Updated: May 4, 2022

MINHO KIM

2028 Dwight Way Unit 3C, Berkeley CA (94704)
(361) 759-2593 | mhk@berkeley.edu | minho.me

Education

PhD | Landscape Architecture & Environmental Planning *Sep 2021 – Present*
University of California, Berkeley
- Committee: Marta Gonzalez, John Radke, Iryna Dronova
- Research Focus: Data-driven Assessment of Landscape Resilience to Catastrophic Wildfires

MS | Civil & Environmental Engineering *Mar 2019 – Feb 2021*
Seoul National University, South Korea
- Advisor: Prof. Yongil Kim
- Thesis: Local Climate Zone Classification Using Multi-Scale Convolutional Networks

BS | Civil & Environmental Engineering *Sep 2012 – Feb 2017*
Seoul National University, South Korea
- Thesis: Analysis of North Korea's 4th Nuclear Test Site with Sentinel-1A Data Using DInSAR Techniques

Employment

Graduate Student Researcher *Jan 2022 – Present*
HumNet Lab, University of California, Berkeley
Advisor: Marta Gonzalez / Mentor: Cristobal Pais
- Data-driven, physics-based fire spread modeling using FARSITE/FLAMMAP and Cell2Fire

Researcher *Mar 2021 – Aug 2021*
Institute of Construction and Environmental Engineering, Seoul National University
- Developed high resolution land cover maps of inaccessible areas using a deep learning-based semantic segmentation model and very high resolution satellite imagery

PR Manager *Mar 2021 – Aug 2021*
Education & Research Program for InfraSPHERE
Seoul National University
- Helped promote and coordinate BK21 Seminar Series *(New Frontiers of InfraSPHERE)*
- Designed main website for BK Infrasphere (hosted by Dept. of Civil and Environmental Engineering) and maintained Youtube channel

Lab Manager *Mar 2021 – Aug 2021*
SPINS-RS Lab, Seoul National University
Advisor: Yongil Kim
- Organized lab's surveying equipment (GPS/GNSS, total stations, etc) and software licenses

Research Assistant *Mar 2019 – Mar 2021*
SPINS-RS Lab, Seoul National University
Advisor: Yongil Kim
- **Urban Remote Sensing:** Generated high resolution Local Climate Zone classification maps of key cities in South Korea using newly developed multi-scale CNN models with multi-temporal Sentinel-2 images and GIS data (national LULC maps and OpenStreetMap).
- **Multi-Disciplinary Research:** Conducted photovoltaic power forecasts of solar farms using large-scale, multitemporal geostationary satellite images and multi-source meteorological data via machine learning and CNN
- **Data Fusion:** Developed a spatiotemporal fusion model to produce disaggregated Landsat-8 thermal images in heterogeneous urban areas.
- **Change Detection/Monitoring:** Applied radiometric calibration methods to help detect and monitor wildfire burn scars using change detection results from multi-temporal Sentinel-2 and PlanetScope images.
- **Multi-Modal/Sensor Experience:** Multi-modal image processing including, but not limited to: SAR, very-high resolution, mid-high resolution, geostationary, nighttime, CubeSat.

Ammunition Inspector *May 2017 – Jan 2019*
Republic of Korea Army
- Recorded ammunition transactions and composed ammunition inventory reports using Excel
- After working hours, contributed to writeup on pan-sharpening image fusion research using Worldview images

Research Assistant (Undergraduate Intern) *Aug 2016 – Feb 2017*
SPINS-RS Lab, Seoul National University
Advisor: Yongil Kim
- Analyzed ground deformations in inaccessible, remote areas using Sentinel-1 SAR images
- Prepared manuscript entitled "Case Study on the Feasibility of DInSAR Analysis with Sentinel-1 Data to Detect the Location of North Korea's 4th Nuclear Test" for consideration in *Remote Sensing*
- Carried out fieldwork and experiments using a ground-based hyperspectral imager to monitor crop health

Research Assistant (Co-op student) *Sep 2011 – Jan 2012*
Carson Lab (Medical Imaging), Lawson Health Research Institute, London, Canada
Advisor: David Carson
- Researched on photoacoustic image reconstruction of a line source using multiple regularization percentages with the addition of maximum intensity projection using Matlab

