






# MINHO KIM

Ph.D. Student

Department of Landscape Architecture & Environmental Planning  
University of California, Berkeley

 [mhk@berkeley.edu](mailto:mhk@berkeley.edu)  
 Website |  Scholar |  RG |  Twitter

## RESEARCH INTERESTS

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Remote Sensing, Geospatial Data Science, Machine Learning, Computer Vision,  
Environmental Planning, Sustainable Development, Fire Spread Modeling

## EDUCATION


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**Ph.D. Landscape Architecture & Environmental Planning** Sep 2021 – Present  
 UNIVERSITY OF CALIFORNIA, BERKELEY Berkeley, CA

Topic: Data-driven Assessment of Landscape Resilience to Catastrophic Wildfires  
Advisors: [Marta Gonzalez](#), [John Radke](#)

**M.Sc. Civil & Environmental Engineering** Mar 2017 – Feb 2021  
 SEOUL NATIONAL UNIVERSITY Seoul, South Korea

Thesis: “Local Climate Zone Classification Using Multi-Scale Convolutional Networks” ([Link](#))  
Advisor: [Yongil Kim](#)

**B.Sc. Civil & Environmental Engineering** Sep 2012 – Feb 2017  
 SEOUL NATIONAL UNIVERSITY Seoul, South Korea

Thesis: “Study Analysis of North Korea’s 4th Nuclear Test Site with Sentinel-1A Data  
Using DInSAR Techniques”  
Advisor: [Yongil Kim](#)

## EXPERIENCE

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**Graduate Student Researcher** Berkeley, CA  
 *HumNet Lab, University of California, Berkeley* Jan 2022 – present

Advisor: [Marta Gonzalez](#) & Mentor: [Cristobal Pais](#)

- Data-driven, machine learning-based fire spread simulation using Cell2Fire.

**Researcher** Seoul, South Korea  
 *Institute of Construction & Env. Eng., Seoul National University* Mar 2021 – Aug 2021

- 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** Seoul, South Korea  
 *Education & Research Program: InfraSPHERE, Seoul National University* Mar 2021 – Aug 2021

- Helped promote and coordinate the BK21 Seminar Series (New Frontiers of InfraSPHERE). Also, designed the main website for BK Infrasphere (hosted by Dept. of Civil and Environmental Engineering) and maintained their Youtube channel.

**Lab Manager** Seoul, South Korea  
 *SPINS-RS Lab, Seoul National University* Mar 2021 – Aug 2021

- Organized lab’s surveying equipment (GPS/GNSS, total stations, etc) and software licenses.

**Research Assistant** Seoul, South Korea  
 *SPINS-RS Lab, Seoul National University* Mar 2019 – Feb 2021

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 multitemporal 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 multitemporal Sentinel-2 and PlanetScope images.

**Research Assistant (Undergraduate Intern)**

Seoul, South Korea

📍 *SPINS-RS Lab, Seoul National University*

Aug 2016 – Feb 2017

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)**

London, Canada

📍 *Carson Lab (Medical Imaging), Lawson Health Research Institute*

Sep 2011 – Jan 2012

Advisor: Jeffrey Carson

- Researched photoacoustic image reconstruction of a line source using multiple regularization percentages with the addition of maximum intensity projection using Matlab.

**HONORS / 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. ([Link](#))**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 Competition using Meteorological Satellites (Research Award)**

Jan 2019

*Korean Meteorological Administration*

🌟 Development and automation of a preprocessing algorithm for the harmonization of COMS and GEOKOMPSAT-2A satellite images.

## SCHOLARSHIPS

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

## PUBLICATIONS

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*\*Papers reported in reverse chronological order*

### Preprints & Working Papers

- [W1] Minho Kim, Cristobal Pais, John Radke, Marta Gonzalez *Cell2FireML : Machine learning based fire spread simulator using BehavePlus and Cell2Fire*

### Peer Reviewed Journal Papers

- [P1] **Minho Kim**, Jeong, D. & Kim, Y. *Local climate zone classification using a multi-scale, multi-level attention network*, ISPRS Journal of Photogrammetry and Remote Sensing, 181, (345-366).
- [P2] **Minho Kim**, Song, H. & Kim, Y. *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, 12(15), (2357).
- [P3] **Minho Kim**, Jung, M. & Kim, Y. *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).
- [P4] Kim, Y., **Minho Kim**, Choi, J. & Kim, Y. *Image fusion of spectrally nonoverlapping imagery using SPCA and MTF-based filters*, IEEE Geoscience and Remote Sensing Letters, 14(12), (2295-2299).

