

Seungyeon Lee

Kyung Hee University

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Education

2023 – 2025

MS in Geography (Specialization: GIS)

- Kyung Hee University, Seoul, South Korea
- Advisor : Dr. Chul Sue Hwang
- Thesis: Spatiotemporal Network-Based Traffic Congestion Prediction Using Grid Data – Case Study of Atlanta, Georgia, USA
- GPA: 4.25 / 4.3 (Equivalent to 3.95 / 4.0)

2019 – 2023

BS in Geography

- Kyung Hee University, Seoul, South Korea
- GPA: 3.87 / 4.3 (Equivalent to 3.6 / 4.0)

Research Interest

- GIS and Spatio-Temporal Data Analytics
- Urban Mobility & Traffic Safety
- GeoAI & Spatial Deep Learning
- Spatial Disparity & Accessibility

Publications

- [5] Cho, Y., Seong, J. C., **Lee, S.**, & Hwang, C. S. (2025). 교차로 교통환경 복잡성과 교통사고의 상관성 연구 -미국 조지아주 애틀랜타를 사례로- (A Study on the Correlation Between Intersection Traffic Environment Complexity and Traffic Accidents: A Case Study of Atlanta, Georgia, USA). *Journal of the Korean Geographical Society*, 60(4), 451–463.
- [4] Seong, J. C., **Lee, S.**, Cho, Y., & Hwang, C. S. (2025). Beyond the Road: A Regional Perspective on Traffic Congestion in Metro Atlanta. *ISPRS International Journal of Geo-Information*, 14(2), 61.
- [3] **Lee, S.**, Hwang, T., Do Lee, W., & Hwang, C. S. (2024). 청년인구 일상 활동 영역과 행복주택 입지의 공간적 불일치에 관한 연구 (Unveiling Spatial Disparities between Public Rental Housing and Young People's Daily Activity Spaces). *Journal of the Korean Geographical Society*, 59(4), 573–584.
- [2] Kim, S., **Lee, S.**, Kim, M., Lee, C., & Kang, J. Y. (2024). 에이전트 기반 모델링을 활용한 소아·청소년 의료 서비스 취약지 분석-서울 서남권 4개 자치구를 대상으로 (Vulnerability

Assessment for Pediatric Healthcare Services Using Agent-based Modeling: A Case Study of Four Districts in Southwest Seoul). *Journal of the Korean Geographical Society*, 59(2), 196–209.

- [1] Lee, S., Hwang, T., Do Lee, W., & Hwang, C. S. (2023). 최근린 권역을 고려한 인구감소지역 간 흐름의 공간적 연관성 탐색에 관한 연구 (Measuring Spatial Associations of Intercity Flows between Depopulation Regions Considering Nearest Neighborhoods). *Journal of the Korean Geographical Society*, 58(6), 644–656.

