

INSANG SONG

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CURRENT AFFILIATION

Ph.D. student (Adviser: Hui Luan)

September 2019 - Current

Department of Geography, University of Oregon

EDUCATIONS

M.A., Geography, Seoul National University, Republic of Korea

August 2017

- Thesis: Construction of an imputation model by resampling-based spatio-temporal kriging and its implication – for 2010-2014 particulate matter (PM₁₀) data in Seoul, Korea (Adviser: Key-Ho Park)

B.A., Geography, *summa cum laude*, Seoul National University, Republic of Korea

February 2015

PUBLICATIONS

In preparation or in review

1. **Song, I.**, and D. Kim. In preparation. Extensive examination the association of spatial autocorrelation and machine learning.
2. **Song, I.**, and H. Luan. In review. County-level association of mortality rates and unemployment rates in the United States: a Bayesian spatio-temporal modeling approach. *Social Science & Medicine*.

Published

1. Kim, D., and **I. Song**. In press. Predicting model improvement by accounting for spatial autocorrelation: A socio-economic perspective. *The Professional Geographer*. (DOI: 10.1080/00330124.2020.1812408)
2. **Song, I.**, Kim, O.-J., Choe, S.-A. and S.-Y. Kim. (2020). Spatial heterogeneity in the association between particulate matter air pollution and low birth weight in South Korea. *Environmental Research* 191, 110096. (DOI: 10.1016/j.envres.2020.110096)
3. Park, Y., **Song, I.**, Yi, J., Yi, S.-J., and S.-Y. Kim. (2020). Web-based visualization of scientific research findings: national-scale distribution of air pollution in South Korea. *International Journal of Environmental Research and Public Health* 17(7): 2230. (DOI: 10.3390/ijerph17072230)
4. Kim, D., Lee, J.-Y., Seo, J., and **I. Song**. (2019). Recolonization of native and invasive plants after large-scale clearance of a temperate coastal dunefield. *Applied Geography* 109, 102030. (DOI: 10.1016/j.apgeog.2019.05.007)
5. **Song, I.**, Lee, C., and K.-H. Park. (2018). An Ensemble Machine Learning from Spatio-temporal Kriging for Imputation of PM₁₀ in Seoul, Korea. *Journal of the Korean Geographical Society* 53(3): 427-444. (in English; a direct link for the PDF file is available: <https://bit.ly/2LF7HK7>)
6. Kim, S.-Y., and **I. Song**. (2017). National-scale exposure prediction for long-term concentrations of particulate matter and nitrogen dioxide in South Korea. *Environmental Pollution* 226(2017): 21-29. (DOI: 10.1016/j.envpol.2017.03.056)
7. **Song, I.**, and S.-Y. Kim. (2016). Estimation of Representative Area-Level Concentrations of Particulate Matter (PM₁₀) in Seoul, Korea. *Journal of the Korean Association of Geographic Information Studies* 19(4): 118-129. (in Korean, English abstract available; DOI: 10.11108/kagis.2016.19.4.118)
8. Eum, Y., **Song, I.**, Kim, H.-C., Leem, J.-H. and S.-Y. Kim. (2015). Computation of geographic variables for air pollution prediction models in South Korea. *Environmental Health and Toxicology* 30: 70-83. (DOI: 10.5620/eh.t.2015010)

RESEARCH EXPERIENCE

Graduate Employee (Research Assistant), University of Oregon **June 2020 – September 2020**

- Acquiring base data for spatial and spatiotemporal analysis of the association between HIV, HCV, COVID-19, and sociodemographic factors
- Analyzing the acquired data using conventional and Bayesian spatial analysis methods

Researcher, The Institute for Korean Regional Studies, Seoul National University, Republic of Korea
October 2017 – October 2019

- Modeling spatio-temporal dynamics of particulate matter air pollution in Seoul with spatio-temporal kriging and machine learning techniques

Research Assistant, National Research Foundation of Korea, Republic of Korea **September 2017 – August 2019**
Dynamics of coastal environment by climate change (PI: Daehyun Kim [Seoul National University])

- Investigating the descriptive and predictive contributions of spatial autocorrelation in geographic data
- Conducted a micro-scale quantitative analysis using ecological data of coastal dunes in Sindu-ri, South Korea

Research Assistant, National Research Foundation of Korea, Republic of Korea **August 2015 – August 2019**
Association of predicted particulate matter air pollution and health - Simulation and epidemiological studies on spatial exposure prediction modeling approaches (PI: Sun-Young Kim [National Cancer Center])

- Computing geographic variables with national scale geodatabases of South Korea
- Conducted spatial analysis of the association between particulate matter air pollution and low birth weight

Researcher, National Cancer Center, Goyang, Republic of Korea **January 2018 – December 2018**

