Yoonsu Kang

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INTERESTS

3D Computer Vision, Robot Learning

EDUCATION

University of Toronto Sep. 2026 – Current
- Ph.D. in Computer Science
- Advisor: Prof. Florian Shkurti

KAIST (Korea Advanced Institute of Science and Technology) Mar. 2021 – Feb. 2023
- M.S. in Mechanical Engineering
- Advisor: Prof. Kuk-Jin Yoon (Visual Intelligence Laboratory)
- GPA: 3.98/4.3

RWTH Aachen University - Mechanical Engineering Exchange Student Apr. 2019 – Aug. 2019

KAIST (Korea Advanced Institute of Science and Technology) Mar. 2016 – Feb. 2021
- B.S. in Mechanical Engineering, Minor in Electrical Engineering
- GPA: 3.84/4.3

WORK EXPERIENCE

AI Lead, VMONSTER – Seoul, Korea Jul. 2023 – Jun. 2026
- Founding member of an early-stage startup developing real-time interactive AI avatar agent services
- Led the development of video generation AI models for photorealistic conversational avatars
- Optimized and deployed AI models on AWS cloud while achieving real-time performance ($\geq$ 25 FPS)
- Developed domain-specific Chat/Voice Agents for F&B, hotels, sales, and senior care, leveraging RAG and tool integration to improve accuracy and usability
- Three patents for lipsync model development and optimization methods

Intern, SIIS – Daejeon, Korea Sep. 2020 – Nov. 2020
- Designed and trained GAN-based super-resolution model for satellite images

Intern, Samsung Electro-Mechanics, Global Technology Center – Suwon, Korea Jan. 2019
- Designed a beam expander mount for laser equipment for increased stability and precise alignment

PUBLICATIONS

[J1] "Towards Enhanced Representation for Single-Source Domain Generalization in LiDAR Semantic Segmentation" **[paper]**
Hyeonseong Kim*, ***Yoonsu Kang****, Changgyoon Oh, Kuk-Jin Yoon, **IEEE TPAMI**

[C2] "Single Domain Generalization for LiDAR Semantic Segmentation" **[code] [paper]**
Hyeonseong Kim*, ***Yoonsu Kang****, Changgyoon Oh, Kuk-Jin Yoon, **CVPR 2023** - Proceedings of the IEEE/CVF conference on computer vision and pattern recognition.

[C1] "Pixel-wise Warping for Deep Image Stitching" **[paper]**
Hyeokjun Kweon*, Hyeonseong Kim*, ***Yoonsu Kang****, Youngho Yoon*, Wooseong Jeong, Kuk-Jin Yoon, **AAAI 2023** - Proceedings of the AAAI conference on artificial intelligence 37 (1), 1196-1204.

SELECTED PROJECTS

Audio-driven Lipsync Model Development Aug. 2024 – Jul. 2025
Work project in VMONSTER
- Developed a zero-shot lipsync model to reduce training cost while mitigating skin texture flicker and frame-to-frame inconsistency in photorealistic video generation
- Developed an Audio2Expression model with improved multi-lingual expression generation and enhanced naturalness lip synchronization

Object Detection AI Research for Intelligent Xray Luggage Scanning System Jul. 2021 – Feb. 2023
Joint-project with Korea Customs Service
- Designed EfficientNet-based object detection model training pipeline for x-ray colored images

Unmanned Swarm CPS Research Laboratory Program Mar. 2021 – Dec. 2021
Joint-project with Agency for Defense Development

- Developed an algorithm to reconstruct multi-view images from drones in a Cyber-Physical System into one image from one viewpoint using pixel-wise optical flow
- Co-inventor on two patents for deep stitching model and dataset generation methods

Visual Odometry using Stereo images Mar. 2021 – June. 2021

In-class term project for ME459

- Implemented overall process of stereo visual odometry with camera calibration, feature tracking, disparity and depth estimation

Ball Collector Mar. 2020 – June. 2020

In-class term project for ME400

- Implemented an overall turtlebot system in Gazebo simulation and ROS, with tasks including line tracing, slope climbing, ball harvesting and reaching goal position

SCHOLORSHIPS AND AWARDS

National Science and Engineering Scholarship, Korea Student Aid Foundation 2018 – 2019
Full tuition scholarship (4 semesters) awarded to undergraduates with academic excellence

Outstanding Achievement Award, ME, KAIST Fall 2017, Fall 2018
Highest honor by Department of Mechanical Engineering for distinguished academic excellence

Outstanding Mentor Award, KAIST Science Outreach Program Fall 2018
Awarded to mentors with excellent reviews from students

TEACHING EXPERIENCE

Academic Counseling Assistant, KAIST Aug. 2021 – Aug. 2022

MAS102 Calculus II Tutor, KAIST Fall 2017, Fall 2018, Fall 2019

Math/Science Tutor, KAIST Science Outreach Program Sep. 2017 – Dec. 2018

SKILLS

Programming Python, MATLAB, C++

Frameworks & Tools PyTorch, ROS, Git, AWS, Docker, FastAPI, SolidWorks

Languages English (*fluent*), Korean (*native*)