

Jooyoung Yoo

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EDUCATION

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

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

- Research Student Worker, **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

- 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

- 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

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

Python
C++
Javascript
SQL
R
MATLAB

METHODOLOGICAL FRAMEWORK EXPERTISE

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

- 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