Smart Prosthetics</i> Gillespie, Brent	FrCT1.10 Univ. of Michigan

Baker, John
O'Malley, Marcia
Shewokis, Patricia A.
Contreras-Vidal, Jose Luis

Univ. of Michigan
Rice Univ.
Drexel Univ.
Univ. of Maryland

15:30-16:00 Coffee break

FrD1	Room
Perception 5 (Oral)	
16:00-16:15 <i>Evaluation of Weight Perception During Unimanual and Bimanual Manipulation of Virtual Objects</i> Giachritsis, Christos Barrio Gragera, Jordi Ferre, Manuel Wing, Alan Ortego, Javier	FrD1.1 Univ. of Birmingham Univ. Pol. de Madrid Univ. Pol. de Madrid Univ. of Birmingham Univ. Pol. de Madrid
16:15-16:30 <i>Discrimination of Thermal Diffusivity</i> Bergmann Tiest, Wouter Kappers, Astrid M.L.	FrD1.2 Utrecht Univ. Utrecht Univ.
16:30-16:45 <i>Haptic, Visual and Visuo-Haptic Softness Judgments for Objects with Deformable Surfaces</i> Drewing, Knut Ramisch, Andreas Bayer, Florian	FrD1.3 Justus-Liebig-Univ. Giessen Justus-Liebig-Univ. Giessen Justus-Liebig-Univ. Giessen
16:45-17:00 <i>Haptic Stiffness Identification by Veterinarians and Novices: A Comparison</i> Forrest, Neil Baillie, Sarah Tan, Hong	FrD1.4 Univ. of London Univ. of London Purdue Univ.

17:00-17:30 Closing, announcements (next HS, EH, WHC)