MENTORING & ADVISEMENT

Undergraduate Student Advisees

SNU School of Earth & Environmental Sciences | Undergraduate Thesis Research *– Total 11 projects (10 completed)*
[§ *Best Undergraduate Thesis Research Award*]

2013 – 2014	Hobin Lim ***Imaging subduction structures beneath southern Mexico by high-precision earthquake relocation***
2014 – 2015	§Young-Wook Kim ***Structure and seismological properties of the subduction plate boundary in southern Peru***
2015 – 2016	Hyoihn Jang ***Seismic attenuation structure beneath Jeju Island, Mexico and Peru: Implications for magmatism and fluids***
2015 – 2016	Hee-Chul Jung ***Seismic structure beneath Upper Cook Inlet Basin in Alaska through receiver functions, H-k stacking, and 1-D iterative-optimizing modeling***
2016 – 2017	Young-Jin Ryu ***Crustal P-wave velocity analysis using earthquakes from Korean Peninsula***
2016 – 2017	§HyeJeong Kim ***Lithospheric velocity structure of three volcanic islands near Korean Peninsula***
2017 – 2018	Jeena Yoon ***Lateral variations of crustal seismic attenuation in Central California from Lg Q inversion***
2017 – 2019	§Jaewoo Kim ***Detecting pore-fluid pressure change by shear-wave splitting in 2017 Mw 5.4 Pohang earthquake region***
2019 – 2021	Min Seong Seo ***Complex spatiotemporal triggering of 2017-2018 Pohang aftershock sequence revealed by nearest neighbor analysis***
2019 – 2021	Sangwoo Han ***Imaging 3-dimensional rupture processes of the 2015 Peru deep earthquake doublet by back-projection***
2019 – 2021	Young Oh Son (B.S. degree expected at Aug 2021) ***Constraints on crustal properties in South Korea from virtual deep seismic sounding***

Summer (International) Guest Student Advisees | Undergraduate Thesis Research

2018	Sungbin Cho (B.S. student at University of Texas at Austin) ***Origin of the Columbia River flood basalt – probing lithospheric interactions with Yellowstone plumes*** - *Co-advised by Prof. C. Wilson (UT Austin)*

SNU Student Directed Education (SDE) Program | Undergraduate Research Project

The SDE program is a highly competitive research program at SNU open to undergraduates in all disciplines. Only ~30 projects are selected each year, and those research results are evaluated for awards.

2016 HyeJeong Kim
Lithospheric velocity structure of three volcanic islands near Korean Peninsula
- Received research fund of 3,000,000 won (~2,700 USD) for 6 months
- Won the first-place award

2019 Jaewoo Kim
Detecting pore-fluid pressure change by shear-wave splitting in 2017 Mw 5.4 Pohang earthquake region
- Received research fund of 3,000,000 won (~2,700 USD) for 6 months
- Won the second-place award

2020 Young Oh Son & Min Seong Seo
Measurement of seismometer misorientation based on P-wave polarization: Application to permanent and dense temporary seismic arrays in South Korea
- Research fund of 6,000,000 won (~5,400 USD) for 6 months
- Link to research results (in Korean): *https://www.youtube.com/watch?v=ic7wKafJa6c*

SNU College of Natural Sciences Undergraduate Internship Program | Undergraduate Research Project

The internship opportunities in SNU College of Natural Sciences are offered SNU & non-SNU undergraduate students for four sessions (Fall & Spring semesters; Summer & Winter sessions). About 10 projects are selected in each term in Earth & environmental science disciplines.

2013 Chang-Hyun Choi
Seismic data processing for ambient noise tomography

2014 Jung-Hoon Song
Receiver function analysis using Korean seismic data

2015 Hee-Chul Jung
Receiver function analysis using MOOS array in Cook Inet Basin

2015 Hyoihn Jang
Constraining seismic attenuation structure beneath Jeju Island, S. Korea

2015 Dong-Hyuk Kang
Exploring basic seismic array processing

2015 Young-Jin Ryu
Receiver function modeling for lithospheric structure beneath S. Korea

2016 Tae-Yoon Kim
Exploring methods of seismic tomography

2016 Min Seong Seo
Earthquake detection based on STA/LTA algorithm using Cascadia Initiative ocean-bottom seismic data

2017 HyeJeong Kim
Lithospheric velocity structure of three volcanic islands near Korean Peninsula

2017	Jaewoo Kim ***Exploring methods of shear-wave splitting to probe local seismic anisotropy***
2017	Jisoo Kim ***Receiver function analysis using seismic data in Arabia Peninsula***
2018	Jun Yong Park (Chungnam University) ***Exploring methods for detection and location of earthquakes using ocean bottom seismic data***
2018	Jaewoo Kim ***Detecting pore-fluid pressure change by shear-wave splitting in 2017 Mw 5.4 Pohang earthquake region***
2019	Young Oh Son ***Detection and space-time location of non-volcanic tremors***
2019	Sangwoo Han ***Seismic data classification using machine learning***
2019	Min Seong Seo ***Multifractal characterization of seismic activity***
2019	Young Oh Son ***Detection and location of earthquake tremors in Nankai subduction zone, SW Japan***
2020	Joo-Hyung Lee ***Detection and location of 2016 M 5.5 Gyeongju earthquake using OBSPy***
2020	Sangwoo Han ***Classification of shallow/deep earthquakes using spectrogram***
2020	Seung-Hoon Han ***Shear-wave splitting analysis using dense seismic array in SE part of Korea***

