2020 IEEE Haptics Symposium (HAPTICS 2020)

Crystal City, Virginia, USA
28 – 31 March 2020
Content List of 2020 IEEE Haptics Symposium (HAPTICS)

Technical Program for Sunday March 29, 2020

SuA1 Grand Ballroom, Salons ABJK
Oral Session 1: Softness and Soft Haptics (Oral Session)

09:00-09:15 SuA1.1
Soft Haptic Interface Based on Vibration and Particle Jamming, pp. 1-6.
Brown, Joshua P. Queen Mary University of London
Farkhatdinov, Idlar Queen Mary University of London

09:15-09:30 SuA1.2
Elastowave: Localized Tactile Feedback in a Soft Haptic Interface Via Focused Elastic Waves, pp. 7-14.
Reardon, Gregory University of California, Santa Barbara
Kastor, Nikolai University of California, Santa Barbara
Shao, Yitian University of California, Santa Barbara
Visell, Yon UC Santa Barbara

09:30-09:45 SuA1.3
Fluidic Haptic Interface for Mechano-Tactile Feedback, N/A.
Shi, Ge University College London
Palombi, Andrea University College London
Lim, Zara Timothea Yue Xin King's College London
Astolfi, Anna University of Pisa
Burani, Andrea University of Pisa
Campagnini, Silvia University of Pisa
Cornacchia Loizzo, Federica University of Pisa
Lo Preti, Matteo Istituto Italiano Di Tecnologia
Marin Vargas, Alessandro University of Pisa
Peperoni, Emanuele University of Pisa
Oddo, Calogero Maria Scuola Superiore Sant'Anna
Li, Min Xi'an Jiaotong University
Hardwicke, Joseph University Hospitals Coventry and Warwickshire NHS Trust
Venus, Matthew University Hospitals Coventry and Warwickshire NHS Trust
Homer-Vanniasinkam, Shervanthi University College London
Wurdemann, Helge Arne University College London

09:45-10:00 SuA1.4
Time-Dependent Cues Encode the Minimum Exploration Time in Discriminating Naturalistic Compliances, pp. 22-27.
Xu, Chang University of Virginia
Gerling, Gregory J. University of Virginia

10:00-10:10 SuA1.5
Effect of Material Hardness on Friction between a Bare Finger and Dry and Lubricated Artificial Skin, N/A.
Inoue, Koki Nagoya University
Okamoto, Shogo Nagoya University
Akiyama, Yasuhiro Nagoya-University
Yamada, Yoji Nagoya University

10:10-10:20 SuA1.6
Identifying 3-D Spatiotemporal Skin Deformation Cues Evoked in Interacting with Compliant Elastic Surfaces, pp. 35-40.
Li, Bingxu University of Virginia
Hauser, Steven University of Virginia
Gerling, Gregory J. University of Virginia

10:20-10:30 SuA1.7
Mid-Air Action Contributions to Pseudo-Haptic Stiffness Effects, N/A.
Kawabe, Takahiro NTT Communication Science Laboratories

SuB2 Grand Ballroom, Salons JK
Oral Session 2A: Haptic Rendering (Oral Session)

11:00-11:15 SuB2.1
Closed Loop Application of Electroadhesion for Increased Precision in Texture Rendering, N/A.
Grigorii, Roman Northwestern University
Colgate, Edward Northwestern University

11:15-11:25 SuB2.2
Step-Change in Friction under Electrovibration, N/A.
Ozdamar, Idil Koc University
Alipour, M. Reza Alipour Koc University
Delhaye, Benoit Institute of Neuroscience, Université Catholique de Louvain, Belgium
Lefevre, Philippe Université Catholique De Louvain
Basdogan, Cagatay Koc University

11:25-11:35 SuB2.3
HapToes: Vibrotactile Numeric Information Delivery Via Tactile Toe Display, pp. 61-67.
Vyas, Preeti McGill University
Al Taha, Feras McGill University
Blum, Jeffrey R. McGill University
Cooperstock, Jeremy McGill University

11:35-11:45 SuB2.4
Subjective Evaluation of the Spectral Temporal SIMilarity (ST-SIM) Measure for Vibrotactile Quality Assessment, N/A.
Hassen, Rania PDF
Steinbach, Eckehard Technical University of Munich

11:45-12:00 SuB2.5
Path Routing Optimization for STM Ultrasound Rendering, N/A.
Barreiro, Hector URJC Madrid
Sinclair, Stephen Universidad Rey Juan Carlos
Otaduy, Miguel A. URJC Madrid

12:00-12:10 SuB2.6
SPH Fluid Tactile Rendering for Ultrasonic Mid-Air Haptics, N/A.
Jang, Jaehyun KAIST
Park, Jinah KAIST

12:10-12:20 SuB2.7
Reducing Amplitude Fluctuation by Gradual Phase Shift in Midair Ultrasonic Haptics, N/A.
Suzuki, Shun The University of Tokyo
Fujiwara, Masahiro The University of Tokyo
Makino, Yasutoshi The University of Tokyo
Shinoda, Hiroyuki Univ. of Tokyo

