

# Goeun Jung

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## EDUCATION & CAREER

### National Cancer Center, South Korea

Goyang, Korea

- Position: Researcher (Spatial Analysis)
- PI: Prof. Sun-Young Kim

Present

### Korea University

Seoul, Korea

- M.S. in Geography / Spatial Analysis
- Advisor: Prof. Young-ho Kim

Aug. 2022

### Kongju National University

Seoul, Korea

- B.A. in Geography
- Advisor: Prof. Man-gyu Kim

Feb. 2020

## RESEARCH INTERESTS

Human mobility, Air Pollution, Spatial Modeling, Spatio-temporal change, Land use and Land cover change

## PUBLICATIONS

- [Under Review] Mongju Jeong, **Goeun Jung**, Won Kyung Kim, Sun-Young Kim. (2025). Impact of Temporally-Varying Geographic Predictors on Long-Term Air Pollution Exposure Estimation for Epidemiology 2025
- [Manuscript in Preparation] **Goeun Jung**, Won Kyung Kim, Kyumin Kim, Seokmin Ji, Dongook Son, Soriul Kim, Chol Shin, Miji Kim, Sun-Young Kim. (2025). Analyzing Personal PM2.5 Exposure Through APT (Activity-Place-Transport) variables: Integration of Time Activity Patterns, Place, and Transportation 2025
- Won Kyung Kim, **Goeun Jung**, Dongook Son, Sun-Young Kim. (2024). Geospatial Data Pipeline to Study the Health Effects of Environments -Limitations and Solutions- 2024
  - Journal of the Korean Association of Geographic Information Studies Volume 27, Number 3
  - DOI: <https://doi.org/10.11108/kagis.2024.27.3.060>
- **Goeun Jung**, Youngho Kim. (2022). A Spatio-temporal Pattern Analysis of Seoul Bus Use After COVID-19 Outbreaks Using Big Data-based Network Cluster Analysis 2022
  - Journal of the Korean Cartographic Association Volume 22, Number 1
  - DOI: <https://doi.org/10.16879/jkca.2022.22.1.035>
- **Goeun Jung**, Youngho Kim. (2021). Modeling of Spatio-temporal changes of Urban Sprawl in Jeju-island: Using CA (Cellular Automata) and ARD (Automatic Rule Detection) 2021
  - JAKG (Journal of the Association of Korean Geographers) Volume 10, Number 1
  - DOI: <https://doi.org/10.25202/JAKG.10.1.9>

## WORK EXPERIENCE

### National Cancer Center, Department of Public Health & AI, Researcher

Goyang, Korea

- Personal PM Exposure
  - Investigating the Relationship between Personal PM Exposure and Personal Activity and Mobility using Time-Activity Diary and GPS Data
  - Analyzing Spatial Variability of Personal PM Exposure in Microenvironments
- Air Pollution Predictive Modeling
  - Predictive Modeling of Outdoor Air Pollution (PM10, PM2.5, O3, NO2) Using Ordinary Kriging
  - Calculating Approximately 320 Geographic Variables, including Land Cover, Census, Transportation, and Environmental Factors, as Predictors

Sep 2022 – Present

### National Cancer Center, Graduate Researcher

Korea

- Geospatial Data Pipeline Construction

Aug 2020 – Jan 2021

- Expanding the Spatiotemporal Coverage of Data Used in Air Pollution Modeling
- Automating Data Collection and Processing for DEM, NDVI, Census, and Additional Data for Air Pollution Modeling

Apr 2022 – Aug 2022

**Korea Environment Institute (KEI), Climate and Air Quality Research Group, Research Intern**

Sejong, Korea  
July 2018 –Oct 2018

- Analysis of Regional Variations in NO<sub>2</sub> Emission by Source for Particulate Matter Reduction and Creation Map
- Literature Review on NO<sub>2</sub> Research
- Spatial Data Management Using R
- Processing of CrIS Satellite Images

