

# Jooyoung Yoo

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## EDUCATION

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**M.S.** in Spatial Data Science, University of Southern California, Los Angeles, CA present

**M.S.** in Data Technology, Myongji University, Seoul, Korea 2018

Thesis: Development of a New Pedestrian Avoidance Algorithm considering a Social Distance for Social Robots

*Advisor: Prof. Daewon Kim*

**B.E.** in Information and Communication Engineering, Myongji University, Seoul, Korea 2016

*Honors: Semester Honor Scholarship (2009)*

## PUBLICATIONS

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**Jooyoung Yoo**, Seon Ho Kim, Krish Sukhani, Min Sang Yoo, and Cyrus Shahabi. “Truck Detection and Counting in Low-Light Condition: Do We Need Infrared Camera?” In *IEEE International Conference on Big Data and Smart Computing* (2024)

**Yoo, J.** & Kim, D., “Development of a New Pedestrian Avoidance Algorithm considering a Social Distance for Social Robots”, *Journal of Broadcast Engineering* (2020)

**Yoo, J.** & Park, J., “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* (2020)

Kang, E., **Yoo, J.** et al., “Curriculum-related teaching and learning supplementary materials for students with disabilities (reorganization of curriculum)”, *National Institute of Special Education*, ISBN: 978-89-6095-013-9 (2021)

**Yoo, J.**, Kim, J., Yun, S., & Kim, D., “Development of a scenario-based work distribution function for tele-operation under multi-user and multi-robot environments.” In *IEEE ISR 2013 (pp. 1-3)*. IEEE. (2013)

Kim, J., Yun, S., **Yoo, J.**, & Kim, D. “Implementation of N: 1/1: N work distribution function for tele-operation under multi-user and multi-robot environments.” In *2013 10th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)* (pp. 328-330). IEEE. (2013)

**Yoo, J.**, “Super Developer's Dream: Challenging, questioning and thinking”, Seoul: *Micro Software* (pp.194-196), ISSN: 1227-6227. (2013, June)

## WORK EXPERIENCES

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- Research Assistant, **Keck School of Medicine of USC**, *Los Angeles, CA* May.2023~present
  - ✓ Development of Deep Learning Model for object detection
  - ✓ Research about Object Detection and Classification for Smart City (Department of Population and Public Health Sciences)
- Teaching Assistant, **IMSC, University of Southern California**, *Los Angeles, CA* Jul.2023~Aug.2023
  - ✓ USC Summer Programs for undergraduate students and graduate students (International Students)
  - ✓ Introduction to Artificial Intelligence (CSCI 360), Introduction to Machine Learning (CSCI 467) classes
- Software Engineer, **Techsphere**, *South Korea* Jul. 2020~Oct. 2021
  - ✓ Development of Vision Processing Software with Deep Learning (Vehicle Access Control system)
- Development & Contents Dep. Leader, Korean Dictionary, *South Korea* Feb.2013~Nov.2016
  - ✓ **Co-founder (Non-profit Organization)** - Brand new Korean Dictionary Platform
  - ✓ Developed a platform through collaboration with graphic designers and text writers to enhance Korean language vocabulary learning, contributing to subscribers enjoying a richer language lifestyle.
- Hardware Engineer, **Republic of Korea Air Force (ROKAF)**, *South Korea* Apr. 2009~May.2011
  - ✓ Radio Frequency Communication System Engineer, Staff Sergeant

## RESEARCH EXPERIENCES

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- Student Researcher, Truck Detection and Counting Project, IMSC of USC Feb.2023~present
  - ✓ Conducted data collection, labeling, model training.
  - ✓ **Led the paper** on IEEE BigComp 2024 conference paper, serving as the first author.
- Student Researcher, Medical Machine Learning Project, Keck School of Medicine of USC Feb.2023~present
  - ✓ **Developing machine learning-based clustering and classification models** for both image and tabular eye data.
  - ✓ Collaborating with Dr. Mark S. Humayun at the Keck School of Medicine
- Research Participant, **USC CKIDS DataFest Fall 2022** Sep.2022~Dec.2022
  - ✓ Research Title - Automatic Discovery of News Articles: Case of Police Misconduct (An automatic identification mechanism to effectively search articles about police misconduct)
  - ✓ Developed a Web Scraper for data collection from various newspaper websites.
  - ✓ Established an NLP-driven text mining workflow to extract names and details related to police misconduct.
  - ✓ **Awarded Best Presentation as a project presenter.**
- Software Developer, College of Education, Joongbu University, *South Korea* Feb.2020~Feb.2022
  - ✓ Web Developer (Javascript, Python)
  - ✓ **Research on the Development of a Web-based Collaboration Platform to Promote the Formation of Academic Integration Network for Engineering College Students for Future Social Competency Development**
    - Funded by Korean National Research Foundation

