

HYEONWOO JUNG

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EDUCATION

BS in AI Convergence

Mar. 2021 – Present

Soongsil University, Seoul, Republic of Korea

GPA: 4.32/4.5, Rank: 2/75

BoostCamp AI Tech 7th

Aug. 2024 – Feb. 2025

Naver Connect Foundation, Computer Vision

EXPERIENCE

Undergraduate Research Intern

Apr. 2025 – Present

KAIST, Advised by Prof. Jaegul Choo

- Developing query-adaptive multimodal video understanding methods that efficiently combine visual and audio information.

Undergraduate Research Intern

Mar. 2023 – Apr. 2024

Soongsil University, Advised by Prof. Kunwoo Park

- Developed and evaluated a prime number reasoning dataset with varying difficulty levels to assess the mathematical reasoning capabilities of large language models

PUBLICATIONS

Domestic Journal

- **Hyeonwoo Jung, Kunwoo Park**, "In-Depth Evaluations of the Primality Testing Capabilities of Large Language Models: with a Focus on ChatGPT and PaLM 2", Journal of KIISE, 2024.

Domestic Conference

- **Hyeonwoo Jung, Kunwoo Park**, "In-Depth Evaluations of the Primality Testing Capabilities of Large Language Models", Korea Software Conference, 2023.
- **Yejun Yoon, Hyeonwoo Jung, Seunghyun Yoon, Kunwoo Park**, "A Multilingual CLIP-based Contrastive Learning Framework for Understanding News Image Representativeness: A cross-lingual experiment using English and Korean data", Korea Computer Conference, 2023.

AWARDS

Grand Award, Autonomous Driving Data Utilization Competition

2024

- Organized by: Advanced Institute of Convergence Technology (Gyeonggi Autonomous Driving Center)
- Real-time CCTV Object Detection using YOLO

Excellence Award (Kakao Mobility CEO Award), Autonomous Driving AI Challenge

2024

- Organized by: Ministry of Science and ICT
- Traffic Light Detection for Vehicles using MMDetection's CO-DINO

Outstanding Paper Award in Language Engineering

2023

- Organized by: Korean Institute of Information Scientists and Engineers
- Prime Number Reasoning to Assess LLMs' Mathematical Abilities

Excellence Award, Soongsil University AI Convergence Code Challenge

2022

- Organized by: Soongsil University
- Soongsil University Algorithm Competition

PROJECTS

Video-to-Text/Text-to-Video System Development

PDF

- Developed a video content search system using Video Captioning and Text Retrieval techniques.
- **Pipeline Design**, Structured the entire workflow, from data collection to model training, inference, and search.
- **Inference Speed Optimization**, Achieved an 82.27% increase in inference speed through parallel processing, frame rate adjustment, and memory optimization.

Hand Bone Segmentation

PDF

- Developed a hand bone segmentation model using a UNet++ architecture with the smp library.
- **Data Improvement**, Identified and corrected mislabeled validation data, improving dataset quality and enabling more accurate performance evaluation.
- **Loss Function Optimization**, Addressed memory issues by replacing BCE + IoU + MS-SSIM loss with a more memory-efficient BCE + IoU combination, achieving a Dice Score of 0.9733.

Recyclable Item Object Detection

PDF

- Developed an object detection model using the Co-DINO architecture from the MMDetection library to classify recyclable items.
- **Hyperparameter Optimization**, Enhanced performance by 2% (mAP50 0.72) through image resizing and scheduler adjustments.
- **Ensemble Techniques**, Applied NMW ensemble to optimized models, increasing mAP50 to 0.7422.

Sketch Image Classification

PDF

- Used ConvNext model from the timm library. Initially, The model initially achieved 89.2% accuracy.
- **Training Optimization**, Reduced training time by 5x using gradient accumulation and mixed precision for more experiments.
- **Data Augmentation**, Due to a small dataset, used diffusion models to data augmentation, increasing accuracy to 91.8%.

LANGUAGE

TOEIC 830

2025

- Capable of reading academic papers in English, experienced in solo backpacking across Europe, and able to engage in basic communication with foreigners.