Sangwoo Han

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Education

Seoul National University March 2021 – Present
Combined M.S. and Ph.D. program in Seismology and Geophysics (GPA: 4.22/4.3) *Seoul, Republic of Korea*

Seoul National University March 2014 – February 2021
School of Earth and Environmental Sciences (GPA: 3.9/4.3 Summa Cum Laude) *Seoul, Republic of Korea*

- B.S. in Earth and Environmental Sciences
- B.S. in Computational Sciences

Experience

Visiting Researcher November 2024 – May 2025
Rice University *Houston, Texas, United State*

- Advisor: Jonathan Ajo-Franklin (email: ja62@rice.edu)
- Microearthquake Detection and Location by using Distributed Acoustic Sensing (DAS) and Nodal Geophone Array in Imperial Valley, California

Teaching Assistant & Research Assistant 2021, 2022, 2023
Seoul National University *Seoul, Republic of Korea*

Field experience 2020, 2023
Seoul National University *Seoul, Republic of Korea*

- Deployment of the linear array with geophones in Hongseong-Yugyu area (Oct 2023-Nov 2023)
- Deployment of the linear array with geophones on the fault zone of the 2016 Mw 5.5 Gyeongju earthquake (Nov 2020-Dec 2020)

Undergraduate Researcher 2019, 2020
Seoul National University *Seoul, Republic of Korea*

- Advisor: YoungHee Kim (email: younghkim@snu.ac.kr)
- Imaging 3-dimensional rupture processes of the 2015 Peru deep earthquake doublet by back-projection (Sep 2020-Feb 2021)
- The Kamchatka-Kuril subduction zone earthquakes catalog data analysis, especially, in regard to 2006 M8.3 great earthquake (Jun 2019-Aug 2019)

Undergraduate Researcher June 2020 – August, 2020
Music and Audio Research Group, Seoul National University *Seoul, Republic of Korea*

- Advisor: Kyogu Lee (email: kglee@snu.ac.kr)
- Singing voice lyrics syllable alignment by using pitch and amplitude

ML&DL internship December, 2019 – February, 2020
Enlighten (Solar power energy IT platform) *Seoul, Republic of Korea*

- Forecasting solar power generation using sun behavior and climate data by ML&DL

Auxiliary Firefighter (Mandatory Military Service) June, 2017 – April, 2019
Hongcheon Fire Station *Gangwon, Republic of Korea*

Awards & Honors

NRF Doctoral Research Fellowship
National Research Foundation of Korea *2025-2026*

2025 SSA Annual Meeting Student Presentation Awards
Seismological Society of America *2025*

Support Program for Outstanding Graduate Students' International Joint Research
Brain Korea 21 grant *2024-2025*

Seoul National University Alumni Association Scholarship/Development Fund Scholarship
Seoul National University *2022-2023*

Brain Korea 21 Scholarship
National Research Foundation of Korea *2021,2022*

Best Paper Award (poster presentation)
Geological Society of Korea *2021*

2nd Place Award in Geological Resource Data Utilization and AI Competition
Korea Institute of Geoscience and Mineral Resources *2021*

Presidential Science Scholarship
Korea Student Aid Foundation *2014-2016,2019*

Skills

Seismological analysis
Rupture process analysis, Focal mechanism, EGF analysis, Slip inversion, Stress inversion, Back-projection, Microseismicity detection and location, Waveform modeling, Distributed acoustic sensing, Receiver function

Programming experience
Python (NumPy, Pandas, Scikit-Learn, Matplotlib, PyGMT, TensorFlow, PyTorch), Matlab, Linux, GitHub

Language)
English, Korean (native)

Manuscripts in Preparation / Submitted

[2] **Han, S.**, Ajo-Franklin, J., Kim, J., Nayak, A., and & Kim, Y. Near-simultaneous nucleation of a two-episode microearthquake rupture resolved with distributed acoustic sensing. *(in prep.)*

[1] **Han, S.** & Kim, Y. Determining Small Earthquake Focal Mechanisms Using 360° S-Wave Polarization: Insights from Dense Seismic Arrays. *(reviewed in Geophysical Journal International)*

Research Publications

[6] Seo, M.-S., Kim, W.-Y., **Han, S.**, Park, J. Y., & Kim, Y. (2025). Complex Multi-patch Rupture and Aftershock Characteristics of the 2024 Mw 4.2 Buan, Korea, Earthquake Sequence. *(accepted in Seismological Research Letters)*