### Conference & Workshop Papers

- [C1] **Minho Kim**, Kwak, T., Jung, J. & Kim, Y. *Mapping inaccessible areas using deep learning based semantic segmentation of VHR satellite images with OpenStreetMap data*, In Proceedings of the 2021 International Symposium of Remote Sensing, Virtual, May 26-28, 2021.
- [C2] **Minho Kim**, Jeong, D., Choi, H. & Kim, Y. *Developing High Quality Training Samples for Deep Learning Based Local Climate Zone Classification in Korea*, arXiv preprint, Presented at AI for Earth Sciences Workshop at NeurIPS 2020, Virtual, [arXiv:2011.01436](https://arxiv.org/abs/2011.01436).
- [C3] Song, A., Kim, C., **Minho Kim** & Kim, Y. *Analysis of Geospatial Technology for Smart City Development: Case Study of South Korea*, In Proceedings of The 1st Tunisian Smart Cities Symposium, 2019.
- [C4] Kim, G., Song, H., Kim, **Minho Kim** & Kim, Y. *Multimodal Merging of Satellite Imagery with Meteorological and Power Plant Data in Deep Convolutional Neural Network for Short-Term Solar Energy Prediction*, In Proceedings of the 40th Asian Conference on Remote Sensing, Daejeon, South Korea, Oct 14-18, 2019.

- [C5] **Minho Kim** & Kim, Y. *Integration of Sentinel-2 Spectral Information with High Spatial Resolution PlanetScope Imagery for Wildfire Damage Assessment*, In Proceedings of the 40th Asian Conference on Remote Sensing, Daejeon, South Korea, Oct 14-18, 2019.
- [C6] Song, H., Kim, G., **Minho Kim** & Kim, Y. *Short-Term Forecasting of Photovoltaic Power Integrating Multi-Temporal Meteorological Satellite Imagery in Deep Neural Network*, In 2019 IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC), Macao, (pp1-5).
- [C7] **Minho Kim**, Cho, K., Kim, H. & Kim, Y. *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, 3, (pp247-254).

## PATENTS & SOFTWARE

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Song, H., Kim, Y., **Minho Kim**, Kim, K. *Convolutional neural networks for short-term photovoltaic forecast using satellite imagery, meteorological data, and power station data*. Patent, South Korea, 2021.

## TEACHING

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**Lead Instructor**, *University of California, Berkeley*

- GEOG188/LDARCH188: Geographic Information Systems (*Lead Instructor*) Sep 2022 – Dec 2022

**Graduate Student Instructor**, *University of California, Berkeley*

- GEOG188/LDARCH188: Geographic Information Systems (*Lab Tutor & GSI*) Sep 2021 – Dec 2021

**Teaching Assistant**, *Seoul National University*

- 457.542\*: Advanced Surveying (*Head TA*) Mar 2021 – June 2021
- 457.205: Introduction to Geospatial Engineering (*Lab Tutor & Head TA*) Mar 2021 – June 2021
- 457.539\*: Advanced Remote Sensing: VHR Imagery (*Head TA*) Sep 2020 – Dec 2020
- 457.402: Remote Sensing (*Lab Tutor & Head TA*) Sep 2020 – Dec 2020
- 457.544\*: Satellite Image Interpretation (*Head TA*) Mar 2020 – June 2020
- Leadership for Civil Engineers (*TA*) Mar 2020 – June 2020
- 457.205: Spatial Informatics and Systems (*Lab Tutor & Head TA*) Mar 2020 – June 2020

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\*Graduate-level Courses

## SERVICES

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**Reviewer**

*Remote Sensing, Geo-Spatial Information Science, ISPRS International Journal of Geo-Information, Geocarto International, Applied Sciences, Sustainability, Agronomy, Forecasting*

 **Publons**

**Ammunition Inspector**

*Republic of Korea Army*

Pocheon, South Korea

May 2017 – Jan 2019

- 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.

**General Education Peer Tutor**

*Seoul National University*

Seoul, South Korea

Mar 2016 – June 2016

- Tutored college-level English to undergraduate students and acted as mentor for incoming freshmen.

**Section Editor***The SNU Quill - SNU's English Press*

Seoul, South Korea

Mar 2016 – June 2016

- SNU campus news section reporter and editor for 9 volumes; responsible for 6-8 journal reporters. Also coordinated English writing/composition workshops and orientations.

**COMPUTER SKILLS**

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<b>GitHub</b>	<a href="https://github.com/minhokim93">https://github.com/minhokim93</a>
<b>Programming</b>	Python, Matlab, C++, LaTeX
<b>Machine Learning</b>	<b>Proficient:</b> Tensorflow, Keras, Scikit-learn <b>Basic:</b> Pytorch
<b>Remote Sensing</b>	ArcGIS, QGIS, ENVI (SARscape), Google Earth Engine (Javascript)
<b>Fire Modeling</b>	FARSITE/FLAMMAP
<b>Languages</b>	English, Korean, French

**REFERENCES**

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**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

**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

**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