TACT-21: Tactile Display Devices and Their Practical Applications in the 21st Century

Special track along with ACHI 2020, Nov. 21-25, 2020, Valencia, Spain

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TACT-21 Special Track Organizer

• **Simona Vasilache**
• Assistant professor in the Graduate School of Systems and Information Engineering, University of Tsukuba, Japan
• Undergraduate studies: Politechnica University of Bucharest, Romania
• PhD: University of Tsukuba, Japan
• Research interests
  • Global software engineering, human computer interaction, cultural aspects of e-learning, intercultural communication
• Past 9 years: teaching a culturally diverse group of international students in Japan
TACT-21 Special Track

• Aim
  • Bring together researchers in the field of tactile displays

• Topics of interest
  • Tangible interfaces
  • Tactile display devices
  • Tactile sensors
  • Tactile communication
  • Wearable tactile displays
  • Pressure and vibration based tactile devices
  • Electrostatic tactile displays
  • Vibrotactile stimulation
  • Tactile communication in mobile environments
  • Machine learning and tactile information
“Simple Generative Adversarial Network to Generate Three-axis Time-series Data for Vibrotactile Displays”
Shotaro Agatsuma, Junya Kurogi, Satoshi Saga, Simona Vasilache, Shin Takahashi

- Generation of time-series data using a Generative Adversarial Network (GAN) originally developed for audio synthesis
- Training data based on accelerations recorded by rubbing real objects
- Relatively simple architecture that does not require rich computational resources

- Three-axis time-series data for vibrotactile displays is generated, facilitating the analysis and recognition of tactile signals
“Rendering Method of 2-Dimensional Vibration Presentation for Improving Fidelity of Haptic Texture”
Junya Kurogi, Satoshi Saga

- New rendering method to display multi-dimensional vibration
- Reproduce biaxial acceleration information through a lateral-force-displaying device using X-axis and Y-axis vibration information
- Combining image features information of the textures
- Randomized textures and large periodic textures presented more precisely than using conventional methods
Challenges for future tactile displays

• Ongoing research of tactile displays in many fields
• Applications in medicine, industry, entertainment and education
• More and more applications
• Increasingly improved accuracy of perceived tactile information