

Sangwon Park (Last updated: Feb. 28th, 2021)

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Research Interest

Vibration and noise control, Structural dynamics, Vibroacoustics, Acoustics, Elastic metamaterials

Education

Yonsei University

Master of Science, Mechanical Engineering
- GPA 4.21 /4.3 (4.0/4.0)

Seoul, Korea

Mar. 2019 - Feb. 2021

Bachelor of Science, Mechanical Engineering

Mar. 2013 - Feb. 2019

- Cumulative GPA: 3.76/4.3 (3.65/4.0), Upper GPA: 3.95/4.3 (3.77/4.0), Major GPA: 4.05/4.3 (3.88/4.0)
- 2-year absence to fulfill military duty (May. 2015 - Feb. 2017)

Research Experience

Vibration and Optomechanics Laboratory (Prof. No-Cheol Park), Yonsei University

Full-time researcher

Rendering vibrotactile feedback on automotive touchscreens (LG Electronics)

Feb. 2019 – May. 2020

- Developed a method to render vibrotactile feedback with reduced sound radiation
- Performed modal tests and frequency response function (FRF) measurements to identify the touchscreen system
- Utilized a vibroacoustic model of the touch surface to estimate sound power using the surface velocity components
- Validated the proposed method through vibration and acoustic measurements
- Investigated auditory perception of the acoustic noise based on psychoacoustical parameters

Developing a haptic touchscreen for automotive and haptic rendering scheme (KEIT)

Apr. 2020 – Feb. 2021

- Analyzed vibration characteristics of the piezoelectric actuator using a laser doppler vibrometer
- Proposed optimal actuator placement to minimize the input voltage considering the mode shapes of the structure
- Currently designing tactile signals for automotive context and developing tactile rendering methods that utilize both vibrotactile and ultrasonic vibration

Evaluating the structural integrity of an integrated mast for warships (LIG Nex1)

Sep. 2019 – May. 2020

- Proposed a method to evaluate the structural integrity of an integrated mast through a proxy subscale counterpart
- Performed finite element analysis (FEA) to obtain dynamic responses and confirm similitude relations
- Investigated ballistic protection performance of the outer structure using explicit finite element analysis

Publications

Sangwon Park, Wheejae Kim, Dongjoon Kim, Jaebeom Kwon, Hyejin Bae, and No-Cheol Park*. "Vibrotactile rendering on a touch surface with reduced sound radiation," *Journal of Sound and Vibration*, 497, 115936 (2021)
(DOI: <https://doi.org/10.1016/j.jsv.2021.115936>)

Jong-Hak Lee, Donghoon Son, Keonmin Lee, Dongjoon Kim, **Sangwon Park**, and No-Cheol Park*. "A Method of Evaluating Structural Integrity of Integrated Mast with Scaled Model," *Transactions of the Korean Society for Noise and Vibration Engineering* 30(2) (2020)
(DOI: 10.5050/KSNVE.2020.30.2.179)

Conference Presentations (Oral)

Sangwon Park, Dongjoon Kim, Wheejae Kim, No-Cheol Park*. "Rendering high-fidelity vibrotactile feedback on a plate via optimization of actuator driving signals," in *Proceedings of Internoise 2020*, 2020 (**Young Professionals Award**)

Sangwon Park, Dongjoon Kim, Wheejae Kim, No-Cheol Park*. "Control of acoustic noise induced by vibrotactile rendering on a touchscreen," in *Proceedings of the Korean Society for Noise and Vibration Engineering Autumn Conference*, 2020

Sangwon Park, Dongjoon Kim, Wheejae Kim, No-Cheol Park*. "Analysis of vibration and sound radiation on haptic display with VCM," in *Proceedings of the Korean Society for Noise and Vibration Engineering Autumn Conference*, 2019

Awards and Scholarships

I-INCE Young Professionals Grant , I-INCE	Aug. 2020
1st Prize , Creative design project, Yonsei University	Fall 2018
High Honor , Yonsei University	Spring 2018
Honor , Yonsei University	Fall 2017
Scholarship , DK Korea Scholarship	Fall 2013
Academic Excellence Honor Scholarship , Yonsei University	Spring & Fall 2018

Teaching Experience

YONSEI UNIVERSITY

Teaching Assistant: Dynamics (Spring & Fall 2019, Fall 2020)

- Responsible for teaching lab component of class and TA help sessions
- Graded homework assignments and exams.

Skills

- Technical: Vibration and acoustic measurement (FRF measurement, modal test, sound pressure measurement)
- FEA Software: Ansys Mechanical (Modal, Harmonic, Static, Explicit, Transient, LS-DYNA),
- Programming: Matlab, C++, Labview
- Fabrication: 3D printing
- Design: Creo, Spaceclaim, Adobe Photoshop, Premiere Pro, After Effects
- Language: TOEFL 117/120 (R:30, L: 30, W: 29, S: 28), GRE: V 161(88%), Q 170(96%), W 4.0(56%)

Experience and Extracurricular Activities

Higher education and training support for Energy R&D personnel

Undergraduate track

Jan. 2018 – Dec. 2018

- Supported by the Korea Institute of Energy Technology Evaluation and Planning (KETEP)
- Took two graduate courses in Civil and Environmental Engineering, participated in seminars on seismic safety assessment, and visited Nuclear powerplants and related facilities

Seoul Companion Project, Seoul Volunteer Center

Volunteer

Aug. 2017 – Dec. 2017

- Taught mathematics to four high school students with a weak financial background and served as a mentor

Auxiliary Police, Seoul Metropolitan Police Agency

Administrative assistant

May. 2015 – Feb. 2017

- Assisted documentation and inventory management

References

Available upon request