Kim Jisoo

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| Personal Website | GitHub |

Research Interests

Deep Learning based Machine perception understanding including:

Multi-modal Learning, Representation Learning, Data efficient Learning, and Data Augmentation

Education

Ewha Womans University Mar. 2018 – Mar. 2023
Bachelor of Computer Science *Seoul, Korea*

- CGPA: 3.76/4.3, Major GPA: 3.86/4.3, *Magna Cum Laude*
- Academic Excellence Scholarship (full-tuition scholar during 4 years)

Columbia University Aug. 2023 – Dec. 2024
Master of Computer Science *New York, USA*

Publications

(*Equal contribution are denoted by "*".*)

[1] A paper on "Text-guided Augmentation," *submitted.*

[2] M. Ye-Bin, **Kim Jisoo**, K. Hong-Yeob, S. Kil-Ho, O. Tae-Hyun "Title: Enriching Visual Features via Text-driven Manifold Augmentation", *CVPR WFM Workshop*, 2023.

[3] K. Da-yeon*, **Kim Jisoo***, K. Do-yeon, K. Hye-Jin, C. Ki-Jun "Grape Grade Discrimination System using Step-by-Step Deep Learning Model and Drone Path Planning Algorithm", *Korean Institute of Information Scientists and Engineers: KIISE*, 2021.

Research Experience

Algorithmic Machine Intelligence Lab, POSTECH Jul. 2022 - Present
External Research Participant (Advisor : Prof. TaeHyun Oh) *Pohang, Korea*

- Researched on Text-driven Visual Augmentation, paper submitted for CVPR 2023.
- Validated research hypothesis by designing experiments such as text-guided image editing and text embedding visualization with dimensionality reduction methods.
- Implemented baseline and conducted a comparison experiment on long-tail classification, achieved 11.54% accuracy gain in tail classes compared to the baseline.

NuviLab, Inc. Jan. 2022 – Jun. 2022
AI Software Engineer Intern *Seoul, Korea*

- Researched on Zero-Shot Classification model that leverages Vision-Language representation.
- Re-implemented CLIP and DeepSORT in Pytorch Lightning to classify 2,000+ food categories in image and videos.
- Proposed new loss measurement method in CLIP and enhanced food classification performance by 4.9%
- Managed over 140k images by building automated synchronizing system between AWS S3 and local database and adapted an anomaly detection system; used AWS lambda, fast api and MySQL.
- Built multi-conditional validation set sampling API and analyzed domain gap problem between train data sources.

Computer Vision Lab, POSTECH May 2021 – Sep. 2021
Undergraduate Research Intern (Advisor : Prof. Jaesik Park) *Pohang, Korea*

- Researched on Generative Model and Representation Learning.
- Implemented 'Repurposing GANs for One-shot Semantic Part Segmentation' in PyTorch and extended to an ablation study on other tasks and dataset. [Github]

Projects

GGDS: Generalizable Grape Development System Sep. 2021 – Jun. 2022
Project Leader, AI Engineer *Seoul, Korea*

- Built an intelligence system for grape farms that provides grape grading, yield management, and grape thinning assistance service; technologies consists drone autonomous driving, detection, tracking, segmentation.
- Consolidated a feature extractor and a regression model to estimate total number of berries including occluded ones from a monocular image.
- Introduced and presented as best practice at the UIC Barcelona (Universitat Internacional de Catalunya).

AWS CIC Challenge Nov. 2021 – May 2022
AI Software Researcher & Engineer *Seoul, Korea*

- Constructed leaf segmentation system and calculated the leaf area to build database for perilla leaf farming; applied them to local farms in Geumnsan, Korea.
- Provincial government project, funded by the Geumsan county.

Naver AI BoostCamp Jul. 2021 – Dec. 2021
AI Engineer *Seoul, Korea*

- Implemented custom CutMix module and improved performance by 3% for trash semantic segmentation model.
- Developed diary application for companion animals using Multimodal Model CLIP; Generated diary text by classifying emotion, action, and locations from pet photos.

Junction X Seoul AI Hackathon May 2021
AI Software Engineer *Seoul, Korea*

- Segmented major facilities (i.e. building, road) from satellite images and adapted proposal algorithms including building clustering and road adjacency measurement to establish a location proposal model for fire stations. [Github]

Awards & Honors

Gold Prize, Graduation Project Competition, Ewha Womans University *May 2022*
2nd Place, Smart Farm AI Challenge, Ministry of Agriculture, Food, and Rural Affairs, Korean Gov. *Mar. 2022*
Best Poster Award, Graduation Project Competition, Ewha Womans University *Nov. 2021*
2nd Place, SW Startup Competition, Ewha Womans University *Nov. 2021*
Finalist in Animal Datathon Korea, Ministry of Agriculture, Food, and Rural Affairs, Korean Gov. *Aug. 2021*
2nd Place, JunctionXSeoul AI Hackathon, Junction Korea *May 2021*
ADsP certificate, Advanced Data Analytic Semi-Professional certified by Korea Data Agency *Mar. 2021*
Dean's List, every eligible quarter *2020 – 2021*

Extra

Technical Skills

Advanced: Python, PyTorch, Pytorch Lightning, Java, C/C++, Git, SQL, Linux, PHP

Moderate: AWS EC2, AWS S3, AWS Cloudwatch, LaTeX, FastAPI

Languages: Korean (native fluency), English (full-professional proficiency), Spanish (limited working proficiency)

Theater Troupe: Led 50+ members as a president, participated as actress and director.