Research Projects

Funding Entity	Research Project	Period*
C3AI	Multi-Scale Analysis for Improved Risk Assessment of Wildfires Facilitated by Data and Computation	*June 2021– Present*
The Institute for Peace and Unification Studies (Korea)†	Mapping Basic Spatial Information in North Korea Using Very High Resolution Satellite Images	*Jan 2021– Aug 2021*
Ministry of Interior & Safety (Korea)	Detection and Monitoring of Natural Disasters Using Multi-Modal and Multi-Sensor Remotely-Sensed Imagery	*July 2019 – Aug 2021*
National Research Foundation (Korea)	Development of an End-to-End Deep Learning based Technique to Generate Very High Resolution Environmental Data	*July 2019 – Aug 2021*
National Geographic Information Institute (Korea)	Establishment of Spatial Information Roadmap for Supporting the Infrastructure Construction of the Unified Korean Peninsula	*Aug 2019 – July 2020*
SK Telecom (Korea)	Solar Power Prediction using Geostationary Satellite Imagery via Deep Learning Forecast Models	*July 2019 – Dec 2019*

**Period: Actual time participated*
† Worked as lead project manager

Teaching Experience

Graduate Student Instructor
University of California, Berkeley
- GEOG188/LDARCH188: Geographic Information Systems *Sep 2021 – Dec 2021*

Teaching Assistant
Seoul National University
- 457.542: Advanced Surveying *Mar 2021 – June 2021*
- 457.205: Introduction to Geospatial Engineering *Mar 2021 – June 2021*
  (*Previously: Spatial Informatics and Systems)
- 457.539: Advanced Remote Sensing (KOMPSAT Very-High Resolution Imagery) *Sep 2020 – Dec 2020*
- 457.402: Remote Sensing *Sep 2020 – Dec 2020*
- 457.544: Satellite Image Interpretation *Mar 2020 – June 2020*
- Leadership for Civil Engineers *Mar 2020 – June 2020*
- 457.205: Spatial Informatics and Systems *Mar 2020 – June 2020*

Services

Reviewer (Details: https://publons.com/researcher/4444758/minho-kim/peer-review/)
- Remote Sensing (IF2020: 4.848)
- Geo-Spatial Information Science (IF2020: 4.288)
- ISPRS International Journal of Geo-Information (IF2020: 2.899)
- Geocarto International (IF2020: 4.889)

- Applied Sciences (IF2020: 2.679)
- Sustainability (IF2020: 3.251)
- Forecasting

General Education Peer Tutor *Mar 2016 – June 2016*
Seoul National University
- Tutored college-level English to undergraduate students and acted as mentor for incoming freshmen

Section Editor *Mar 2016 – June 2016*
The SNU Quill – School's English Press (snuquill.com)
- SNU campus news section reporter and editor for 9 volumes; responsible for 6-8 journal reporters
- Coordinated English writing/composition workshops and orientations

Publications

Peer-Reviewed Journal Articles

1. **Minho Kim**, Jeong, D., & Kim, Y. **(2021)**. Local climate zone classification using a multi-scale, multi-level attention network. ISPRS Journal of Photogrammetry and Remote Sensing, 181, 345-366.
2. **Minho Kim**, H. Song, Y. Kim **(2020)**. Direct Short-Term Forecast of Photovoltaic Power through a Comparative Study Between COMS and Himawari-8 Meteorological Satellite Images in a Deep Neural Network. *Remote Sensing.*
3. **Minho Kim**, M. Jung, Y. Kim **(2019)**. Histogram matching of Sentinel-2 spectral information to enhance Planetscope imagery for effective wildfire damage assessment. *Korean Journal of Remote Sensing*, 35(4), 517-534.
4. Y. Kim, **Minho Kim**, J. Choi, Y. Kim **(2017)**. Image fusion of spectrally nonoverlapping imagery using SPCA and MTF-based filters. *IEEE Geoscience and Remote Sensing Letters*, 14(12), 2295-2299.