12:20-12:30 SuB2.8
Virtual Bumps Display Based on Electrical Muscle Stimulation, pp. 96-101.
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<td>11:00-11:15</td>
<td>SuB3.1</td>
<td>Oral Session 2B: Teleoperation (Oral Session)</td>
<td>Rahal, Rahaf, Matarrese, Giulia, Gabiccini, Marco, Artoni, Alessio, Prattichizzo, Domenico, Robuffo Giordano, Paolo, Pacchierotti, Claudio</td>
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<td>11:15-11:25</td>
<td>SuB3.2</td>
<td>Integrating Haptic Data Reduction with Energy Reflection Based Passivity Control for Time-Delayed Teleoperation</td>
<td>Xu, Xiaoz, Panzirsch, Michael, Liu, Qian, Steinbach, Eckeard</td>
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<td>11:35-11:45</td>
<td>SuB3.4</td>
<td>Haptic-Guided Teleoperation of a 7-DoF Collaborative Robot Arm with an Identical Twin Master</td>
<td>Singh, Jayant, Srinivasan, Aravinda, Ramakrishnan, Neumann, Gerhard, Kucukyilmaz, Ayse</td>
<td>Grand Ballroom, Salons AB</td>
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<td>11:45-11:55</td>
<td>SuB3.5</td>
<td>Prefatory Study of the Effects of Exploration Dynamics on Stiffness Perception</td>
<td>Singhal, Mohit, Brown, Jeremy DeLaine</td>
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<td>11:55-12:05</td>
<td>SuB3.6</td>
<td>Adaptive Packet Rate Control for the Mitigation of Bursty Haptic Traffic in Teleoperation Systems</td>
<td>Gui, Ming, Xu, Xiaoz, Steinbach, Eckeard</td>
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<td>12:05-12:20</td>
<td>SuB3.7</td>
<td>Haptic Object Parameter Estimation During Within-Hand-Manipulation with a Simple Robot Gripper</td>
<td>Mohtasham, Delara, Sathya narayanan, Gokul narayanan, Calli, Berk, Spiers, Adam</td>
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<td>12:20-12:30</td>
<td>SuB3.8</td>
<td>Haptic Teleoperation of UAVs through Control Barrier Functions, N/A.</td>
<td>Zhang, Dawei, Yang, Guang, Khurshid, Rebecca</td>
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<td>14:30-16:30</td>
<td>SuDS.1</td>
<td>A Compact Driving Simulator Enhanced with a Two-DoF Buttock Skin Stretch Device, N/A.</td>
<td>Yanai, Tomohiro, Horie, Arata, Konyo, Masashi, Tadokoro, Satoshi</td>
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<td>A Comparison of Active and Hybrid Active-Passive Actuation in Handheld Kinesthetic Haptics, N/A.</td>
<td>Dills, Patrick, Zhang, Bolun, Colonnesse, Nick, Nicholas, Agarwal, Priyanshu, Zinn, Michael</td>
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<td>14:30-16:30</td>
<td>SuDS.3</td>
<td>A Demonstration of an Anthropomorphically-Driven Prosthesis Featuring Embedded Haptic Feedback, N/A.</td>
<td>Miller, Ethan, Amanze, Ihemriorochi, Brown, Jeremy DeLaine</td>
<td>Grand Ballroom, Salons C-H</td>
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<td>14:30-16:30</td>
<td>SuDS.4</td>
<td>A Hands-On Stand-Alone Teaching Module on Force-Feedback Haptic Devices, N/A.</td>
<td>Gueorguiev, David, Seifi, Hasti</td>
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<td>14:30-16:30</td>
<td>SuDS.5</td>
<td>A Real-Time Sound Modeling and Rendering System for Virtual Tool-Surface Interactions, N/A.</td>
<td>Lu, Shihan, Chen, Yang, Culbertson, Heather</td>
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<td>14:30-16:30</td>
<td>SuDS.6</td>
<td>A Wearable Haptic Interface for Protactile-Inspired Communication, N/A.</td>
<td>MacGavin, Bryan, Gorlewicz, Jenna</td>
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<td>14:30-16:30</td>
<td>SuDS.7</td>
<td>BeaTactile: A Tactile Display for Low-Frequency Spatial Surfaces Using Wave Interferences, N/A.</td>
<td>Kawazoe, Anzu, Hachisu, Taku, Visell, Yon</td>
<td>Grand Ballroom, Salons C-H</td>
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**Contributors:**
- Ishimaru, Takaya, Saga, Satoshi: Kumamoto University
- Rahal, Rahaf: Univ Rennes, Inria, CNRS, IRISA
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- Artoni, Alessio: Universitá Di Pisa
- Prattichizzo, Domenico: University of Siena
- Robuffo Giordano, Paolo: Centre National De La Recherche Scientifique (CNRS)
- Pacchierotti, Claudio: Centre National De La Recherche Scientifique (CNRS)
- Xu, Xiao: Technical University Munich
- Panzirsch, Michael: DLR Institute of Robotics and Mechatronics
- Liu, Qian: Dalian University of Technology
- Steinbach, Eckeard: Technical University of Munich
- Ramos, Andres: Queen’s University
- Hashtrudi-Zaad, Keyvan: Queen’s University
- Singh, Jayant: University of Lincoln
- Srinivasan, Aravinda: University of Lincoln, UK
- Ramakrishnan: University of Lincoln
- Neumann, Gerhard: University of Lincoln
- Kucukyilmaz, Ayse: University of Nottingham
- Singhal, Mohit: Johns Hopkins University
- Brown, Jeremy DeLaine: Johns Hopkins University
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- Xu, Xiao: Technical University of Munich
- Steinbach, Eckeard: Technical University of Munich
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- Sathya narayanan, Gokul narayanan: Worcester Polytechnic Institute
- Calli, Berk: Worcester Polytechnic Institute
- Spiers, Adam: Max Planck Institute for Intelligent Systems
Braille Display for Portable Device Using Flip-Latch Structured Electromagnetic Actuator, N/A.

Kim, Joonyeong  KAIST
Han, Byung-Kil  KAIST
Pyo, Dongbum  KAIST
Ryu, Semin  KAIST
Kim, Hanbyeol  KAIST
Kwon, Dong-Soo  KAIST

14:30-16:30  SuDS.9

Combined Tracking and Vibrotactile Rendering with a Wearable Armband, N/A.

Aggravi, Marco  CNRS
Lisini Baldi, Tommaso  University of Siena
Pacchierotti, Claudio  Centre National De La Recherche Scientifique (CNRS)
Prattichizzo, Domenico  University of Siena

14:30-16:30  SuDS.10

Composing Peristaltic Motion: Wearable Haptic Feedback from Fluidic Fabric Muscle Actuators, N/A.

Zhu, Mengjia  University of California, Santa Barbara
Ferstera, Adrian  ETH Zurich
Dinulescu, Stejara  University of California, Santa Barbara
Kastor, Nikolas  University of California, Santa Barbara
Visell, Yon  UC Santa Barbara

14:30-16:30  SuDS.11

Contextual Haptic Interfaces for First Responders in Virtual Reality, N/A.

Bakshi, Ashish  ASA-VR
Bakshi, Shaunak  ASA-VR
de Castro, Cesar  ASA-VR
Dias, Andreas  ASA-VR
Buchanan, Thomas  Contact Control Interfaces
Douglass, Craig  Contact Control Interfaces
Schoeder, Zachary  Contact Control Interfaces

14:30-16:30  SuDS.12

Continuous 6-DOF Haptic Rendering of Dental Drilling, N/A.

Kalouschke, Maximilian  University of Bremen, Institute for Computer Graphics and Virtua
Weller, René  University of Bremen
Zachmann, Gabriel  University of Bremen

14:30-16:30  SuDS.13

Demonstrating Electrotactile Feedback on the Hand, N/A.

Alotaibi, Yosuel  University of Glasgow
Williamson, John H.  University of Glasgow
Brewster, Stephen  University of Glasgow

14:30-16:30  SuDS.14

Demonstrating Spatiotemporal Haptic Effects from a Single Actuator Via Spectral Control of Cutaneous Wave Propagation, N/A.

