Yesung Hwang

Date of birth: 31/05/1996 | **Nationality:** South Korean (Republic of Korea) | **Phone number:**

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EDUCATION AND TRAINING

01/09/2024 – CURRENT Eindhoven, Netherlands
MASTER OF SCIENCE Eindhoven University of Technology

- Major in Artificial Intelligence and Engineering Systems

Website www.tue.nl

01/03/2015 – 25/08/2023 Seoul, South Korea
BACHELOR OF SCIENCE Yonsei University

- Major in Electrical and Electronic Engineering, Minor in Physics
- Thesis advisor: Dong-hyun Kim

Website https://www.yonsei.ac.kr/ | **Final grade** 98.1/100 |

Thesis Accelerated mGRE Image Reconstruction for MWI via Deep Learning

WORK EXPERIENCE

26/12/2021 – 31/12/2022 Daejeon, South Korea
UNDERGRAD INTERN KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

Undergraduate internship at Geometric AI Lab at KAIST, advised by professor Minhyuk Sung.

Hyperbolic Embedding Space for Language-driven Shape Manipulation
Description: This project addresses one-to-many relationships between text and images and proposes a novel method of shape manipulation. It connects text and shape by projecting a point (text) on a region (shape) of hyperbolic half-space and hyperbolic entailment cone in a high-dimensional hyperbolic CLIP(Contrastive Language-Image Pre-Training) embedding space.
Contribution:
- Analytically determined the projection point to a region on hyperbolic CLIP embedding space, drastically reducing the training time

Differentiable Discrete Poisson Equation Solver and Its Use
Description: Poisson equation is widely used for image and shape manipulation. However, it has never been used as a layer of a deep learning network
Skills: Algorithm developed on Python and PyTorch
Contribution:
- Analytically solving discrete Poisson equation in any dimensions with Dirichlet boundary condition using fast Fourier transform
- Developing an algorithm for solution computation to enhance backpropagation speed

Website https://www.kaist.ac.kr/

01/07/2021 – 31/08/2021 Seoul, South Korea
RESEARCH INTERN KAKAO MOBILITY

Real-time Continuous-time SLAM(Simultaneous Localization and Mapping) using Bounded Surface Features for large-scale indoor mapping
Description: High precision SLAM algorithm is essential for indoor large-scale mapping where GPS signal is unreliable.
Output: High precision map with less distortion. Experiment was conducted in multi-floor underground parking lot.
Skills: Developed on C++ and ROS
Contributions:
- Development of a novel method of extracting pointcloud features using the surfaces and its edge

- LiDAR distortion correction using IMU
- LiDAR-LiDAR calibration

Website https://www.kakaomobility.com

02/01/2020 – 28/02/2021 Seoul, South Korea
RESEARCH INTERN STRYX

City-scale High-definition 3D Mapping
Description: This project is to achieve centimeter-level precision mapping, which is crucial for automotive vehicles. This precision is essential for enabling vehicles to determine not only their relative position in relation to the environment but also their absolute location.
Output: Map of every main streets of Seoul with centimeter-level precision for automotive vehicles
Skills: Algorithm developed on C++
Contributions:
- Pointcloud registration algorithm development for city-scale mapping
- GPS noise detection and reduction
- Faster algorithm for street bundle adjustment

Precise Indoor SLAM for Integration with Outdoor Maps
Description: Seamless integration of indoor and outdoor map is critical for automotive vehicles. With the lack of GPS signal, the precision of indoor SLAM was not sufficient.
Output: Higher precision indoor map using advanced pointcloud features
Skills: Algorithm developed on C++ and ROS
Contributions:
- Faster feature detection algorithm
- Development of new type of pointcloud features for higher precision

LiDAR(Light Detection and Ranging)+IMU(Inertial Measurement Unit) Localization in Tunnels
Description: Navigating in tunnels is essential for automotive vehicles. Lack of GPS signal and pointcloud features are a challenge to this task.
Output: Lane-level precision localization using LiDAR, IMU and the map
Contributions:
- IMU filtering incorporating map information
- LiDAR lane detection algorithm
- Algorithm developed on C++ and ROS

03/12/2018 – 10/11/2019 South Korea
CONSCRIPTION SOLDIER REPUBLIC OF KOREA ARMY

Served as a coast guard

HONOURS AND AWARDS

01/03/2015
Yonsei Honors Program – Yonsei University

Merit-based Full Scholarship

LANGUAGE SKILLS

Mother tongue(s): **KOREAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C1	C1	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Git │ Robots Operating System (ROS) │ LaTeX │ C++ │ Linux │ Python

● TRAVELING

01/02/2023 – 25/07/2023
Backpacking

01/07/2017 – 23/09/2017
Backpacking