

Gahyun Kim, 김가현

BS Student

Inha University

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Education

Mar. 2020 ~ Feb. 2024

Inha University, B.S. in Information and Communication Engineering

Thesis: Development of Braille Translator Using Deep learning-Based Braille Recognition Model (*Advisor: Sungeun Hong*)

GPA: 3.71 / 4.5

Research Interests

- Computer vision and image processing
- Medical Informatics
- Human-Computer Interaction

Publications

- **Gahyun Kim**, Chanhoo Park, Hyuk-Jin Yoon, Dae-Hyun Kim*, "Research on Autonomous Bus Passenger Recognition Algorithm", *Journal of the Korean Society for Railway (JKSR)*, 2024

Research Experiences

- Research Intern at ICT 대중교통연구실, Korea Railroad Research Institute (KRII)
Sep. 2023 ~ Mar. 2024
 - ✓ Development of Smart Gate-Free System Software
 - ✓ Research on Efficient 3D Modeling Approaches for Railway Facilities based on NeRF

- ✓ Super Resolution and Deblurring in Fisheye Image
- ✓ Development of High-occupancy BRT Passenger Recognition Software

- **Research Student at AI & Media (AIM) Lab, Inha University**

Jan. 2023 ~ Jul. 2023

- ✓ Research and Investigation of Video Object Segmentation(VOS) Technology
- ✓ Building a Braille Recognition Model using Object Detection

Awards and Honors

- **정보통신 종합설계 최우수설계상**, Inha University (Jul. 2023)

Topic: Development of Braille Translator Using Deep learning-Based Braille Recognition Model

Projects

- **Development of high-occupancy BRT passenger recognition technology**, *Korea Railroad Research Institute (KRRRI)*

Jan. 2024 ~ Sep. 2024

- ✓ Development of vision-based passenger boarding and alighting completion detection technology
- ✓ Published a paper to JKSR(Journal of the Korean Society for Railway) as the first author

- **Research on Efficient 3D Modeling Approaches for Railway Facilities based on NeRF**, *Korea Railroad Research Institute (KRRRI)*

Nov. 2023 ~ Dec. 2023

- ✓ Investigation of 'NeRF(Neural Radiance Fields)' 3D Model Construction Technology
- ✓ 3D Modeling of Railway Facilities and Comparison of Results Using NeRF-based Modeling Technologies

- **Development of Smart Block-based Contactless Payment System**, *Korea Railroad Research Institute (KRRRI)*

Aug. 2023 ~ Oct. 2023

- ✓ Development of IoT System Using ROS2 and MQ Server for User Position Tracking on Smart Blocks, Smartphone User Matching, Payment, and LED Payment Status Display
- ✓ Field Experimentation in a Crowded Real-World Environment

- **Development of Braille Translator Using Deep learning-Based Braille Recognition Model, *Inha University***

Jan. 2023 ~ Sep. 2023

- ✓ Building a English Braille Image Dataset
- ✓ Training Object Detection Models
- ✓ Enhancing Translation Performance Using GPT-3 and Papago API
- ✓ Development of a Braille Translation App for the Visually Impaired Using Android Studio

- **Predicting Personal Color using Image Classification, *Inha University***

Sep. 2022 ~ Dec. 2022

- ✓ Building a Skin Tone Image Dataset
- ✓ Training Image Classification Models

- **Development of AI chatbot service for integrated performing arts information provision, *Hanium***

Apr. 2021 ~ Nov. 2021

- ✓ Deploying and Implementing an AI chatbot model based on public data.

Skills and Techniques

- Primary Languages: Python, PyTorch / Secondary Languages: C, C++
- Developing IoT system software with ROS2 and MQTT communication
- Training various computer vision models and reviewing papers
 - ✓ Object Detection: YOLO, Faster-RCNN, RAPID
 - ✓ Video Object Segmentation using Space-Time Memory Networks
 - ✓ Image Classification: ResNet, AlexNet

- ✓ NeRF: Instant-NGP, 3D-Gaussian-Splatting, F2-NeRF
- ✓ Pose Estimation: HRNet
- ✓ Image Deblurring: MTRNN, DeMFI, DeepDeblur
- ✓ Super Resolution: VDSR
- Image processing using OpenCV
- Big data analysis using MongoDB and MySQL
- Frontend development of applications using Android Studio
- Developing AI chatbots using Dialogflow