Dandu, Bharat  UCSB
Shao, Yitian  University of California, Santa Barbara
Stanley, Andrew A.  Stanford University
Visell, Yon  UC Santa Barbara

14:30-16:30  SuDS.15

Hand Guidance Using Grasping Metaphor, Wearable Haptics, and LeapMotion, N/A.

D'Aurizio, Nicole  University of Siena, Istituto Italiano Di Tecnologia
Lisini Baldi, Tommaso  University of Siena
Prattichizzo, Domenico  University of Siena

14:30-16:30  SuDS.16

Haptic Feedback System for a Smart Walker, N/A.

Sanchez, Ramon  Boston University
Khwishid, Rebecca  Boston University

14:30-16:30  SuDS.17

Haptic Interaction with Dynamic and Deformable Objects Using a “Mass-Less” Proxy, N/A.

Ding, Haiyang  Tokyo Institute of Technology
Mitate, Hironori  Tokyo Institute of Technology
Hasegawa, Shoichi  Tokyo Institute of Technology

14:30-16:30  SuDS.18

Haptic Vest for Displaying Full Body Collisions in VR Games, N/A.

Cumbul, Kivilcim  University of Southern California
Uludag, Fatma Zehra  Los Angeles
Culbertson, Heather  University of Southern California

14:30-16:30  SuDS.19

Interacting with Fluids Using Ultrasonic Mid-Air Haptic Device, N/A.

Jang, Jaehyun  KAIST
Park, Jinah  KAIST

14:30-16:30  SuDS.20

PUMAH : Pan-Tilt Ultrasound Mid-Air Haptics, N/A.

Demonstration of Tactile Glance: Encoding Notifications Using Illusive Movement Constraints for Eyes and Ear-Free Interaction, N/A.

Lalamentik, Anastasia  University of Virginia
Heo, Seongkook  University of Virginia

14:30-16:30  SuDS.21

Demonstration of haptic Teleoperation of UAVs through Control Barrier Functions, N/A.

Zhang, Dawei  Boston University
Yang, Guang  Boston University
Khurshid, Rebecca  Boston University

14:30-16:30  SuDS.22

Demonstration of Haptic Teleoperation of UAVs through Control Barrier Functions, N/A.

Zhang, Dawei  Boston University
Yang, Guang  Boston University
Khurshid, Rebecca  Boston University

14:30-16:30  SuDS.23

Demonstration of Haptic Teleoperation of UAVs through Control Barrier Functions, N/A.

Zhang, Dawei  Boston University
Yang, Guang  Boston University
Khurshid, Rebecca  Boston University

14:30-16:30  SuDS.24

Demonstration of Haptic Teleoperation of UAVs through Control Barrier Functions, N/A.

Zhang, Dawei  Boston University
Yang, Guang  Boston University
Khurshid, Rebecca  Boston University

14:30-16:30  SuDS.25

Demonstration of Haptic Teleoperation of UAVs through Control Barrier Functions, N/A.
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<td>Demers, Marc</td>
<td>McGill University, Dept of Elec. &amp;</td>
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**SuHS**

**IEEE Transactions on Haptics Poster Session (Poster Session)**

16:30-18:00 SuHS.1

**A Haptic Shared-Control Poster Session**

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16:30-18:00 SuHS.2

**A Phonic-Based Tactile Display for Speech Communication**

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<td>Massachusetts Institute of Technology</td>
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<td>Tan, Hong</td>
<td>Purdue University</td>
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<td>Perez, Zachary D.</td>
<td>Massachusetts Institute of Technology</td>
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<td>Wilson, E. Courtenay</td>
<td>Massachusetts Institute of Technology</td>
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<td>Blum, Jeffrey R.</td>
<td>McGill University</td>
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<td>Fortin, Pascal</td>
<td>McGill University</td>
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<td>Al Taha, Feras</td>
<td>McGill University</td>
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<td>Allirezaee, Parisa</td>
<td>McGill University</td>
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<tr>
<td>Demers, Marc</td>
<td>McGill University, Dept of Elec. &amp;</td>
<td></td>
</tr>
</tbody>
</table>
Haptic Exploration During Fast Video Playback: Vibrotactile Support for Event Search in Robot Operation Videos, N/A.
Gongora Flores, Daniel Marcell
Konyo, Masashi
Nagano, Hikaru
Tadokoro, Satoshi

16:30-18:00
SuHS.10

How Do Novice Hapticians Design? a Case Study in Creating Haptic Learning Environments, N/A.
Sefll, Hasti
Chun, Matthew
Gallicher, Colin
Schneider, Oliver
MacLean, Karan

16:30-18:00
SuHS.11

Human–Robot Team Interaction through Wearable Haptics for Cooperative Manipulation, N/A.
Musie, Selma
Salvietti, Gionata
Budde genannt Dohmann, Pablo
Chinello, Francesco
Prattichizzo, Domenico
Hirche, Sandra

16:30-18:00
SuHS.12

Implementation of a 6-DOF Parallel Continuum Manipulator for Delivering Fingertip Tactile Cues, N/A.
Young, Eric Kuchenbecker, Katherine J.

16:30-18:00
SuHS.13

Influence of Sparse Contact Point and Finger Penetration into Object Shape Recognition, N/A.
Ujijtoku, Yusuke
Sakurai, Sho
Hirotoko, Koichi

16:30-18:00
SuHS.14

Midair Haptic Pursuit, N/A.
Yoshimoto, Azuma
Hasegawa, Keisuke
Makino, Yasutoshi
Shinoda, Hiroyuki

16:30-18:00
SuHS.15

Multi-Sensory Stimuli Improve Distinguishability of Cutaneous Haptic Cues, N/A.
Sullivan, Jennifer Dunkelberger, Nathan Bradley, Joshua Young, Joseph

16:30-18:00
SuHS.16

Presenting Surface Features Using a Haptic Ring: A Psychophysical Study on Relocating Vibrotactile Feedback, N/A.
Gaudeni, Chiara
Meli, Leonardo
Jones, Lynette
Prattichizzo, Domenico

16:30-18:00
SuHS.17

Skin Stretch Tactile Feedback to Convey Closure Information in Anthropomorphic, Under-Actuated Upper Limb Soft Prostheses, N/A.
Battaglia, Edoardo
Clark, Janelle
Bianchi, Matteo
Catalano, Manuel Giuseppe
Bicchi, Antonio
O’Malley, Marcia

16:30-18:00
SuHS.18

Spatially Separating Haptic Guidance from Task Dynamics through Wearable Devices, N/A.
Pezent, Evan
Fani, Simone
Clark, Janelle
Bianchi, Matteo
O’Malley, Marcia

16:30-18:00
SuHS.19

Tactile Roughness Perception of Virtual Gratings by Electrovibration, N/A.
Isleyen, Aykut
Vardar, Yasemin
Basdogan, Cagatay

