2013 IEEE International Symposium
on Haptic Audio Visual
Environments and Games

(HAVE 2013)

Istanbul, Turkey
26-27 October 2013
### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELCOME MESSAGE FROM THE CHAIRPERSONS</td>
<td>vii</td>
</tr>
<tr>
<td>2013 IEEE HAVE ORGANIZERS</td>
<td>viii</td>
</tr>
<tr>
<td>KEYNOTE SPEAKER</td>
<td>ix</td>
</tr>
<tr>
<td><strong>Saturday, October 26</strong></td>
<td></td>
</tr>
<tr>
<td><strong>10:30 - 12:10</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Session I: Haptic, Tactile and Force Feedback Systems</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Session Chair:</strong> Konstantinos Moustakas (University of Patras, Greece)</td>
<td></td>
</tr>
<tr>
<td><strong>A Real Time Vibrotactile Biofeedback System for Optimizing Athlete Training</strong></td>
<td>1</td>
</tr>
<tr>
<td>Mohamad Eid (New York University Abu Dhabi, United Arab Emirates)</td>
<td></td>
</tr>
<tr>
<td>Umair Saad (New York University Abu Dhabi, United Arab Emirates)</td>
<td></td>
</tr>
<tr>
<td>Usama Afzal (New York University Abu Dhabi, United Arab Emirates)</td>
<td></td>
</tr>
<tr>
<td><strong>An Exergame Framework For Obesity Monitoring and Management</strong></td>
<td>7</td>
</tr>
<tr>
<td>M. Shamim Hossain (King Saud University, Saudi Arabia)</td>
<td></td>
</tr>
<tr>
<td>Mohammad Meheri Hassan (King Saud University, Saudi Arabia)</td>
<td></td>
</tr>
<tr>
<td>Atif Alamri (King Saud University, Saudi Arabia)</td>
<td></td>
</tr>
<tr>
<td><strong>Development of Tangible Haptic Interfaces for Use in Physics Instruction</strong></td>
<td>13</td>
</tr>
<tr>
<td>Eloisa García-Canseco (Autonomous University of Baja California, Mexico)</td>
<td></td>
</tr>
<tr>
<td>Lars F Karlström (Autonomous University of Baja California, Mexico)</td>
<td></td>
</tr>
<tr>
<td>Alberto Moran Y Sorales (Autonomous University of Baja California, Mexico)</td>
<td></td>
</tr>
<tr>
<td>Jesus R Lerma-Aragon (Autonomous University of Baja California, Mexico)</td>
<td></td>
</tr>
<tr>
<td>Victoria Meza-Kubo (Autonomous University of Baja California, Mexico)</td>
<td></td>
</tr>
<tr>
<td><strong>Bimanual Drive-By-Wire System with Haptic Feedback</strong></td>
<td>18</td>
</tr>
<tr>
<td>Pablo Ciáurriz (University of Navarra, Spain)</td>
<td></td>
</tr>
<tr>
<td>Iñaki Díaz (University of Navarra, Spain)</td>
<td></td>
</tr>
<tr>
<td>Jorge Juan Gil (University of Navarra, Spain)</td>
<td></td>
</tr>
</tbody>
</table>
Session II: Haptic and Visuo-Haptic Sensor Systems and Modeling
Session Chair: Eloísa del Carmen García Canseco (Autonomous University of Baja California, Mexico)

Visuo-haptic sensor for force measurement and contact shape estimation ......................................................24
Nicolas Alt (Technische Universität München, Germany)
Eckehard Steinbach (Technische Universität München, Germany)

A Biomimetic Soft Fingertip Applicable to Haptic Feedback Systems for Texture Identification ..................29
Katudampe Vithanage Damith Suresh Chathuranga (Ritsumeikan University, Japan)
Wang Zhongkui (Ritsumeikan University, Japan)
Van Anh Ho (Mitsubishi Electric, Japan)
Atsushi Mitani (Sapporo City University, Japan)
Shinichi Hirai (Ritsumeikan University, Japan)

