

JOOYOUNG YOO

CONTACT INFORMATION

jooyoung.yoo@emory.edu

<https://jooyoung01.github.io>

EDUCATION

Emory University

Ph.D. in Computer Science (Advisor: Dr. Joon-Seok Kim)

PRESENT

University of Southern California

M.S. in Spatial Data Science (Advisor: Dr. John Wilson, and Dr. Yi Qi)

2025

Myongji University

M.S. in Data Technology (Advisor: Dr. Daewon Kim)

2020

Myongji University

B.E. in Information and Communication Engineering

2016

PUBLICATIONS

Joon-Seok Kim, **Jooyoung Yoo**, Su Yeon Han, Andreas Züfle (2025), “An Agile Design of Activity-based Mobility Intervention using Large Language Models” *The 8th ACM SIGSPATIAL International Workshop on Geospatial Simulation (GeoSIM '25)*, Nov.3, 2025

Su Yeon Han, **Jooyoung Yoo**, Alexander Michels, Shaowen Wang, Joon-Seok Kim (2025), “Vulnerable Neighborhood Explorer (VNE): An Open-Source Visual Analytics Tool for Exploring Social Vulnerability to Disasters across Different Neighborhoods” *SoftwareX*, 31, p.102233.

Bhavyesh Sajja, Wenting Qiu, **Jooyoung Yoo**, Seon Ho Kim (2025) “Object Detection in Real-World Smart City Applications: A Case of Truck Detection in California Highways,” *In IEEE 41st International Conference on Data Engineering Workshops (ICDEW)*, pp. 55-62, May.23, 2025

Siqin Wang, **Jooyoung Yoo**, Wenhui Cai, Fan Yang, Xiao Huang, Qian Chayn Sun, Shaokun Lyu (2025). “Reducing the social inequity of neighborhood visual environment in Los Angeles through computer vision and multi-model machine learning.” *Sustainable Cities and Society*, 119, p.106062.

Jooyoung Yoo, Reem Emad Shtaiwi, Mohammad Yasin, Dweep Trivedi, Abdullah Alfarrarjeh, Amani Abu Jabal, Seon Ho Kim (2024), “Towards real-world deployment of deep learning solutions for global road damage detection and classification,” *IEEE Big Data, Big Data Cup Challenge (ORDDC'2024)*, awarded the **Bronze Prize in an international challenge**, pp. 8485-8494. Dec.17, 2024

Jooyoung Yoo, Abdullah Alfarrarjeh, Krish Sukhani, Seon Ho Kim, and Cyrus Shahabi (2024). “STVD: Synchronized Truck Video Dataset with RGB and IR cameras for continuous truck traffic monitoring,” *IEEE International Workshop on AI and Computer Science*, Dec.9, 2024

Jooyoung Yoo, Seon Ho Kim, Krish Sukhani, Min Sang Yoo, and Cyrus Shahabi (2024). “Truck detection and counting in low-light condition: do we need infrared camera?,” *In IEEE International Conference on Big Data and Smart Computing*, Feb.15, 2024

Jooyoung Yoo, and Daewon Kim (2020). “Development of a new pedestrian avoidance algorithm considering a social distance for social robots,” *Journal of Broadcast Engineering* 25.5 : 734-741.

Jooyoung Yoo, and Jin Lee Park (2020). “Examining the socialization of grit and the effects of peer community and teacher closeness using longitudinal social network analysis,” *Journal of Learner-Centered Curriculum and Instruction*, 20(14), pp.1267-1285.

Jooyoung Yoo, Joomin Kim, Sungsik Yun, and Daewon Kim (2013). “Development of a scenario-based work distribution function for teleoperation under multi-user and multi-robot environments,” *IEEE International Symposium on Robotics 2013*

RESEARCH EXPERIENCE

Individual Tree Detection, Segmentation for Urban Greening Project

MAY. 2024 – AUG. 2025

Full-time Student Researcher (Advisor: Dr. John Wilson, and Dr. Yi Qi)

- Developed detection and segmentation models using aerial imagery to identify and segment individual trees.
- Designed a training and prediction workflow for LA city administrators, enabling them to count trees and calculate canopy areas using GIS, without the need for coding skills.

Spatial Pattern Mapping using Street View: Human Perception Project MAR. 2024 – SEP. 2024
Volunteer Student Researcher (Advisor: Dr. Siqin Wang)

- Conducted data collection at 50-meter intervals across Los Angeles County using GIS software, Python libraries, and 360-degree imagery from Google and Mapillary Street View APIs.
- Applied machine learning methods, including segmentation and classification, to analyze Street View imagery for sentiment analysis of various locations.
- Visualized spatial patterns of six human emotions (Beautiful, Wealthy, Livable, Safe, Boring, Depressing) to map urban perception.

Truck Detection and Counting Project MAY. 2023 – MAY. 2024
Full-time Student Researcher (Advisor: Dr. Seon Ho Kim)

- Published two research papers as the first author while leading a team of 7 in synchronized data collection and labeling using RGB and infrared videos.
- Developed a truck detection and tracking system with YOLOv5 and DeepSORT, enabling monitoring under various light conditions.
- Provided research data to USC Keck Medical School, supporting environmental studies on the impact of truck traffic on residential areas.
- Led the development of a web service for data collection and visualization, supporting STEM students from four universities with database modeling and implementation.
- Conducted longitudinal network analysis to examine changes in student friendships and academic motivation over time.

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| EMPLOYMENT | Spatial Data Lab (SDL) at Harvard University , <i>Intern</i> | 2024 - 2025 |
| | Spatial Sciences Institute of USC , <i>Database Analyst, Full-time Researcher</i> | 2024 - 2025 |
| | Keck School of Medicine of USC , <i>Full-time Student Researcher</i> | 2023 – 2024 |
| | Integrated Media Systems Center of USC , <i>Teaching Assistant, Student Researcher</i> | 2023 – 2024 |
| | Joongbu University , <i>Web Developer</i> | 2020 – 2022 |
| | Techsphere , <i>Computer Vision AI Software Engineer</i> | 2020 – 2021 |
| | Myongji University , <i>Research Assistant, Teaching Assistant</i> | 2018 – 2020 |
| | Konkuk University , <i>Web Developer</i> | 2018 |
| | Korean Dictionary , <i>Co-founder</i> | 2013 – 2017 |
| | †Non-profit Organization | |

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| AWARDS | Bronze Prize(3rd Place), Optimized Road Damage Detection Challenge 2024, IEEE BigData | 2024 |
| | Best Presenter – The 23rd KOCSEA Technical Symposium | 2023 |
| | Best Presenter – USC CKIDS DataFest Fall 2022 | 2022 |

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| SKILLS | DL Frameworks: Pytorch, Keras, Tensorflow, Ultralytics | |
| | Languages: Python, R, C++, Java, JavaScript, SQL | |
| | Other: Git, Linux, Matlab, ArcGIS Pro, QGIS, SPSS, L ^A T _E X – All professional proficiency or above | |