16:30-18:00
SuHS.20

Tactile Stimulation by Repetitive Lateral Movement of Midair Ultrasound Focus, N/A.
Takahashi, Ryoko
Hasegawa, Keisuke
Shinoda, Hiroyuki

16:30-18:00
SuHS.21

The Evaluation of Tactile Parameters and Display Prototype to Support Physiological Monitoring and Multitasking for Anesthesia Providers in the Operating Room, N/A.
Gomes, Kylie
Scott Reeves
Sara Rigs, Sara Lu

16:30-18:00
SuHS.22

Support Physiological Monitoring and Multitasking for Anesthesia Providers in the Operating Room, N/A.
Gomes, Kyle
Scott Reeves
Sara Rigs, Sara Lu

16:30-18:00
SuHS.23

How Do Novice Hapticians Design? a Case Study in Creating Haptic Learning Environments, N/A.
Sefll, Hasti
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Shinoda, Hiroyuki

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Sara Rigs, Sara Lu

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SuHS.22

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Sara Rigs, Sara Lu

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Hirotoko, Koichi

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Sara Rigs, Sara Lu

16:30-18:00
SuHS.22

Support Physiological Monitoring and Multitasking for Anesthesia Providers in the Operating Room, N/A.
Gomes, Kyle
Scott Reeves
Sara Rigs, Sara Lu

16:30-18:00
SuHS.23
UltraShiver: Lateral Force Feedback on a Bare Fingertip
Via Ultrasonic Oscillation and Electroadhesion, N/A.
  Xu, Heng  Northwestern University
  Peshkin, Michael  Northwestern University
  Colgate, Edward  Northwestern University

16:30-18:00  SuHS.25
Understanding Continuous and Pleasant Linear Sensations on the Forearm from a Sequential Discrete Lateral Skin-Slip Haptic Device, N/A.
  Nunez, Cara M.  Stanford University
  Williams, Sophia R.  Stanford University
  Okamura, Allison M.  Stanford University
  Cubertson, Heather  University of Southern California

16:30-18:00  SuHS.26
Unilateral and Bilateral Virtual Springs: Contact Transitions Unmask Device Dynamics, N/A.
  Treadway, Emma  Trinity University
  Gillespie, Brent  University of Michigan

Using a Variable-Friction Robot Hand to Determine Propr ioceptive Features for Object Classification During Within-Hand-Manipulation, N/A.
  Spiers, Adam  Max Planck Institute for Intelligent Systems
  Morgan, Andrew  Yale University
  Srinivasan, Krishnan  Stanford University
  Calli, Berk  Worcester Polytechnic Institute
  Dollar, Aaron  Yale University

16:30-18:00  SuHS.27
Wearable Tactile Display Based on Thermal Expansion of Nichrome Wire, N/A.
  Kajimoto, Hiroyuki  The University of Electro-Communications
  Jones, Lynette  MIT

SuWPS  Grand Ballroom, Sal ons ABJK
Work in Progress Poster Session (Poster Session)
20:00-21:30  SuWPS.1
A Fabric-Based Sensing System for Recognizing Social Touch, N/A.
  Bevill Burns, Rachael  Max Planck Institute for Intelligent Systems
  Lee, Hyesang  Max Planck Institute for Intelligent Systems
  Seifi, Hasti  Max Planck Institute for Intelligent Systems
  Kuchenbecker, Katherine J.  Max Planck Institute for Intelligent Systems

20:00-21:30  SuWPS.2
A Grip Force Measurement Concept for Tactile Stimulation Mechanisms, N/A.
  Bitton, Guy  Ben Gurion University
  Zarrouk, David  Ben Gurion University
  Nisky, Ilana  Ben Gurion University of the Negev

20:00-21:30  SuWPS.3
A Multivariate Modeling Approach to Deciphering Peripheral Nerve Signaling Underlying Naturalistic Human Touch, N/A.

Xu, Shan  University of Virginia
Hauser, Steven  University of Virginia
Nagi, Saad S.  Linkoping University
 McIntyre, Sarah  Linkoping University
Olausson, Hakan  University of Gothenburg
Gerling, Gregory J.  University of Virginia

20:00-21:30  SuWPS.4
A Novel Teleoperator Testbed to Understand the Effects of Master-Slave Dynamics on Embodiment and Kinesthetic Perception, N/A.
  Singhal, Mohit  Johns Hopkins University
  Brown, Jeremy DeLaine  Johns Hopkins University

20:00-21:30  SuWPS.5
Accuracy in Judging Self-Generated Elbow Torques During Multi-Joint Isometric Tasks: Preliminary Findings, N/A.
  Cai, Ninghe  Northwestern University
  Guzman, Camille  Northwestern University
  Gurari, Netta  Northwestern University

20:00-21:30  SuWPS.6
An Experiment of Paradoxical Thermal Illusion on Fingers, N/A.
  Hashiguchi, Satoshi  Ryukoku University

20:00-21:30  SuWPS.7
Communicating Socio-Emotional Sentiment through Haptic Messages, N/A.
  Cang, Laura  UBC
  Israr, Ali  Facebook Inc

20:00-21:30  SuWPS.8
Comparing the Perception of Vibrotactile Feedback on the Anterior and Posterior Sides of Wrists, Elbows, Ankles, and Knees, N/A.
  Quick, Ryan Racel  Oregon State University
  Fitter, Naomi T.  University of Southern California

20:00-21:30  SuWPS.9
Design of a Wearable Hand-Grounded Kinesthetic Haptic Device for Multi-Directional Force Display, N/A.
  Hosotani, Kiona  Kyoto University
  Nisar, Sajid  Kyoto University
  Endo, Takahiro  Kyoto University
  Matsuno, Fumitoshi  Kyoto University

20:00-21:30  SuWPS.10
Development of a 2-Axis Tactile Sensor Using Acoustic Reflection Principle for Tumor Detection in Laparoscopic Surgery, N/A.
  Ly, Hoang Hiep  Nagoya Institute of Technology
  Tanaka, Yoshihiro  Nagoya Institute of Technology

20:00-21:30  SuWPS.11
Effects of Haptic Feedback on the Wrist during Virtual Manipulation, N/A.
  Sarac, Mine  Stanford University
  Okamura, Allison M.  Stanford University
  Di Luca, Massimiliano  University of Birmingham

20:00-21:30  SuWPS.12
Effects of Interfering Cue Amplitude on the Haptic Detection of Skin Stretch, N/A.
  Low, Andrew K.  Rice University
  Zook, Zane A.  Rice University
  Fleck, Joshua J  Rice University
Electronic Skin Based on Hybride System Employing a Resistive and a Piezoelectric Sensor for Fast Response of Thermal Contact, N/A.

