

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

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<http://www.aria.org/conferences2020/filesACHI20/TACT21.pdf>



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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

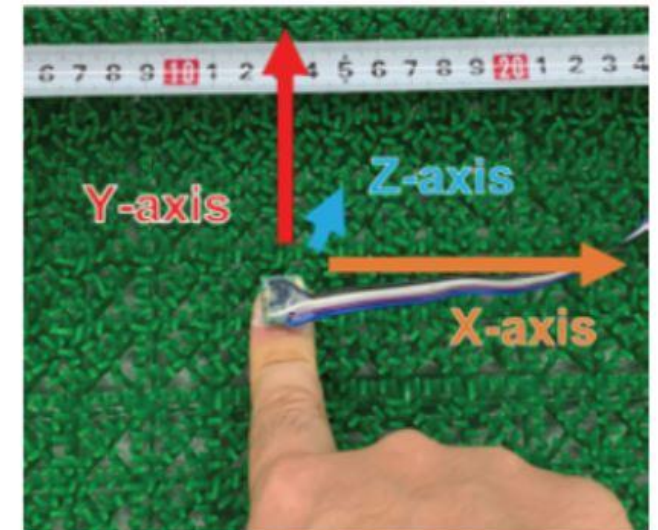
TACT-21 Special Track

- 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

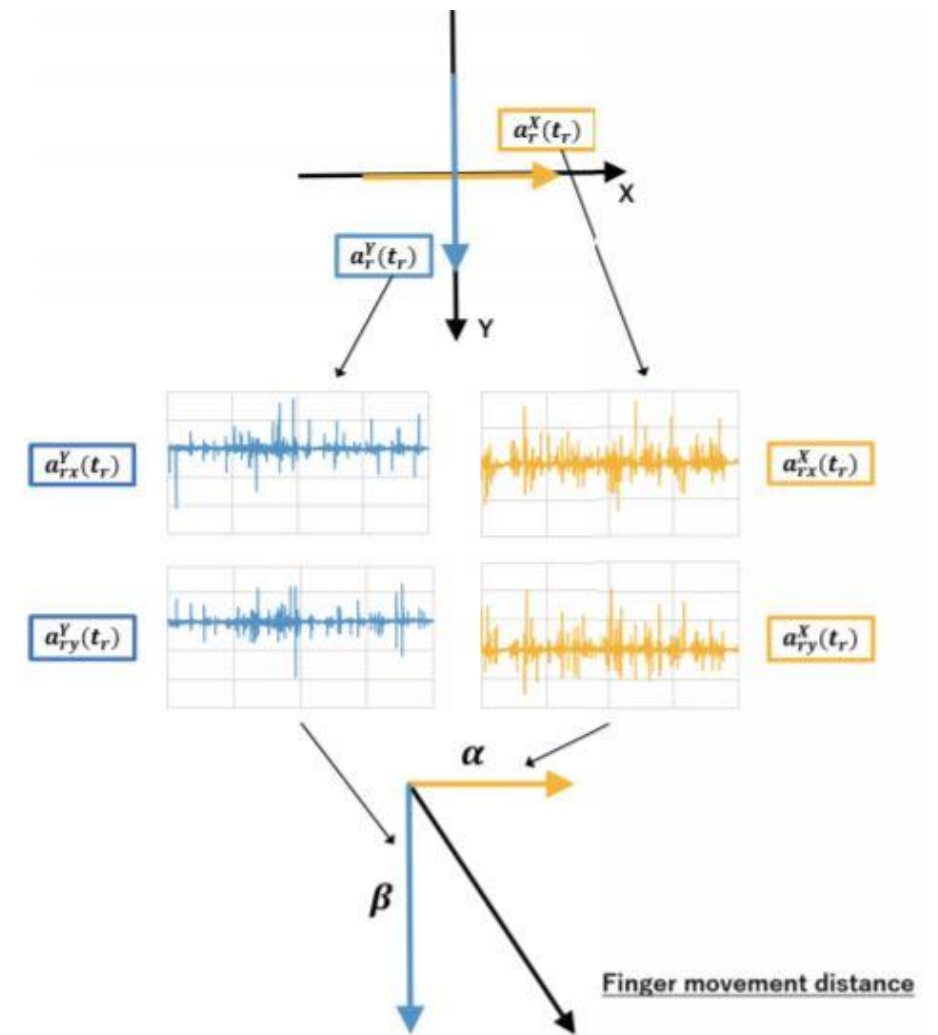


Figure 1. Presentation method of vibration according to the movement direction of the finger

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