Conference Presentations

- [9] Lee, S., Hwang, C. S., & Seong, J. C. (2025, June). Traffic congestion prediction using Spatio-Temporal Network-based GeoAI framework: A case study of Atlanta [Paper presentation]. *Proceedings of the Korean Geographical Society Conference*, Republic of Korea, 177.
- [8] Cho, S., Hwang, T., Lee, Y., Lee, S., & Hwang, C. S. (2024, April). Nonlinear analysis of high-resolution urban thermal environment using random forest method: Seoul, Korea [Poster presentation]. *2024 AAG Annual Meeting*, Honolulu, HI, United States.
- [7] Lee, S., Hwang, T., Do Lee, W., & Hwang, C. S. (2024, April). Unveiling Spatial Mismatch between Public Rental Housing and Youth's Activity [Paper presentation]. *2024 AAG Annual Meeting*, Honolulu, HI, United States.
- [6] Lee, S., Hwang, T., Hwang, C. S., & Lee, W. (2023, June). 공간분석기법을 활용한 지역 간 공간적 흐름의 유사성과 이질성 탐색 (Exploring similarities and heterogeneities of spatial flows between regions using spatial analysis techniques) [Paper presentation]. *Proceedings of the Korean Geographical Society Conference*, Republic of Korea, 147–148.
- [5] Hwang, T., Kim, K., Lee, Y., Cho, S., Lee, S., Hong, H., & Hwang, C. S. (2023, June). BiFlowLISA를 이용한 버스와 공유자전거 OD의 공간적 패턴 탐색 (Exploring spatial patterns of bus and shared bike OD using BiFlowLISA) [Paper presentation]. *Proceedings of the Korean Geographical Society Conference*, Republic of Korea, 154–155.
- [4] Yoo, S., Lee, S., & Lee, W. (2023, June). 인구감소지역별 인구변화 실태와 대응방안 (Current status of population change by depopulated areas and countermeasures) [Paper presentation]. *Proceedings of the Korean Geographical Society Conference*, Republic of Korea, 31.
- [3] Ji, S., Lee, S., Hwang, T., & Lee, W. (2022, September). 표준노드링크를 활용한 교통접근성 측정 오픈소스 패키지 개발 (Development of an open-source package for measuring transport accessibility using standard node-links) [Paper presentation]. *Proceedings of the Korean Society of Transportation Conference*, Republic of Korea, 275.
- [2] Lee, S. (2022, June). 동대문구 화재취약 지역분석: 동대문구 화재취약 지역선정을 위한 서비스 권역 분석 (Analysis of fire-vulnerable areas in Dongdaemun-gu: Service area analysis for selecting fire-vulnerable areas in Dongdaemun-gu) [Poster presentation]. *Proceedings of the Korean Geographical Society Conference*, Republic of Korea, 263.
- [1] Kim, S., Min, Y., Park, S., Lee, S., & Jeong, S. (2021, June). 우리동네 10분 '슬세권' 만들기-동대문구 (회기·이문) 생활 SOC 현황 및 주민 인식 분석 (Creating a 10-minute 'Sulse-gwon' in our neighborhood: Analysis of living SOC status and resident perception in

Dongdaemun-gu) [Poster presentation]. *Proceedings of the Korean Geographical Society Conference*, Republic of Korea, 172.

Awards

2nd place, Spatial Analysis Research Contest | Dec 2022

- Project: Analysis of Fire Vulnerable Areas in Dongdeamun-gu, Seoul

1st place, Spatiotemporal Information Application Paper Contest | Feb 2022

- Project: Analysis of Hourly Fire Accessibility Through the Construction of Road Networks

3rd place, Spatial Big Data Academic Festival & Competition | Dec 2019

- Project: Analysis of Spatial Characteristics of Domestic City Brand Slogans

Scholarships

Global Research Support Program (J-1 Program) | IITP¹

- Visiting Graduate Student at University of West Georgia, Georgia, USA (Jun 2024 – Feb 2025)
- Selected for a highly competitive, fully-funded international research fellowship based on academic and research excellence.
- Total Grant: 60,000,000 KRW (Approx. 41,465.1 USD)

Academic Excellence Scholarship for Top Graduates | Kyung Hee University

- Full tuition (2023 – 2024)
- Awarded to students with a cumulative GPA of 3.8/4.3 or higher for outstanding academic performance.
- Total Award: 12,860,000 KRW (Approx. 8,887.35 USD)

Global Major Field Training Grant | Kyung Hee University

- Selected for an intensive overseas academic training program in University of West Georgia, Georgia, USA (May 2019)
- Total Grant: 3,000,000 KRW (Approx. 2,073.26 USD)

Work Experience

Visiting Researcher | University of West Georgia, USA (Jun 2024 – Aug 2025)

- Project: Global ICT Professional Training Program (Funded by IITP, South Korea).
- Research: Focused on detecting urban traffic risks areas using spatial big data and GeoAI frameworks.