Kang, Minsoo
Sim, Minkyung

20:00-21:30 SuWPS.13

Feeling Creepy: A Haptic Haunted House, N/A.

Clepper, Gina
Martinez, Juan Sebastian
Farooq, Ahmed
Alred, Alyse Marie
McDonald, Kevin
Carr, Ian
Toombs, Austin
Tan, Hong

20:00-21:30 SuWPS.15

Haptic Rendering with Wearable Interfaces Using Machine Learning, N/A.

Chinello, Francesco
Olsen, Martin
Pacchierotti, Claudio

20:00-21:30 SuWPS.17

Integrate Positioning Technology with Uniform Electrovibration Using Capacitive Coupling and High Resistance, N/A.

Sun, Zuowei
Liu, Guohong
Su, Yuning
Sun, Xiaoying

20:00-21:30 SuWPS.19

Intermediate Ridges Amplify Mechanoreceptor Strains in Static and Dynamic Touch, N/A.

Serhat, Gokhan
Kuchenbecker, Katherine J.

20:00-21:30 SuWPS.20

Investigating Vibrotactile Haptic Feedback on the Neck to Improve Robot-Mediated Object Manipulation, N/A.

O'Malley, Marcia
Rice University

20:00-21:30 SuWPS.14

Encoding of Tangential Torque and Its Possible Role in Sensing Friction in the Context of Dexterous Manipulation, N/A.

Afzal, Hafiz Malik Naqash
Loutfi, Alastair
Wiertlewski, Michael
Vickery, Richard
Redmond, Stephen
Khamis, Heba
Birzniesks, Ingvars

20:00-21:30 SuWPS.18

Feeling Creepy: A Haptic Haunted House, N/A.

Clepper, Gina
Martinez, Juan Sebastian
Farooq, Ahmed
Alred, Alyse Marie
McDonald, Kevin
Carr, Ian
Toombs, Austin
Tan, Hong

20:00-21:30 SuWPS.16

HapCaps: A Haptic Device for Finger Sense Training, N/A.

Orta Martinez, Melisa
Williams, Cathy Ann
Okamura, Allison M.
Boaler, Jo

20:00-21:30 SuWPS.14

Integrated Positioning Technology with Uniform Electrovibration Using Capacitive Coupling and High Resistance, N/A.

Sun, Zuowei
Liu, Guohong
Su, Yuning
Sun, Xiaoying

20:00-21:30 SuWPS.19

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Kuchenbecker, Katherine J.

20:00-21:30 SuWPS.20

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Rice University

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20:00-21:30 SuWPS.18

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20:00-21:30 SuWPS.16

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20:00-21:30 SuWPS.19

Intermediate Ridges Amplify Mechanoreceptor Strains in Static and Dynamic Touch, N/A.

Serhat, Gokhan
Kuchenbecker, Katherine J.

20:00-21:30 SuWPS.20

Intergrated Positioning Technology with Uniform Electrovibration Using Capacitive Coupling and High Resistance, N/A.

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Liu, Guohong
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Intermediate Ridges Amplify Mechanoreceptor Strains in Static and Dynamic Touch, N/A.

Serhat, Gokhan
Kuchenbecker, Katherine J.

20:00-21:30 SuWPS.20

Investigating Vibrotactile Haptic Feedback on the Neck to Improve Robot-Mediated Object Manipulation, N/A.
Proposing a Framework for Evaluating Haptic Feedback as a Modality for Velocity Guidance, N/A.

Ravichandar, Shweta
Johns Hopkins University
Shah, Kinjal
Johns Hopkins University
Brown, Jeremy DeLaine
Johns Hopkins University

RepHap: Towards an Opensource Platform for Benchmarking Haptic Devices Leveraging the Robot Operating System Ecosystem, N/A.

Frisson, Christian
McGill University
Delbos, Benjamin
École De Technologie Supérieure
Desourdy, Felix
Haply
Ding, Steve
Haply
Wanderley, Marcelo
McGill University
Levesque, Vincent
École De Technologie Supérieure
Gallacher, Colin
McGill University

Spatial Comparative Method for Analysis of Skin Deformation across Scales, N/A.

Choi, Changhyun
Texas A&M University
Ma, Yuan
Texas A&M University
Li, Xinyi
Texas A&M University
Hipwell, M Cynthia
Texas A&M University

Subjective Equality of Stretch and Squeeze Cues Applied to the Forearm, N/A.

Zook, Zane A.
Rice University
O'Malley, Marcia
Rice University

SurfaceReach: Assistive Guidance by Electrovibration on a Large Table, N/A.

Rajkowski, Laura
École De Technologie Supérieure
Friaa, Balkiss
École De Technologie Supérieure
Levesque, Vincent
École De Technologie Supérieure

Tactile Fingerspelling Letter Identification Using Whole-Hand Mechanical Signals, N/A.

Dinulescu, Stejara
University of California, Santa Barbara
Reardon, Gregory
University of California, Santa Barbara
Topp, Sven
University of Sydney
Visell, Yon
UC Santa Barbara

Tactile Glance: Encoding Notifications Using Illusive Movement Constraints for Eyes and Ears-Free Interaction, N/A.

Lalamentik, Anastasia
University of Virginia
Heo, Seongkook
University of Virginia

Tactile Sensing System to Mimic Personal Tactile Tendency by Machine Learning with Human-Based Tactile Feeling, N/A.

Sim, Minkyung
DGIST
Kang, Minsoo
DGIST
Park, Jiho
DGIST

The Relationship between the Presentation Area and Its Sensation in Impulsive Force Display, N/A.

Ikeda, Naoto
Kumamoto University
Saga, Satoshi
Kumamoto University

The Tactile Mouse: Handheld Tactile Graphics for the Visually Impaired, N/A.

Brown, Joshua P.
Queen Mary University of London
Witkowski, Mark
Imperial College

Towards an Understanding of How Humans Perceive Stiffness During Bimanual Exploration, N/A.

Singhala, Mohit
Johns Hopkins University
Carducci, Jacob
Johns Hopkins University
Brown, Jeremy DeLaine
Johns Hopkins University

Towards Electrically Rendered Virtual Environments: Characterization of Electrical Stimulation Feedthrough in Electromyographic Sensors, N/A.

Cope, Thomas
University of Michigan - Ann Arbor
Agarwal, Varun
University of Michigan - Ann Arbor
Cutlip, Steven
University of Michigan
Gillespie, Brent
University of Michigan

Uncoupled Stability Evaluation for Haptic Interaction with Hunt-Crossley Virtual Environments, N/A.

