

# JOOYOUNG YOO

## MAILING ADDRESS

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United States

## CONTACT INFORMATION

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## EDUCATION

### University of Southern California

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

EXPECTED 2024

### Myongji University

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

2020

### Myongji University

B.E. in Information and Communication Engineering

2016

## PUBLICATIONS

**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. 2024 [Accepted]

**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 (OR-DDC'2024)*, **awarded the Bronze Prize in an international challenge**. [Accepted]

Siqin Wang, **Jooyoung Yoo**, Wenhui Cai, Fan Yang, Xiao Huang, Qian Chayn Sun, Shaokun Lyu (2024). "Reducing the social inequity of neighborhood visual environment in Los Angeles through computer vision and multi-model machine learning," [*Sustainable Cities and Society*-Under Review]

**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*

**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*

**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 – PRESENT

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 officials, enabling them to count trees and calculate canopy areas using GIS, without the need for coding skills.

### Homeless Encampment Detection and Counting Project

FEB. 2024 – PRESENT

Full-time Student Researcher (Advisor: Dr. Abdullah Alfarrarjeh)

- Led a team in data cleaning and statistical analysis, including labeling and developing an ensemble model capable of handling various conditions (occlusion, truncation, blurring) using mobile cameras.
- Conducted comparative studies on 144 trained models and preparing a research paper.

**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.
- Project Leader: Led a team of 7 in synchronized data collection and labeling with RGB and infrared videos, conducted experiments.
- Provided research data to USC Keck Medical School for environmental monitoring, contributing to studies on the impact of truck traffic on residential areas.
- Utilized YOLOv5 for object detection and DeepSORT model for tracking to detect and count trucks in various light conditions.
- Installed cameras and laptops at residential areas near truck routes for a 7-day monitoring period, demonstrating the effectiveness of infrared camera detection.

**Web-based Academic Integration Platform for STEM Students Project** FEB. 2020 – SEP. 2022  
*Research Assistant, Web Developer (Advisor: Dr. Enyoung Kang)*  
*NRF(National Research Foundation of Korea) Fund*

- Led the development of a web service for data collection and visualization involving STEM students from four universities.
- Designed and modeled database structures, including the creation of ER diagrams and development of database schema.
- Conducted longitudinal network analysis to observe and analyze changes in student friendships and academic motivation over time.

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

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

SKILLS	<b>DL Frameworks:</b> : Pytorch, Keras, Tensorflow, Ultralytics	
	<b>Languages:</b> Python, R, C++, Java, JavaScript, SQL	
	<b>Other:</b> Git, Linux, Matlab, ArcGIS Pro, QGIS, SPSS, L <sup>A</sup> T <sub>E</sub> X	– All professional proficiency or above