HAVE 2017

OCT 22-23, 2017

IEEE International Symposium on
Haptic Audio-Visual Environments and Games

ABU DHABI, UAE

2017 SYMPOSIUM PROGRAM

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Table of Contents

Welcome Message from the Chair

We are very pleased to welcome you to the 15th edition of the IEEE IEEE International Symposium on Haptic Audio- Visual Environments and Games (HAVE), hosted by New York University Abu Dhabi here in Abu Dhabi, United Arab Emirates. Similar to the previous editions, HAVE 2017 is a truly international event bringing together members of the Instrumentation and Measurement Society and the Haptics community from all over the world. It promises to be an exciting and comprehensive symposium covering aspects of multimodal haptics, audio/visual virtual reality technologies, augments reality and tele-haptics, distributed collaborative environments and gaming, novel tactile stimulation technologies, and all their related applications.

Like the edition of previous years, IEEE HAVE 2017 is the result of dedicated effort by a large number of volunteers. First of all, we would like to thank New York University Abu Dhabi for hosting the event, and in particular NYUAD Institute for both financially and logistically supporting it. We wish to express our appreciation and thanks to all the individuals who have contributed to its success. Special thanks are extended to our colleagues in the Program Committee for their thorough review of all the submissions, which is vital to the success of this conference. We must also extend our thanks to all the members in the Organizing Committee and our volunteer students who have dedicated their time and efforts in promoting, organizing and helping the conference. Last but not least, our special thanks go to all the authors for contributing their research work, and to the participants in making HAVE 2017 a memorable event. Thank you and wish you a great conference and enjoyable visit in Abu Dhabi.

HAVE 2017 General Chair
Abdulmotaleb El Saddik, University of Ottawa, Canada

IEEE HAVE 2017 Organizers

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Abdulmotaleb El Saddik, University of Ottawa, Canada

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Sunday, October 22, 2017
Conference Center, A6 building, Room: MPR

08:30 - 09:00
Registration

09:00 - 09:05
Welcome

09:05 - 10:00
Keynote 1
      Surface material retrieval and display
      Eckehard Steinbach (Technical University of Munich, Munich, Germany)

10:00 - 10:30
Coffee Break

10:30 - 12:00
I: Haptic Modeling and Applications
Session Chair: Mohamad Eid

10:30   **Thermography-based Material Classification using Machine Learning**
      Tamas Aujeszky (New York University Abu Dhabi, United Arab Emirates)
      Georgios Korres (New York University Abu Dhabi, United Arab Emirates)
      Mohamad Eid (New York University Abu Dhabi, United Arab Emirates)

10:50   **Utilising tele-operation and mobile application in identifying materials of varied thickness and sizes**
      Crankson Kwesi Mensa (School of Science and Technology, Sunway University, Malaysia)
      Kian Meng Yap (School of Science and Technology, Sunway University, Malaysia)

11:10   **Detection Quality Aware Deployment Scheme with Heterogeneous Sensors**
      Ran Bi (School of Computer Science and Technology, Dalian University of Technology)
      Xiaolin Fang (School of Computer Science and Technology, Dalian University of Technology)
      Xu Zheng (Department of Computer Science, Georgia State University)
      Guozhen Tan (School of Computer Science and Technology, Dalian University of Technology)

11:30   **A Framework to Analyze Fatigue for Haptic-based Tactile Internet Applications**
      Mohammad Al Jaafreh (School of Electrical Engineering and Computer Science (EECS), University of Ottawa, Ottawa, Canada)
      Abdelwahab Hamam (School of Electrical Engineering and Computer Science (EECS), University of Ottawa, Ottawa, Canada)
      Abdulmotaleb El Saddik (School of Electrical Engineering and Computer Science (EECS), University of Ottawa, Ottawa, Canada)

12:00 - 13:00
Lunch Break
Room: Torch Club (Building D2, First Floor)

13:00 - 14:30
II: Haptics and Virtual Reality
Session Chair*:* Qian Liu

13:00   **An Audio-visual 3D Virtual Articulation System for Visual Speech Synthesis**
            Rui Li (Department of Automation, University of Science and Technology of China, Hefei, Anhui, P. R. China)
            Jun Yu (Department of Automotive Engineering, Clemson University, Greenville, SC, U.S.)

13:20   **Affordable Hi-fidelity VR based CPR simulator with Haptics Feedback**
            Varun Durai S I (Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India)
            Raj Arjunan (Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India)
            Manivannan M (Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India)

13:40   **Performance evaluation of 3D reaching tasks using a low-cost haptic device and Virtual Reality**
            Emilia Scalona (Department of Mechanical and Aerospace Engineering, "Sapienza" University of Rome, Roma, Italy)
            Darren Hayes (Seidenberg School of CSIS, Pace University, New York, USA)
            Eduardo Palermo (Department of Mechanical and Aerospace Engineering, "Sapienza" University of Rome, Roma, Italy)
            Zaccaria Del Prete (Department of Mechanical and Aerospace Engineering, "Sapienza" University of Rome, Roma, Italy)
            Stefano Rossi (Department of Economics, Engineering, Society and Business Organization (DEIM), University of Tuscia, Viterbo, Italy)