Pecly, Leonam
Queen's University
Hashtrudi-Zaad, Keyvan
Queen's University

Visuo-Tactile Handwriting Training System Using Wearable Sleeve, N/A.

Nair, Dhanya
Chapman University
Duback, Sean
Weber State University
Geoffrion, Robert
Weber State University
Jackson, Justin
Weber State University

Wearable Haptic Feedback from Fluidic Fabric Muscle Actuators: Composing Peristaltic Motion, N/A.

Zhu, Mengjia
University of California, Santa Barbara
Ferstera, Adrian
ETH Zurich
Dinulescu, Stejara
University of California, Santa Barbara
Kastor, Nikolas
University of California Santa Barbara
Visell, Yon
UC Santa Barbara
MoA1

Oral Session 3: Affective Haptics (Oral Session)

09:00-09:15 MoA1.1
Investigating Social Haptic Illusions for Tactile Stroking (SHIFTS), pp. 629-636.

Nunez, Cara M. Stanford University
Huerta, Bryce N. Stanford University
Okamura, Allison M. Stanford University
Culbertson, Heather University of Southern California

09:15-09:25 MoA1.2
Investigating Electrotactile Feedback on the Hand, pp. 637-642.

Alotaibi, Yosuf University of Glasgow
Williamson, John H. University of Glasgow
Brewster, Stephen University of Glasgow

09:25-09:35 MoA1.3

Goetz, Dustin Ohio State University
Owusu-Antwi, David Massachusetts Institute of Technology
Culbertson, Heather University of Southern California

09:35-09:50 MoA1.4
Interpersonal Vibrotactile Feedback Via Waves Transmitted through the Skin: Mechanics and Perception, pp. 650-656.

Hachisu, Taku University of Tsukuba
Reardon, Gregory University of California, Santa Barbara
Shao, Yitian University of California, Santa Barbara
Suzuki, Kenji University of Tsukuba
Visell, Yon UC Santa Barbara

09:50-10:00 MoA1.5
Habituation to Pseudo-Ambient Vibrotactile Patterns for Remote Awareness, pp. 657-663.

Blum, Jeffrey R. McGill University
Cauchard, Jessica Ben Gurion University of the Negev
Cooperstock, Jeremy McGill University

10:00-10:10 MoA1.6
Effects of Motion Parameters on Acceptability of Human-Robot Patting Touch, pp. 664-670.

Zamani, Naghmeh University of Southern California
Moolchandani, Pooja Georgia Institute of Technology
Fitter, Naomi T. University of Southern California
Culbertson, Heather University of Southern California

10:10-10:20 MoA1.7

Chandra, Yurike Keio University
Tag, Benjamin School of Computing and Information Systems, University of Melbo
Peiris, Roshan Rochester Institute of Technology
Minamizawa, Kouta Keio University

10:20-10:30 MoA1.8

MoB2

Oral Session 4A: Force Feedback (Oral Session)

11:00-11:10 MoB2.1

Sheybari, Saber Indiana University Bloomington
Izquierdo, Eduardo Indiana University
Roth, Eatai Indiana University

11:10-11:20 MoB2.2
A Hybrid Active-Passive Actuation and Control Approach for Kinesthetic Handheld Haptics, pp. 690-697.

Dills, Patrick University of Wisconsin - Madison
Colonnesse, Nick, Nicholas Facebook Reality Labs
Agarwal, Priyanshu Facebook Inc
Zinn, Michael University of Wisconsin - Madison

11:20-11:30 MoB2.3
Contact-Free Nonplanar Haptics with a Spherical Electromagnet, pp. 698-704.

Zarate, Juan Jose ETH Zurich
Langerak, Thomas ETH Zurich
Thomaszewski, Bernhard Université De Montréal
Hilliges, Otmar ETH Zurich

11:30-11:40 MoB2.4
Impact of Kinematic Structure on the Force Displayability of Planar Passive Haptic Devices, N/A.

Lacki, Maciej Ontario Tech University
DeBoon, Brayden University of Ontario Institute of Technology
Rossa, Carlos Ontario Tech University

11:40-11:50 MoB2.5

Luna Laija, Victor Alejandro Queen's University
Ozdil, Pembe Gizem Bogazici University
Hashtiroudi-Zaad, Keyvan Queen's University

11:50-12:00 MoB2.6
Respecting the Coupled Dynamics: Haptic Feedback Carries Both Power and Information, pp. 718-723.

Cutlip, Steven University of Michigan
Freudenberg, Jim University of Michigan
Gillespie, Brent University of Michigan

12:00-12:10 MoB2.7
Evidence of Sensory Adaptation to Kinaesthetic Sensations in the Human Somatosensory System, pp. 724-730.

Weill–Duffos, Antoine McGill University
Sakr, Sophia Sorbonnes Université
Haliyo, Dogan Sinan Sorbonne Université
Régnier, Stéphane Sorbonne Université

12:10-12:20 MoB2.8
11:00-11:10 MoB3.1

Gueorguiev, David
Lambert, Julien
Thonnard, Jean-Louis
Kuchenbecker, Katherine J.

11:10-12:30 MoB3.9

Phase Difference between Normal and Shear Forces During Tactile Exploration Represents Textural Features, N/A.
Hasegawa, Hikaru
Okamoto, Shogo
Yamada, Yoji

Three-Dimensional Measurement of Skin Displacement Using Index Matching and Stereoscopy, pp. 794-800.
Tanaka, Satoshi
Kaneko, Seitaro
Kajimoto, Hiroyuki

12:20-12:30 MoB3.8

Relationship between Spatial Variations in Static Skin Deformation and Perceived Roughness of Macroscopic Surfaces, N/A.
Okamoto, Shogo
Oishi, Ariei

12:00-12:10 MoB3.7

PUMAH: Pan-Tilt Ultrasound Mid-Air Haptics for Larger Interaction Workspace in Virtual Reality, N/A.
Howard, Thomas
Marchal, Maud
Lecuyer, Anatole
Pacchierotti, Claudio

12:40-12:50 MoB3.6

On the Role of Lateral Force in Texture-Induced Motion Bias During Reaching Tasks, N/A.
Bettelani, Gemma Carolina
Moscatelli, Alessandro
Bianchi, Matteo

12:00-12:50 MoB3.2

Tactile Exploration Strategies with Natural Compliant Objects
Xu, Chang
He, Hankun
Hauser, Steven
Gerling, Gregory J.

