Gyeore Yun

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Education

2018.2 – 2024.8	Ph.D. in Interaction Laboratory / Advisor: Prof. Seungmoon Choi, Dept. Computer Science and Engineering, **Pohang University of Science and Technology (POSTECH)**
2015.9 – 2015.12	Exchange Student. Université de technologie de Troyes.
2012.3 – 2017.8	B.S. in Dept. Computer Science and Engineering, **POSTECH**

Research Interest

- Sound Processing and Sound-Based Cross-Modal Conversion
- Learning-based Automatic System Generating Tailored Haptic Effects for Sound Events
- Multimodal Interaction in VR
- Human-Computer Interaction

Selected International Papers

Gyeore Yun, Minjae Mun, Jungeun Lee, Dong-Geun Kim, Hong Z Tan, and Seungmoon Choi, "Generating Real-Time, Selective, and Multimodal Haptic Effects from Sound for Gaming Experience Enhancement," In *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2023.

Gyeore Yun, Hyoseung Lee, Sangyoon Han, and Seungmoon Choi, "Improving Viewing Experiences of First-Person Shooter Gameplays with Automatically-Generated Motion Effects," In *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2021.

Gyeore Yun, Seungjae Oh, Seungmoon Choi, "Seamless Phantom Sensation Moving across a Wide Range of Body," In *Proceedings of the IEEE World Haptics Conference (WHC)*, 2019.

Registered Patent

Gyeore Yun, Seungmoon Choi, "METHOD AND DEVICE FOR PROVIDING MOTION EFFECT," International Patent (US), Reg. No. 12053695, Reg. Date: 2024-08-06.

Seungmoon Choi, Sangyoon Han, **Gyeore Yun**, "METHOD AND APPARATUS FOR GENERATING MOTION EFFECTS BASED ON REDUCED OBJECT MOTION," International Patent (US), Reg. No. 11,989,356, Reg. Date: 2024-05-21.

Gyeore Yun, Seungmoon Choi, "METHOD AND DEVICE FOR PROVIDING MOTION EFFECT," Domestic Patent (KR), Appl. Reg. No. 10-2575318, Reg. Date: 2023-09-01.

Research Experiences

2022.9 – Present	**Semantic Sound-to-Haptic Automatic Conversion: Metaverse, Full-body Haptic Effects, and Accessibility,** Mid-Career Researcher Program, National Research Foundation (NRF) The main goal of this project is to automatically provide a tactile experience in a metaverse scenario while wearing a full-body haptic suit by understanding the meaning of sound and providing appropriate spatio-temporal haptic effects. To achieve this, I am conducting research on full-body haptic perception and haptic-audio concurrency, as well as creating a learning-based model to understand the meaning of sound and render appropriate full-body haptic effects.
2022.7 – 2023.6	**Research on Function Advancement to Improve the Marketability of Vibration Seat,** NGV (Hyundai Automobile Company) The main goal of this project is to conduct research on warning vibrations and vibrations for racing games to improve the marketability of vibration seats for cars. I am participating in the design of vibration based on vehicle warning sounds and the evaluation of warning vibration sets.
2021.10 – 2023.11	**Semantic Audio-to-Haptic Conversion: Algorithms and Performance,** Google The main goal of the project is to study semantic sound-to-haptic conversion algorithms and develop performance metrics to evaluate the conversion algorithms. To this end, I developed a system generating real-time, selective, and multimodal haptic effects from sound to improve gaming experiences.
2019.5 – 2021.5	**Design of Seat Vibration Patterns in Harmony with Healing Music,** NGV (Hyundai Automobile Company)

I investigated the emotional characteristics that can be conveyed by vibrations of various waveforms. Additionally, I studied the emotional changes that occur when providing vibrations synchronized with music compared to music alone.

2019.6 – 2020.6 **Automatic Generation of Haptic Feedback for Multimedia Content,** Ministry of SMEs and Startups through Acturonix

I developed a system that analyzes sound in real-time to generate appropriate impact and vibration effects using a digital haptic actuator developed by Acturonix to enhance the gaming experience.

2018.2 – 2023.5 **Automatic Authoring of Physical and Perceptual/Affective Motion Effects for Virtual Reality,** Samsung Research Funding & Incubation

The main goal was to generate haptic motion effects automatically to provide metaverse users with immersive 4D experiences. I have conducted research on enhancing the gaming viewing experience using sound-based motion effects. Currently, I am developing a method to generate motion effects using object-based audio data.

2017.4 – 2018.3 **Haptic Technology Research for Improving NVH Emotional Quality,** NGV (Hyundai Automobile Company)

I conducted research on using the spectral characteristics of music to express pitch as the position of vibration on a car seat. Additionally, I studied tactile illusions that allow smooth changes in the position of vibration to be perceived even with a small number of actuators.

Honors and Awards

Prize (First Place)	Implementation of Music Composition System Based on Gesture Recognition Using Natural User Interface, CSED499: Student Research Project (December, 2016)
Fellowship Award	POSTECH POSTECHIAN Fellowship (June, 2023)
Best ToH Short Paper Award (Finalist)	Dajin Lee, **Gyeore Yun**, and Seungmoon Choi, "Effects of Contact Force on Vibrotactile Perceived Intensity Across the Upper Body," IEEE Transactions on Haptics, vol. 17, no. 1, pp. 14-19, 2024 Dong-Geun Kim, Jungeun Lee, **Gyeore Yun**, Hong Z. Tan, and Seungmoon Choi, "Sound-to-Touch Crossmodal Pitch Matching for Short Sounds," IEEE Transactions on Haptics, vol. 17, no. 1, pp. 2-7, 2024

Career

2020.02 – 2021.02	Implementation of a Scalp Micropigmentation Simulation Program, AI&B, Researcher.
2018.02 – 2018.06	Implementation of a Touch-Based System Using a Beam Projector, I3B, Researcher.
2015.1 – 2015.02	Solution SW Group, SK Hynix, Internship

Technical Skills

Development/ Software	Programming: C/C++, C#, MATLAB, Python, Java Statistical Analysis: R, SAS Libraries: TensorFlow, PyTorch, librosa, NI-DAQmx, CHAI3D, OpenCV, Open3D Game Engines: Unity3D, Unreal Engine, Tools: LATEX, Adobe Photoshop/Premiere, Microsoft Office/Visual Studio/VSCode, Android Studio
Devices	Haptic Interfaces: PHANTOM Series Virtual Reality: Oculus Rift, HTC Vive, Leap Motion, Tactile Suit Others: Vibrotactile Actuators, DAQs, 2/3/6-DoF Motion Platforms, Accelerometers, Photoresistors
Experiment and Analysis	Human Experiment: Psychophysics & Perception, Human Performance, Estimating User Experiences Statistical Analysis: Comparison (Parametric & Non-parametric), Regression, Dimension Reduction, and Survey Analysis

References

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