## RESEARCH EXPERIENCE

<b>Identification of high-risk areas for cancer incidence and mortality and examination of associations with geographic characteristics using geospatial big data in South Korea (National Cancer Center)</b>	2025
<ul style="list-style-type: none"> <li>• Construction of district-level long-term cancer incidence and mortality rates and risk factors, and exploration of their spatial distributions</li> <li>• Identification of high-incidence and high-mortality areas for each cancer type using spatial clustering</li> <li>• Evaluation of the effects of spatial risk factors on cancer outcomes using spatial statistical models</li> </ul>	
<b>Assessment of Personal Air Pollution Exposure in Established Elderly Cohorts (Korea Disease Control and Prevention Agency)</b>	2023
<ul style="list-style-type: none"> <li>• Exploration of outdoor and indoor PM<sub>2.5</sub> concentrations</li> <li>• Calculation of geographic variables and long-term prediction of outdoor PM<sub>2.5</sub> for cohort participants</li> <li>• Analysis of indoor PM<sub>2.5</sub> exposure according to indoor environmental conditions</li> <li>• Personal PM<sub>2.5</sub> exposure modeling – analysis of PM<sub>2.5</sub> exposure by individual activities, places, and transportation modes, analysis of personal PM<sub>2.5</sub> exposure according to individuals' spatiotemporal mobility</li> </ul>	
<b>Long-term Exposure to Air Pollution Associated with Climate Change, Health Effect, and Socioeconomic Disparity (Korea Research Foundation)</b>	2022 - Present
<ul style="list-style-type: none"> <li>• Construction a geospatial data pipeline</li> <li>• Computation and validation of geographic variables</li> <li>• Geocoding and predicting air pollution (PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub>, O<sub>3</sub>) for cohort participants</li> </ul>	
<b>Research Assistant: Land Cover Change Prediction Modeling (Korea Research Foundation)</b>	2018 – 2019
<ul style="list-style-type: none"> <li>• Analysis of Land Cover Change by Administrative Region using LUCK2018 Model</li> <li>• Literature Review on Land Cover Changes Modeling</li> <li>• Construct of a Databased and Thematic Maps for Land Cover Change Modeling</li> <li>• Analysis of the Impact of Spatial Data Weighting on Land Cover Change Prediction (Presented at the 2018 Fall Conference of The Korean Association of Geographic Information Studies)</li> </ul>	
<b>Research Assistant (Proposal Writing): Spatiotemporal Analysis of COVID-19 Spread</b>	2021
<ul style="list-style-type: none"> <li>• Verification of Social Distancing Impact Using Population Mobility and Media Data</li> <li>• Crawling and Text mining of Articles and Comments Using R for COVID-19 Media Trends</li> <li>• Analysis of Regional Traffic Volume Changes Before and After COVID-19</li> </ul>	
<b>Research Assistant at ChungNam Institute: Network Analysis Using Road Networks</b>	2019
<ul style="list-style-type: none"> <li>• Conducted Network Analysis to Study Vehicle Travel Times to Cultural Facilities Utilizing Precision Road Networks</li> <li>• Prepared Network Analysis Reports and Created Visualizations</li> </ul>	
<b>Project: Detection of Land Cover Change Using Multi-Temporal Satellite Images</b>	2019
<ul style="list-style-type: none"> <li>• Creation of Land Cover Maps Using Landsat Satellite Images</li> <li>• Detection of Land Cover Change and Societal Analysis</li> </ul>	

<b>Research Assistant: Population Growth Rates due to Innovative City Development</b>	2018
• Creation of a Stepwise Population Growth Rate Map for Adjacent Areas	

## AWARDS

<b>ICA (International Cartographic Association) Scholarships Award</b>	2024
<b>Outstanding Paper Award</b> , KAGIS (The Korean Association of Geographic Information Studies) Fall Academic Conference	2023
<b>ESRI (Environmental Systems Research Institute) Map Contest - Excellence Award (MAPtelligence)</b> – <i>Presentation on the Spatiotemporal Patterns of Bus Mobility Before and After COVID-19</i>	2022
<b>Outstanding Paper Award</b> , Korea University	2022

## Academic Conference

▪ KAGIS (The Korean Association of Geographic Information Studies), <i>Presentation on “The effect of weighting by spatial data on prediction of land-use change using relative favorability function model”</i>	2017
▪ AKG (The Association of Korean Geographers), <i>Presentation on “Jeju Island Sprawl Prediction Using Cellular Automata”</i>	2020
▪ KCA (The Korean Cartographic Association), <i>Presentation on “Changes in spatial and temporal patterns of bus use in Seoul due to the COVID-19 outbreak”</i>	2021
▪ KSEH (Korean Society of Environmental Health), <i>Presentation on “Correlation of Air Pollution and Traffic Volume: Comparison between Road Density and Traffic Volume Estimates”</i>	2022
▪ ISEE (International Society for Environmental Epidemiology), <i>Presentation on “Construction of a geospatial data pipeline for epidemiology: a case study of land use and road network in South Korea”</i>	2023
▪ CaGIS + UCGIS Symposium, <i>Presentation on “Identification of visited places and activities most contributable to the spatio-temporal variation in PM<sub>2.5</sub>”</i>	2024
▪ ISES (International Society of Exposure Science) -ISEE (International Society for Environmental Epidemiology), <i>Presentation on “Mobility and PM<sub>2.5</sub>: GPS-based Mobility and associated Personal Exposure to fine particles”</i>	2025

## SELECTED COURSEWORK

### GIS and RS

Remote Sensing Geographic Information Systems (Undergraduate)  
 Understanding and Utilizing Satellite Image Information (Undergraduate)  
 Remote Sensing (Undergraduate)  
 Geographic Information Systems (Undergraduate)  
 Geographic Information Systems (Undergraduate)  
 Application of Geographic Information Systems (MS)  
 Applied GIS (MS)

### Environment and Climate

Understanding Particulate Matter (Undergraduate)  
 Weather Observation and Forecasting (Undergraduate)  
 Climate Change Science (Undergraduate)

### Statistics

Health Mathematics (MS)  
 Environmental Analysis Statistics  
 (Undergraduate)