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

Languages

TOEIC: 795 / 990

TEPS: 284 / 600

TOEIC Speaking Test: Intermediate High (Speaking Score 150)

Research Experiences

- **Research Intern at ICT 대중교통연구실, Korea Railroad Research Institute (KRRI)**

  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 (KRRI)*

  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 (KRRI)*

  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 (KRRI)*

  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