Graduate Student & Postdoctoral Scientist Advisees

M.S. Student Advisees

Spring 2020 – Jaewoo Kim (M.S. student)
Project title: ***1. Detecting pore-fluid pressure changes with shear wave splitting measurements at Groningen gas field, Netherlands***
2. Shear-wave splitting using Pacific Array BBOBS data

2019 – 2021 Jeena Yoon (M.S. degree at Feb. 2021)
Thesis title: ***Spatial variation of the Lg wave attenuation along the CCSE array in Central California, US***

2016 – 2017 Hyoihn Jang (M.S. degree at Feb. 2017)
Thesis title: ***Seismic attenuation structure beneath Nazca Plate subduction zone in southern Peru***
Project title: ***1. A possible roll-over slab geometry under the Caroline Plate imaged by Monte Carlo finite-frequency traveltime inversion of teleseismic SS phases***
2. Seismic attenuation structure of Nazca Plate subduction zone in southern Peru

M.S.-Ph.D. Joint Program Student Advisees

Spring 2021 – Sangwoo Han (M.S. student)
Project title: ***Imaging 3-dimensional rupture processes of the 2015 Peru deep earthquake doublet by back-projection***

Spring 2021 – Min Seong Seo (M.S. student)
Project title: ***Complex spatiotemporal triggering of aftershocks revealed by nearest neighbor analysis: Case study of 2017-2018 Pohang aftershock sequence in South Korea***

2019 – present Jun Yong Park (M.S. student)
Project title: ***1. Detection and location of local earthquakes in the oldest Pacific plate using the Oldest-1 (Pacific Array) data***
2. Detection and location of seismicity in Yellow Sea, S. Korea

2016 – present Soojinn Hyung (Ph.D. student; *leave of absence*)
Project title: ***Teleseismic Constraints on Crustal structure of the Grenville Province in eastern North America***

2015 – 2020 Hobin Lim (Ph.D. at Aug. 2020)
Thesis title: ***Geophysical investigations of the subduction zone in Peru and the 2017 Pohang earthquake in South Korea***
Project title: ***1. Evidence of an upper mantle seismic anomaly opposing the Cocos slab beneath the Isthmus of Tehuantepec, Mexico***
2. Earthquake source mechanism and rupture directivity of the 12 September 2016 Mw 5.5 Gyeongju earthquake, South Korea
3. Measurement of borehole seismometer orientation using tangential P-wave receiver function based on harmonic decomposition
4. Seismicity and structure of Nazca Plate subduction zone in southern Peru
5. Data-oriented constraint on the interpretation of S receiver function and its application to observations of seismic discontinuities in the lithosphere-asthenosphere system
6. Seismic attenuation structure of southern Peruvian subduction system
7. 2017 Mw 5.5 Pohang earthquake, South Korea, and poroelastic stress change associated with fluid injection
8. A dataset of seismic sensor responses of South Korea seismic stations

Ph.D. Student Advisees

2017 – present Hyunsun Kang (Ph.D. candidate)
Proposal thesis title: ***Seismic structure beneath various tectonic settings constrained from seismic array data***
Project title: ***1. Localized anisotropic subduction-zone structure in southern Peru: Constraints from teleseismic receiver functions and forward modeling***
2. Seismic crustal structure beneath Jeju Volcanic Island, South Korea
3. Deep seismic crustal structure beneath Wallowa, Columbia River flood basalt province

2012 – 2020 Eunyoung Kim (Ph.D. at Feb. 2020; *now at KIGAM*)
Thesis title: ***Investigation of 3-D crustal velocity structure from seismic tomography and effective medium modeling of anisotropic seismic properties of rocks***
Project title: ***1. Upper crustal seismic structure of the Endeavour segment, Juan de Fuca Ridge from traveltime tomography: Implications for oceanic crustal accretion***
2. GassDem: A MATLAB program for modeling the anisotropic seismic properties of porous medium using differential effective medium theory and Gassmann's poroelastic relationship
3. AnisEulerSC: A MATLAB program combined with MTEX for modeling the anisotropic seismic properties of a polycrystalline aggregate with microcracks using self-consistent approximation

Guest Student Advisees

2020 - present Hwaju Lee (Ph.D. candidate at University of Minnesota)
Project title: ***Seismic anisotropy and mantle flow in Nazca plate subduction system***

International Predoctoral Researcher Advisees

2017 Sagar Singh (M.S. at Indian Institute of Technology Roorkee)
Project title: ***Exploring capability of full waveform inversion using Korean seismic data***

Postdoctoral Scientist

Sep – Nov 2020 Hobin Lim
Nov 2020 – Hobin Lim (BK postdoctoral fellow)
Project title: ***1. Fault zone structure imaged by teleseismic receiver function with geophone array in (1) Clark fault, California, US and (2) Yangsan fault, S. Korea***
2. Application of seismic array processing to assess station quality in Gyeongju, South Korea