Conference Proceedings

1. **Minho Kim**, T. Kwak, J. Jung, Y.Kim **(2021)**. Mapping inaccessible areas using deep learning based semantic segmentation of VHR satellite images with OpenStreetMap data. *2021 International Symposium of Remote Sensing,* May 26-28.
2. **Minho Kim**, K. Cho, H. Kim, Y. Kim **(2020).** Spatiotemporal fusion of high resolution land surface temperature using thermal sharpened images from regression-based urban indices. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XXIV ISPRS Congress 2020.*
3. A. Song, **Minho Kim**, Y. Kim, C. Kim **(2019).** Analysis of geospatial technology for smart city development: Case study of South Korea. *1st Tunisian Smart Cities Symposium 2019*, Tunis, Tunisia, Nov 19.
4. H. Song, G. Kim, **Minho Kim**, Y. Kim **(2019)**. Short-term forecasting of photovoltaic power integrating multi-temporal meteorological satellite imagery in deep neural network. *IEEE PES Asia-Pacific Power and Energy Engineering Conference 2019*, Macao, China, Dec 1-4. *(Oral Presenter)*
5. **Minho Kim** & Y. Kim **(2019).** Integration of Sentinel-2 spectral information with high spatial resolution PlanetScope imagery for wildfire damage assessment. *Asian Conference on Remote Sensing 2019,* Daejeon, Korea, Oct 14-18.
6. G. Kim, H. Song, **Minho Kim**, Y. Kim **(2019)**. Multimodal merging of satellite imagery with meteorological and power plant data in deep convolutional neural network for short-term solar energy prediction. *Asian Conference on Remote Sensing 2019*, Daejeon, Korea, Oct 14-18.
7. **Minho Kim** and Y. Kim **(2019)**. Monitoring the catastrophic 2018 Mendocino complex wildfire using the Sentinel constellation. *International Symposium on Remote Sensing 2019,* Taipei, Taiwan, April 17-19.

Workshops and Invited Talks

1. BEEPS Panel Series: Exploring Research in the Environmental Field (2021). College of Natural Resources at University of California, Berkeley, Oct 11.
2. **Minho Kim,** D. Jeong, H. Choi Y, Kim **(2020).** Developing High Quality Training Samples for Deep Learning Based Local Climate Classification in Korea. *AI for Earth Sciences Workshop at NeurIPS2020,* Dec 12.
3. **Minho Kim (2020).** Urban Remote Sensing, Graduate School of Environmental Studies, Seoul National University, Jan 29.

Awards

ICE-KSCE Master's Thesis Award *July 2021*
Institution of Civil Engineers & Korean Society of Civil Engineers
- Selected as best 2021 English Master's thesis in civil engineering by ICE and KSCE (Master's Thesis: Local climate zone classification using multi-scale convolutional neural networks).

Environmental Geospatial Data Idea Contest – Excellence Award *Nov 2020*
Ministry of Environment, South Korea
- Local climate zone classification using multi-scale CNN for the development of LCZ and environmental big data.

SPINS Lab – Outstanding Research Award *Mar 2020*
Seoul National University

Student Research Competition using Meteorological Satellites– Research Award *Jan 2019*
Korea Meteorological Administration
- Development and automation of a preprocessing algorithm for the harmonization of COMS and GEOKOMPSAT-2A satellite images.

Scholarship

- Brain Korea 21 Plus Scholarship, *National Research Foundation of Korea* *2019 – 2021*
- Merit-based Scholarship, *Seoul National University* *2014 – 2017, 2019*
- National Scholarship for Science and Engineering, *Korea Student Aid Foundation* *2013 – 2014*
- SNU Global Scholarship, *Seoul National University* *2012 – 2013*

Patents

- Convolutional neural networks for short-term photovoltaic forecast using satellite imagery, meteorological data, and power station data (2021, South Korea)

Technical Skills

- **Languages**: English (native), Korean (native), French (fluent), Spanish (elementary)
- **Programming**: Python (experienced), Matlab (intermediate), C++ (elementary)
  - Python libraries: NumPy, Matplotlib, Pandas, Scikit-learn, Tensorflow, Keras, PyTorch
- **Software (Remote Sensing & GIS)**: ArcGIS, ENVI (SARscape), SNAP, QGIS, Google Earth Engine
- **Software (Fire Modeling):** FARSITE/FlamMap, Fire Family Plus

References

Dr. Prof. John Radke
Department of Landscape Architecture and Environmental Planning
Department of City and Regional Planning
University of California, Berkeley
412 Wurster Hall #2000
Email: ratt@berkeley.edu
Tel: +1-510-643-599

Dr. Prof. Marta Gonzalez
Department of Civil and Environmental Engineering
Department of City and Regional Planning
University of California, Berkeley
406C Wurster Hall
Email: martag@berkeley.edu
Tel: +1-857-9284546

Dr. Prof. Yongil Kim
Department of Civil and Environmental Engineering
Seoul National University
Building 35, Room 410 1, Gwanak-ro, Gwanak-gu, Seoul, 08826
E-mail: yik@snu.ac.kr
Tel: +82-2-880-7364