F-Glove: A Glove with Force-Audio Sensory Substitution System for Diabetic Patients .........................34
Basim Hafidh (University of Ottawa, Canada)
Hussein Al Osman (University of Ottawa, Canada)
Majed Alowaidi (University of Ottawa, Canada)
Peter Liu (Carleton University, Canada)
Abdulmotaleb El Saddik (University of Ottawa, Canada)
Xiaoping P. Liu (Carleton University, Canada)

15:25 - 16:40

Session III: Tele-Haptics, Tele-Operation, and Distributed Interaction I
Session Chair: Fernanda Brandi (Technische Universität München, Germany)

A Network-adaptive Compensation Technique for Tele-haptics using Position Prediction Algorithm ......39
Tiam Hee Tee (Sunway University, Malaysia)
Kok Seng Eu (Sunway University, Malaysia)
Kian Meng Yap (Sunway University, Malaysia)
Alan Marshall (Queens University Belfast, United Kingdom)
Tsung-Han Lee (National Taichung University, Taiwan)

HoIP: Haptics over Internet Protocol .................................................................................................................45
Vineet Gokhale (Indian Institute of Technology Bombay, India)
Onkar Dabeer (Tata Institute of Fundamental Research, India)
Subhasis Chaudhuri (Indian Institute of Technology Bombay, India)

Smooth Object State Updates in Distributed Haptic Virtual Environments .............................................51
Clemens Schuwerk (Technische Universität München, Germany)
Eckehard Steinbach (Technische Universität München, Germany)
Sunday, October 27

10:30 - 11:45

Session IV: Tele-HAptics, Tele-Operation, and Distributed Interaction II  
Session Chair: Balakrishnan Prabhakaran (University of Texas at Dallas, USA)

An Area-of-Interest based Communication Architecture for Shared Haptic Virtual Environments ..........57
   Clemens Schuwerk (Technische Universität München, Germany)
   Nakul Chaudhari (Technische Universität München, Germany)
   Eckehard Steinbach (Munich University of Technology, Germany)

Prediction Techniques for Haptic Communication and their Vulnerability to Packet Losses .................63
   Fernanda Brandi (Technical University of Munich, Germany)
   Eckehard Steinbach (Munich University of Technology, Germany)

Point-cloud-based Model-mediated Teleoperation ..................................................................................69
   Xiao Xu (Technische Universität München, Germany)
   Burak Cizmeci (Technische Universität München, Germany)
   Eckehard Steinbach (Technische Universität München, Germany)

12:15 - 13:30

Session V: Haptic Rendering and Authoring
Session Chair: Mohamad Eid (New York University Abu Dhabi, United Arab Emirates)

Haptic-Enabled Interactive Rendering of Deformable Objects based on Shape Matching .......................75
   Yuan Tian (University of Texas at Dallas, USA)
   Yin Yang (University of New Mexico, USA)
   Xiaohu Guo (University of Texas at Dallas, USA)
   Balakrishnan Prabhakaran (University of Texas at Dallas, USA)

Haptic Media from an Information Theoretic Perspective ......................................................................81
   Konstantinos Moustakas (University of Patras, Greece)

MPEG-V based web haptic authoring tool ..............................................................................................87
   Yu Gao (University of Ottawa, Canada)
   Hussein Al Osman (University of Ottawa, Canada)
   Abdulmotaleb El Saddik (University of Ottawa, Canada)
Session VI: Applications and Case Studies

Session Chair: Nicolas Alt (Technische Universität München, Germany)

Particle Filtering Enhanced Human Tracking on Context-Aware Robotic System ........................................... 92
Kun Wang (Carleton University, Canada)
Xiaoping P. Liu (Carleton University, Canada)

Identity Verification based on Haptic Handwritten Signature: Novel Fitness Functions for GP framework .......................................................... 98
Fawaz A Alsulaiman (University of Ottawa & King Saud University, Canada)
Julio Valdes (Researcher at the National Research Council of Canada, Canada)
Abdulmotaleb El Saddik (University of Ottawa, Canada)

Efficient Bitrate Reduction Using A Game Attention Model in Cloud Gaming ................................................. 103
Hamed Ahmadi (University of Tehran, Iran)
Sepideh Khoshnood (University of Tehran, Iran)
Mahmoud Reza Hashemi (University of Tehran, Iran)
Shervin Shirmohammadi (University of Ottawa, Canada)

Author Index ................................................................................................................................. 109