- Investigating the contribution of traffic-related factors to the national-scale air pollution prediction model

Research Assistant, Brain Korea 21 Plus 4-Zero Land Creation Group, Seoul National University, Republic of Korea
March 2015 – February 2017

- Conducted analyses on the estimation of area representative particulate matter air pollution to cope with limited information on precise residential location

Research Assistant, The Seoul Institute, Seoul, Republic of Korea **January 2016 – March 2016**

- Conducted spatial analysis to investigate the association between local environments and obesity in Seoul

Research Assistant, Korea Research Institute for Human Settlements, Anyang, Republic of Korea
October 2014 – November 2014

- Analyzed traffic accident reports to investigate the reasons of traffic accidents with text mining
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CONFERENCE PARTICIPATION**ORAL PRESENTATION**

Song, Insang, and Sun-Young Kim. 2016. Estimation of Representative Areal Concentrations of Particulate Air Pollution in Seoul, Korea. *Association of American Geographers 2016 Annual Meeting*. San Francisco, CA. March 29 – April 4, 2016.

SELECTED POSTER PRESENTATIONS

Song, Insang, and Sun-Young Kim. 2018. A study on the association between two air pollutants (PM₁₀, NO₂) and traffic-related variables in 2010. *Proceedings of the Korean Society of Atmospheric Environment* 2018: 210.

Song, Insang, and Sun-Young Kim. 2017. Impact of Neighborhood Definition on Spatial Analysis of the Association between Particulate Matter and Low Birth Weight in Geographically Weighted Regression. *Proceedings of the Korean Society of Environmental Health and Toxicology* 2017(10):259.

Song, Insang, and Sun-Young Kim. 2016. Local Difference of Association between PM₁₀ and Low Birth Weight. *Proceedings of the Korean Society of Environmental Health and Toxicology* 2016(10):297. (Awarded by the Korean Society of Environmental Health and Toxicology)

TEACHING EXPERIENCE

- Teaching Assistant, Analytical Methods in Geography (undergraduate) **Spring 2017**
 Teaching Assistant, Geographic Information System (undergraduate) **Fall 2015**
- Taught spatial data implementation and analysis with R for junior and senior students
 - Developed materials for assignments; taught elementary R language
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WORK EXPERIENCE

Instructor **August 2017**

Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Chonburi, Thailand

- For Marxan with Zones (Marxan-Z) and MAPS-MSA Regional Training Workshop under the support of PEMSEA and the Korea Maritime Institute (KMI) held in Chonburi, Kingdom of Thailand on August 9-10, 2017
- Developed instruction materials for implementation of a spatial reserve optimization programs Marxan and Marxan-Z

Instructor **May 2017**

Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Batangas, the Philippines

- For Marxan-Z Training Workshop under the support of PEMSEA and the Korea Maritime Institute (KMI) held in Batangas City, Philippines on May 24-26, 2017
- Compiled instruction materials using local spatial data for a delineation of marine protect area in the Verde Island Passage near Batangas city; developed data conversion tool for Marxan and Marxan-Z with Tcl/Tk in R

GIS specialist **February 2011 – November 2012**

Capital Corps, Republic of Korea Army, Republic of Korea

- Conducted spatial analyses for operations and drills; developed and launched an automatic tool for capturing web imagery; provided tactical maps
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SKILLS

R, Python, QGIS, GRASS GIS, SAGA GIS, ArcGIS, Julia, GeoDa, SPSS

AWARDS

Excellence Poster Award, The Korean Society of Environmental Health and Toxicology, October 2016.

Lokey Graduate Science Award, University of Oregon, October 2019.

SCHOLARSHIPS AND GRANTS

University of Oregon, Raymund First-Year Ph.D. Fellowship, USD 55,399, Fall 2019 – Spring 2020.

University of Oregon, Lokey Graduate Science Award, USD 6,000, Fall 2019.

Seoul National University, Lecture and Research Scholarship, USD 2,700*, Spring 2017.

Seoul National University, Merit-based scholarship, USD 3,500*, Spring – Fall 2015 and Fall 2016.

The Sung Ryun Scholarship Foundation, Superior Academic Performance, USD 2,500*, Spring 2014.

Seoul National University, Undergraduate Research Grant, USD 2,600*, Fall 2013 and Fall 2014.

Seoul National University, Superior Academic Performance, USD 2,400*, Fall 2009 – Spring 2011.

* approximate values; subject to the exchange rate of KRW/USD.

PATENTS

Korea Patent No. 1991796, Method of Automatically Generating Input File of Marxan with Zones from Shapefile
(with Jung-Ho Nam and Jongseo Yim).

OTHER PERSONAL INFORMATION

Nationality: Korea, Republic of (South)

Language proficiency: Korean (Native), English (Professional proficiency)