12:50-13:00 MoB3.5

Detection of Tactile Feedback on Touch-Screen Devices Using EEG Data, pp. 775-780.
Alsuradi, Haneen
Pawar, Chaitali
Park, Wanjoo
Eid, Mohammad

12:00-12:10 MoB3.3

The Effect of Contact Surface Curvature on the Accuracy of Fingernail Imaging for Tactile Force Measurement, pp. 760-766.
Fallahinia, Navid
Mascaro, Stephen

12:10-12:20 MoB3.2

Compensating for Fingertip Size to Render Tactile Cues More Accurately, N/A.
Young, Eric
Gueorguiev, David
Kuchenbecker, Katherine J.
Pacchierotti, Claudio

12:20-12:30 MoB3.4

Elicit Virtual Stiffness Cues, N/A.
UCLA
University of Virginia
University of Virginia
University of Utah

12:30-12:40 MoB3.4

SurfaceFlow: Large Area Haptic Display Via Compliant Liquid Dielectric Actuators, pp. 815-820.
Shao, Yitian
Ma, Siyuan
Yoon, Sang Ho
Visell, Yon
Holbery, James

12:40-12:50 MoB3.5

Detection of Tactile Feedback on Touch-Screen Devices Using EEG Data, pp. 775-780.
Alsuradi, Haneen
Pawar, Chaitali
Park, Wanjoo
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12:50-13:00 MoB3.6

On the Role of Lateral Force in Texture-Induced Motion Bias During Reaching Tasks, N/A.
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Yamada, Yoji

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Tanaka, Satoshi
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13:30-13:40 MoB3.4

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Young, Eric
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Kuchenbecker, Katherine J.
Pacchierotti, Claudio

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Detection of Tactile Feedback on Touch-Screen Devices Using EEG Data, pp. 775-780.
Alsuradi, Haneen
Pawar, Chaitali
Park, Wanjoo
Eid, Mohammad

13:50-14:00 MoB3.6

On the Role of Lateral Force in Texture-Induced Motion Bias During Reaching Tasks, N/A.
Bettelani, Gemma Carolina
Moscatelli, Alessandro
Bianchi, Matteo

11:00-11:10 MoB3.1

Gueorguiev, David
Lambert, Julien
Thonnard, Jean-Louis
Kuchenbecker, Katherine J.

11:10-12:30 MoB3.2

Tactile Exploration Strategies with Natural Compliant Objects
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Hauser, Steven
Gerling, Gregory J.

11:20-11:30 MoB3.3

The Effect of Contact Surface Curvature on the Accuracy of Fingernail Imaging for Tactile Force Measurement, pp. 760-766.
Fallahinia, Navid
Mascaro, Stephen

11:30-11:40 MoB3.4

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Pacchierotti, Claudio

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11:50-12:00 MoB3.6

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12:00-12:10 MoB3.7

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Yamada, Yoji

Three-Dimensional Measurement of Skin Displacement Using Index Matching and Stereoscopy, pp. 794-800.
Tanaka, Satoshi
Kaneko, Seitaro
Kajimoto, Hiroyuki

12:20-12:30 MoB3.8

Relationship between Spatial Variations in Static Skin Deformation and Perceived Roughness of Macroscopic Surfaces, N/A.
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Oishi, Ariei

12:00-12:10 MoB3.1

Gueorguiev, David
Lambert, Julien
Thonnard, Jean-Louis
Kuchenbecker, Katherine J.

11:00-11:10 MoB3.1

Gueorguiev, David
Lambert, Julien
Thonnard, Jean-Louis
Kuchenbecker, Katherine J.
16:40-16:50 MoC1.5

Braille Display for Portable Device Using Flip-Latch Structured Electromagnetic Actuator, N/A.

Kim, Joonyeong KAIST
Han, Byung-Kil KAIST
Pyo, Dongbum KAIST
Ryu, Semin KAIST
Kim, Hanbyeol KAIST
Kwon, Dong-Soo KAIST

16:50-17:00 MoC1.6

StickyTouch: A Tactile Display with Changeable Adhesive Distribution, pp. 842-847.