[5] **Han, S.**, Kim, W. Y., Park, J. Y., Seo, M. S., & Kim, Y. (2024). **Rupture model of the 5 April 2024 Tewksbury, New Jersey, earthquake based on regional Lg-wave data**. *The Seismic Record, 4(3), 214-222.*

[4] **Han, S.**, Kim, W.-Y., Lim, H., Son, Y. O., Seo, M.-S., Park, J. Y., & Kim, Y. (2024). **Resolving multi-stage rupture process of the 2021 Mw 4.9 Offshore Jeju Island earthquake from relative source time functions.** *Geophysical Research Letters, 51(3), e2023GL106059.*

[3] Kim, W.-Y., Seo, M.-S., Park, J. Y., **Han, S.**, Son, Y. O., & Kim, Y. (2023). The 28 October 2022 Mw 3.8 Goesan earthquake sequence in central Korea: stress drop, aftershock triggering, and fault interaction. *Bulletin of the Seismological Society of America, 113(6), 2416-2431.*

[2] Kim, W.-Y., Park, J. Y., Seo, M.-S., Son, Y. O., Lim, H., **Han, S.**, & Kim, Y. (2022). The 14 December 2021 Mw 4.9 offshore Jeju Island, Korea, earthquake: Seismological observation of an intraplate earthquake provides insight into regional seismotectonics. *The Seismic Record, 2(2), 107-117.*

[1] Lim, H., Kim, Y., Kwon, K. B., Han, J., Ahn, B. S., Chai, G., ... & Ree, J. H. (2021). Deployment of the linear array with geophones on the fault zone of the 2016 Mw 5.5 Gyeongju earthquake. *Journal of the Geological Society of Korea, 57(5), 741-746.*

Conference presentation

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[9] **Han, S.**& Kim, Y. (2025). Determining Small Earthquake Focal Mechanisms Using 360° S-Wave Polarization. In *SSA Annual Meeting. (*awarded)*

[8] **Han, S.**& Kim, Y. (2024). Fault complexity revealed by focal mechanisms of small earthquakes in Gyeongju, South Korea: effective use of S-wave polarizations retrieved from the high-density seismic array. In *37th International Geological Congress.*

[7] **Han, S.**& Kim, Y. (2024). Improving focal mechanism solutions with 3-D S-wave ground motion: Toward routine determination of the focal mechanisms and detailed earthquake source characterization with Gyeongju Hi-density Broadband Seismic Network (GHBSN) data. In *Asia Oceania Geosciences Society Annual Meeting.*

[6] **Han, S.**, Kim, W.-Y., Lim, H., Son, Y. O., Seo, M.-S., Park, J. Y., & Kim, Y. (2023). Resolving source parameters and multi-stage rupture process of the 2021 Mw 4.9 Offshore Jeju Island (Korea) Earthquake. In *AGU Annual Meeting.*

[5] **Han, S.**, & Kim, Y. (2023). Focal mechanism determination from the 3-D ground motion of S wave: towards detailed earthquake source characterization with Gyeongju High-Density Broadband Seismic Network (GHBSN) data. In *Joint Fall Meeting of Korean Geological Societies*

[4] **Han, S.**, Kim, W.-Y., Lim, H., Son, Y. O., Seo, M.-S., Park, J. Y., & Kim, Y. (2023). Multi-stage Rupture Process of the 2021 Mw 4.9 Offshore Jeju Island Earthquake from Relative Source Time Functions.In *Joint Fall Meeting of Korean Geological Societies*

[3] **Han, S.**, Kim, W.-Y., & Kim, Y. (2022).Source Complexity of the 2021 Mw 4.9 Offshore Jeju Island, Korea, Earthquake. In *AGU Annual Meeting (online)*

[2] **Han, S.**, Kim, W.-Y., Lim, H., Son, Y. O., Seo, M.-S., Park, J. Y., & Kim, Y. (2022). Analysis of Complex Rupture Process of 2021 Mw 4.9 Offshore Jeju Island Earthquake. In *Joint Fall Meeting of Korean Geological Societies*

[1] **Han, S.**, & Kim, Y. (2021). Back-projection imaging of small earthquake ruptures using the data from Gyeongju High-Density Broadband Seismic Network. in *Joint Fall Meeting of Korean Geological Societies. (*awarded)*