14:00   **Towards a Realistic Haptic-based Dental Simulation**
            Georgios Karafotias (New York University Abu Dhabi, United Arab Emirates)
            Georgios Korres (New York University Abu Dhabi, United Arab Emirates)
            Dianne Sefo (College of Dentistry, New York University, New York, USA)
            Peter Loomer (College of Dentistry, New York University, New York, USA)
            Mohamad Eid (New York University Abu Dhabi, United Arab Emirates)

14:30 - 16:00
Exhibition Session, featuring:
• Demonstrations from the Applied Interactive Multimedia Research Lab (New York University Abu Dhabi, UAE)
• UltraHaptics

16:00 - 18:30
Abu Dhabi city tour, featuring:
- Sheikh Zayed Grand Mosque
- Emirates Palace
- Corniche Area

18:30 - 20:30
Symposium Dinner
Room: Torch Club (Building D2, First Floor)

Monday, October 23, 2017
Conference Center, A6 Building, Room: MPR

08:30 - 09:00
Registration

09:00 - 10:00
Keynote 2
> **Midair haptics and Its Future**
> *Hiroyuki Shinoda (The University of Tokyo, Japan)*

10:00 - 10:30
Coffee Break

10:30 - 12:00
I: Tele-Haptics and Tele-Operation
Session Chair: Mohamad Eid

10:30 Toward QoE-driven Dynamic Control Scheme Switching for Time-Delayed Teleoperation Systems: A Dedicated Case Study
> *Xiao Xu (Technical University of Munich, Germany)*
> *Qian Liu (Dalian University of Technology, Dalian, China)*
> *Eckehard Steinbach (Technical University of Munich, Munich, Germany)*

10:50 A Candidate Hardware and Software Reference Setup for Kinesthetic Codec Standardization
> *Amit Bhardwaj (Technical University of Munich, Munich, Germany)*
> *Burak Cizmeci (Technical University of Munich, Munich, Germany)*
> *Eckehard Steinbach (Technical University of Munich, Munich, Germany)*
> *Qian Liu (Dalian University of Technology, Dalian, China)*
> *Mohamad Eid (New York University Abu Dhabi, United Arab Emirates)*
> *José Araújo (Ericsson Research)*
> *Abdulmotaleb El Saddik (University of Ottawa, Canada)*
> *Ritu Kundu (King's College London, United Kingdom)*
> *Xun Liu (King's College London, United Kingdom)*
> *Oliver Holland (King's College London, United Kingdom)*
> *Mark A. Luden (The Guitammer Company, USA)*
> *Sharief M.A. Oteafy (DePaul University, USA)*
> *Venkatesha Prasad (Technical University of Delft, Netherlands)*

11:10 Teleoperation over a shared network: When does it work?
> *Vineet Gokhale (Indian Institute of Technology Bombay, Mumbai, India)*
> *Jayakrishnan Nair (Indian Institute of Technology Bombay, Mumbai, India)*
> *Subhasis Chaudhuri (Indian Institute of Technology Bombay, Mumbai, India)*

11:30 Quality-of-Control-Driven Uplink Scheduling for Networked Control Systems Running over 5G Communication Networks

Qian Liu (Dalian University of Technology, Dalian, China)
Samuele Zoppi (Technical University of Munich, Germany)
Guozhen Tan (Dalian University of Technology, Dalian, China)
Wolfgang Kellerer (Technical University of Munich, Germany)
Eckehard Steinbach (Technical University of Munich, Munich, Germany)

12:00 - 13:00
Lunch Break
Room: Torch Club (Building D2, First Floor)

13:00 - 14:30
II: Haptic Interfaces
Session Chair: Qian Liu

13:00 A Tweezer Haptic Interface for Training Surface Mount Device Assembly

N. Amritha (Amrita School of Engineering, Amritapuri, Amrita Vishwa Vidyapeetham Amrita University, India)
James Jose (Amrita School of Engineering, Amritapuri, Amrita Vishwa Vidyapeetham Amrita University, India)
E.S Rahul (Amrita School of Engineering, Amritapuri, Amrita Vishwa Vidyapeetham Amrita University, India)
Rao R. Bhavani (Amrita School of Engineering, Amritapuri, Amrita Vishwa Vidyapeetham Amrita University, India)

13:20 A Large-Effective Contact Area and Integrated Tactile Display for Texture Perception

Nan Li Shenzhen (Research Institute of Xiamen University, Shenzhen, China)
Zhen Wu (Research Institute of Xiamen University, Shenzhen, China)
Shizhen Huang (Research Institute of Xiamen University, Shenzhen, China)
Tao Zeng (Research Institute of Xiamen University, Shenzhen, China)

13:40 Mechanics of Pseudo-Haptics with Computer Mouse

Ashok Kumar (Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India)
Gourishetti Ravali (Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India)
Manivannan M (Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India)

14:30 - 15:00
Coffee Break

15:00-16:00 Discussion Panel (The Future of Haptics):
- Future of Haptics (hardware, software, interaction, etc.)
- Killer application?
- Challenges in Haptic Research

16:40 - 17:00
Closing Remarks