Ishihara, Yoshitaka Osaka University
Itoh, Yuichi Osaka University
Shirai, Ryo Osaka University
Fujita, Kazuyuki Tohoku University
Takashima, Kazuki Tohoku University
Onoye, Takao Osaka University
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<th>Session</th>
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<th>Authors</th>
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<tr>
<td>09:00-09:10</td>
<td>TuAT1.1</td>
<td>Grand Ballroom, Salons JK</td>
<td>The Predictive Perception of Dynamic Vibrotactile Stimuli Applied to the Fingertip</td>
<td>de Grosbois, John (Baycrest Health Sciences), Di Luca, Massimiliano (University of Birmingham), King, Raymond (Oculus VR), Ziat, Mounia (Bentley University)</td>
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<tr>
<td>09:10-09:20</td>
<td>TuAT1.2</td>
<td>Grand Ballroom, Salons JK</td>
<td>A Rate-Scaleable Perceptual Wavelet-Based Vibrotactile Codec</td>
<td>Noll, Andreas (Technical University of Munich), Güleçyüz, Başak (Technical University of Munich), Hofmann, Alexander (Technical University of Munich), Steinbach, Eckehard (Technical University of Munich)</td>
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<tr>
<td>09:20-09:30</td>
<td>TuAT1.3</td>
<td>Grand Ballroom, Salons JK</td>
<td>Incidental Categorization of Vibrotactile Stimuli</td>
<td>Martinez, Juan Sebastian (Purdue University), Holt, Lori (Carnegie Mellon University), Reed, Charlotte (Massachusetts Institute of Technology), Tan, Hong (Purdue University)</td>
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<td>09:30-09:40</td>
<td>TuAT1.4</td>
<td>Grand Ballroom, Salons JK</td>
<td>Towards Multisensory Perception: Modeling and Rendering Sounds of Tool-Surface Interactions</td>
<td>Lu, Shihan (University of Southern California), Chen, Yang (University of Southern California), Culbertson, Heather (University of Southern California)</td>
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<tr>
<td>09:40-09:55</td>
<td>TuAT1.5</td>
<td>Grand Ballroom, Salons JK</td>
<td>Dimensional Reduction for 6D Vibrotactile Display</td>
<td>Zhang, Ruisi (University of Utah)</td>
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<tr>
<td>09:55-10:10</td>
<td>TuAT1.6</td>
<td>Grand Ballroom, Salons JK</td>
<td>Vibrator Transparency: Re-Using Vibrotactile Signal Assets for Different Black Box Vibrators without Re-Designing</td>
<td>Uijtoko, Yusuke (University of Electro-Communications, Hitachi, Ltd.), Sakurai, Sho (The University of Electro-Communications), Hirot, Koichi (The University of Electro-Communications)</td>
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<tr>
<td>10:10-10:20</td>
<td>TuAT1.7</td>
<td>Grand Ballroom, Salons JK</td>
<td>Edge Vibration Improves Ability to Discriminate Roughness Difference of Adjoining Areas</td>
<td>Ban, Yuki (The University of Tokyo), Uijtoko, Yusuke (University of Electro-Communications, Hitachi, Ltd.), Minamizawa, Kouta (Keio University)</td>
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<td>10:20-10:30</td>
<td>TuAT1.8</td>
<td>Grand Ballroom, Salons JK</td>
<td>Multi-Fingertip Vibrotactile Array Interface for 3D Virtual Interaction</td>
<td>Baik, Silleon (Korea Institute of Science and Technology (KIST)), Han, IlHwan (KIST), Park, Jung-Min (Korea Institute of Science and Technology)</td>
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<td>09:00-09:15</td>
<td>TuAT2.1</td>
<td>Grand Ballroom, Salons AB</td>
<td>Altering the Stiffness, Friction, and Shape Perception of Tangible Objects in Virtual Reality Using Wearable Haptics</td>
<td>Villa Salazar, David Steeven (LMU Munich), Pacchierotti, Claudio (Centre National De La Recherche Scientifique (CNRS)), De tinguin de la girouiere, Xavier (INRIA), Maciel, Anderson (Universidade Federal Do Rio Grande Do Sul)</td>
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<tr>
<td>09:15-09:25</td>
<td>TuAT2.2</td>
<td>Grand Ballroom, Salons AB</td>
<td>Soft Pneumatic Actuator for Rendering Anal Sphincter Tone</td>
<td>Haghhigh Osgouei, Reza (Imperial College London), Marechal, Luc (Singapore University of Technology and Design), Kontovounisios, Christos (Imperial College London), Bello, Fernando (Imperial College London)</td>
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<tr>
<td>09:25-09:40</td>
<td>TuAT2.3</td>
<td>Grand Ballroom, Salons AB</td>
<td>Realistic Haptic Feedback for Material Removal in Medical Simulations</td>
<td>Kaluschke, Maxmillian (University of Bremen, Institute for Computer Graphics and Virtual Reality), Weller, René (University of Bremen), Hammer, Niels (Medical University of Graz, Department of Macroscopic and Clinic), Pelliccia, Luigi (Chemnitz University of Technology), Lorenz, Mario (Chemnitz University of Technology, Professorship Machine Tool Design), Zachmann, Gabriel (University of Bremen)</td>
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<td>09:40-09:50</td>
<td>TuAT2.4</td>
<td>Grand Ballroom, Salons AB</td>
<td>Enabling In-Bore MRI-Guided Biopsies with Force Feedback</td>
<td>Frishman, Samuel (Stanford University), Kight, Ali (Stanford University), Pirozzi, Ilnea (Stanford University), Coffey, Mela Camille (Virginia Tech), Daniel, Bruce (Stanford University, Department of Radiology), Cutkosky, Mark (Stanford University)</td>
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<td>09:50-10:00</td>
<td>TuAT2.5</td>
<td>Grand Ballroom, Salons AB</td>
<td>Wearable Dual-Frequency Vibrotactile System for Restoring Force and Stiffness Perception</td>
<td>Gathmann, Timothee (Imperial College London), Atashzar, S. Farokh (New York University (NYU), US), Sagastegui, Patrick (Imperial College London), Farina, Dario (Imperial College London)</td>
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<td>10:00-10:10</td>
<td>TuAT2.6</td>
<td>Grand Ballroom, Salons AB</td>
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Park, Jaeyoung (Korea Institute of Science and Technology)
Object Shape and Surface Topology Recognition Using Tactile Feedback Evoked through Transcutaneous Nerve Stimulation, N/A.

Vargas, Luis
Joint Department of Biomedical Engineering at University of North Carolina State University and University of North Carolina

Huang, He (Helen)
North Carolina State University

Zhu, Yong
North Carolina State University

Hu, Xiaogang
Joint Department of Biomedical Engineering at University of North Carolina

10:10-10:20 TuAT2.7
Exploring the Effectiveness of Haptic Alarm Displays for Critical Care Environments, pp. 948-954.

Alirezaee, Parisa
McGill University

Weil-Duflos, Antoine
McGill University

Schlesinger, Joseph
Vanderbilt University Medical Center

Cooperstock, Jeremy
McGill University

10:20-10:30 TuAT2.8

Suzuki, Takahiro
Nagoya Institute of Technology

Tanaka, Yoshio
Nagoya Institute of Technology

Niwa, Kazuhiro
Nagoya Institute of Technology

Saito, Takafumi
Aso Rehabilitation College

TuBT Grand Ballroom, Salons ABJK
Oral Session 7: Haptic Cues and Guidance (Oral Session)

11:00-11:15 TuBT.1

Lisini Baldi, Tommaso
University of Siena

D'Aurizio, Nicole
University of Siena, Istituto Italiano Di Tecnologia

Prattichizzo, Domenico
University of Siena

11:15-11:25 TuBT.2
Enhancing Physical Human Evasion of Moving Threats Using Tactile Cues, N/A.

Bajpai, Aakash
Georgia Institute of Technology

Powell, Justine
Georgia Institute of Technology

Young, Aaron
Georgia Tech

Mazumdar, Anirban
Georgia Institute of Technology

11:25-11:40 TuBT.3

Smith, Casimir
Rice University

Pezent, Evan
Rice University

O'Malley, Marcia
Rice University

11:40-11:50 TuBT.4
Power Wheelchair Navigation Assistance Using Wearable Vibrotactile Haptics, N/A.

Devigne, Louise
IRISA UMR CNRS 6074 - INRIA - INSA Rennes - Rehabilitation Centre

Aggravi, Marco
CNRS

Bivaud, Morgane
INSA, Univ Rennes, CNRS, Inria, IRISA

Balix, Nathan
INSA, Univ Rennes, CNRS, Inria

11:50-12:00 TuBT.5

Tsykunov, Evgeny
Skolkovo Institute of Science and Technology

Agishev, Ruslan
Skolkovo Institute of Science and Technology

Ibrahimov, Roman
Skolkovo Institute of Technology and Science

Moriyama, Taha
The University of Electro-Communications

Labazanova, Luiza
The Hong Kong Polytechnic University

Kajimoto, Hiroyuki
The University of Electro-Communications

Tsetserukou, Dzmitry
Skolkovo Institute of Science and Technology

12:00-12:10 TuBT.6
Pseudo-Sensation of Walking Generated by Passive Whole-Body Motions in Heave and Yaw Directions, N/A.

Amemiya, Tomohiro
The University of Tokyo

Kitazaki, Michiteru
Toyoohashi University of Technology

Ikei, Yasushi
Tokyo Metropolitan University