¹ IITP: Institute for Information & Communications Technology Planning & Evaluation, Republic of Korea (under the Ministry of Science and ICT)

- Outcome: Published a co-author research paper in the ISPRS International Journal of Geo-Information (IJGI)
- Supervisors: Dr. Chul Sue Hwang and Dr. Jeang Chang Seong

Graduate Teaching Assistant | University of West Georgia, USA (Jul 2024)

- Workshop: UWG Geospatial Workshop for Kyung Hee University undergraduate students.
- Responsibility: Managed a group of international students and served as a project tutor.
- Technical Support: Provided hands-on assistance with ArcGIS pro and geospatial data analysis.
- Supervisors: Dr. Chul Sue Hwang and Dr. Jeang Chang Seong

Research Assistant | Kyung Hee University, South Korea (Jun 2022 – Sep 2022)

- Project: Development of Support Strategies for Depopulated Regions in South Korea (Funded by the Korea Research Institute for Local Administration).
- Role: Analyzed nationwide population decline indicators using road network analysis and large-scale demographic datasets.
- Supervisors: Dr. Chul Sue Hwang and Dr. Won Do Lee

Program Assistant (Office Assistant) | Kyung Hee University, South Korea (Jul 2022 – Feb 2025)

- Project: Geospatial Information Innovation Cultivation Program (Funded by the Spatial Information Industry Promotion Agency).
- Responsibility: Coordinated academic activities for undergraduate students and provided mentoring in GIS applications.
- Supervisor: Dr. Chul Sue Hwang

Extracurricular Activities

Teaching Assistant, Applications of Geographic Information and Technology | 2022 – 2023

- Provided technical tutoring to undergraduate students on drone imagery collection and geospatial data processing.
- Conducted hands-on training for software including Pix4D Mapper and ArcGIS Pro.

Conference Volunteer, The Korean Geographical Society & CJK Conference | 2022 – 2023

- Assisted in session management and logistics for the 2022 Annual Conference of the Korean Geographical Society.
- Supported operational activities for the 2023 Korea–Japan–China (CJK) Regional Conference.

Academic Club Member, Human Geography Club | 2019 – 2021

- Focused on human geography theories and collaborative spatial data projects.
- Won **3rd Place** at the Spatial Big Data Academic Festival & Competition (Dec 2019)

Skills & Methodologies

Technical Skills

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| Language | <ul style="list-style-type: none">English (IELTS: overall 7.0)Korean (Native) |
| Programming & Simulation | <ul style="list-style-type: none">Python (Advanced)PyTorch (Intermediate)R (Intermediate)AnyLogic (Intermediate) |
| GIS & Remote Sensing | <ul style="list-style-type: none">ArcGIS Pro (Advanced)QGIS (Advanced)Pix4D Mapper (Advanced)ERDAS Imagine (Intermediate) |

Research Methodology

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| Spatial Statistics | <ul style="list-style-type: none">Spatial Autocorrelation (Moran's I / LISA)Spatial Flow Association (SFlowLISA / BiFlowLISA)Spatial Regression (GWR / MGWR)Spatial Clustering (Getis-Ord Gi*)Spatio-Temporal Clustering (Space Time Cube, Emerging Hot Spot)Mann-Kendall Test |
| Spatial Analysis | <ul style="list-style-type: none">Road Network Analysis (Dijkstra's algorithm, Service Area)Accessibility Modeling (2SFCA / E2SFCA)Agent-based Modeling |
| GeoAI & Machine Learning | <ul style="list-style-type: none">GNN-based frameworks (GCN, TGCN, STGCN GC-LSTM)LSTMRandom ForestXGBoost |

Reference

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| Dr. Chul Sue Hwang | <ul style="list-style-type: none">Professor, Department of Geography, Kyung Hee UniversityE-mail: hcs@khu.ac.krRelationship: Thesis Advisor (MS) / Academic Advisor (BS) |
| Dr. Jeon-Young Kang | <ul style="list-style-type: none">Assistant Professor, Department of Geography, Kyung Hee UniversityE-mail: geokang@khu.ac.krRelationship: Thesis Committee (MS) |
| Dr. Jeong Chang Seong | <ul style="list-style-type: none">Professor, School of Field Investigations & Experimental Sciences, University of West GeorgiaE-mail: jseong@westga.eduRelationship: Research Supervisor during J-1 Exchange Program |