- Principal Investigator: Enyoung Kang, Ph.D.
- Research Assistant, Data Application Laboratory, Myongji University, *South Korea* Aug.2018~Aug.2021
- Software Developer, 2018, Artificial Intelligent R&D Challenge Jul. 2018
  - ✓ Python (Tensorflow) - Model, OpenCV(C++), Matlab - Image Synthesis & Factor Analysis
  - ✓ **Discrimination of Fake AI Generated Photo** (Ministry of Science and ICT, South Korea)
- Software Developer, Peer Laboratory, Konkuk University, *South Korea* May.2018~Dec.2018
  - ✓ Web Developer (R, Python)
  - ✓ **Examining the moderating effect of peer subgroup class norm on social status of aggressive children using social network analysis**
    - Funded by Korean National Research Foundation
- Software Developer, Robot Software Training Center (SimLab.), *South Korea* Dec.2015~Jun.2016
  - ✓ C Developer (Motor Control - Kinematics, Image Processing,)
  - ✓ Hardware Design with 3D Printing
  - ✓ **Development of Prosthetic Hand Robot with Image Processing**
    - Funded by Korea Institute for Robot Industry Advancement
- Team Leader, College of Engineering - Capstone Design, Myongji University, *South Korea* Dec.2014~Dec.2015
  - ✓ Hardware, Software Design (Brushless DC Motor Control Software)
  - ✓ **Development of Quadcopter Motor Control System**
- Software Developer, Robotics & Intelligent Systems Laboratory, Myongji University, *South Korea* Mar. 2013~Mar. 2015
  - ✓ C++ Developer (Robotics Simulation Environment with Haptic Technology, Marilou Simulator)
  - ✓ Development of Teleoperation Algorithm (Scenario-based Work Distribution Algorithm)
  - ✓ **Development of Teleoperation Service Engine and Robot System**
    - Funded by The Ministry of Knowledge Economy of the Republic of Korea
- Research Intern, Robotics & Intelligent Systems Laboratory, **Myongji University**, *South Korea* Aug. 2013~Dec. 2015

## TEACHING EXPERIENCES

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- Teaching Assistant, College of ICT Convergence, **Myongji University**, *South Korea* Feb. 2021~Feb.2023
  - ✓ Capstone Design 1, 2: Senior Project
- Invited Speaker, **Korean Society of Expressive Arts Psychotherapy**, *South Korea* Jul. 2019
  - ✓ Movie Making with AI for Art Psychotherapist (**Image Processing, Deep Learning**)
- Teaching Assistant, College of ICT Convergence, **Myongji University**, *South Korea* Feb. 2018~Aug.2018
  - ✓ Linear algebra, Algorithm, UX design(Design Thinking)
- Tutor, Department of Communication and Information, **Myongji University**, *South Korea* Sep. 2014~Dec.2014
  - ✓ “Introduction to Computer Communications” (C language, Computer Network)

## < VOLUNTEER ACTIVITIES>

- Education Assistant, **Multicultural children Support Program**,  
Jongnogu Multicultural Family Support Center, *South Korea*

Feb.2014~Nov.2014

## RESEARCH INTERESTS

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**Digital Image Processing (Computer Vision)**  
**Machine Learning, Deep Learning**  
**Geospatial Data Management**  
**Large-scale Rendering and Visualization**  
**GIS (Geographic Information System)**  
**Human-Centered Computing (HCC)**  
**Network Analysis (SIENA)**

## PROGRAMMING SKILLS

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**Python**  
**C++**  
**Javascript**  
**SQL**  
**R**  
**MATLAB**

## METHODOLOGICAL FRAMEWORK EXPERTISE

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### Machine Learning

**PyTorch, Keras, TensorFlow for Deep Learning**  
**YOLO for Object Detection**  
**OpenCV for Image Processing**

### Geospatial Analysis

**ArcGIS Pro**  
**QGIS**  
**ArcGIS Online**

### Web Development

**Node.js for Backend development**

### Statistical Data Analysis

**R-SIENA for Longitudinal Social Network Analysis (SIENA)**  
**SPSS and MPLUS for SEM (Structural Equation Modelling) Research Methodology**

## ADDITIONAL EXPERIENCES

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- Research Assistant, **Joongbu University**, *South Korea* June. 2021 ~ Jun. 2022
  - ✓ **Curriculum-related teaching and learning supplementary materials for students with disabilities (reorganization of curriculum)**, Contents developer, Research Accounting Manager
    - Funded by Ministry of Education: National Institute of Special Education
- Research Advisor, Dongyang University, *South Korea* Feb. 2020 ~ Jun. 2022
  - ✓ **Redefining the meaning of child-centered curriculum using text mining Funding Body**, Text mining and Semantic network analysis: Research advisor
    - Funded by Korean National Research Foundation
- Co-Investigator, Radboud University, *Netherland* Dec.2019 ~ Feb.2020
  - ✓ **Development of an Online Survey System**, Statistical Assistant
- Statistics Assistant, Korean Baptist Theological University, *South Korea* May. 2019 ~ Oct.2019
  - ✓ **Developing an Online Survey System** with Social Network Analysis, Statistical Method
- Survey Assistant, Korean Sport & Olympic Committee, *South Korea* Feb. 2019 ~ Nov.2019
  - ✓ Nationwide Paper Survey for Elderly Citizens (135 Facilities in 13 Cities, South Korea)
  - ✓ Senior Physical Education Facility Inspector (135 Facilities)
  - ✓ **Development and Business Evaluation of the Package Program for the Elderly Sports Activities**
    - Funded by Ministry of Culture, Sports, and Tourism of the Republic of Korea