Jinyoon Kim

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Education

May 2024 B.S., Computer Science, The Pennsylvania State University-Harrisburg

Awards & Honors

National Ackroyd Healthier Days Scholarship, 2024. Awarded for a research project focused on improving health environments for patients through a skin cancer detection application. This project was conducted in collaboration with *the Ackroyd Family Foundation and the Penn State community*.

PennState Harrisburg Computer Science Department Undergraduate Student Award, 2023. Recognized by *the Penn State Harrisburg Computer Science Department* for my participation in the ICMLA 2023 conference, where I presented research on a self-supervised learning algorithm for an automated image segmentation system.

Research Interests

Medical image analysis: Focused on computer vision, including image recognition, object detection, deep learning in medical imaging, and disease detection

Deep learning/Reinforcement learning: Focused on deep learning, reinforcement learning, and model optimization for autonomous systems and AI-driven decision making

Machine perception: Specializing in 3D object detection, depth estimation, and sensor fusion for advanced environment perception and decision-making in autonomous agents and intelligent systems.

Vision language models: Centered on multimodal learning, cross-modal retrieval, visual grounding, and image-text synthesis for enhanced human-computer interaction and AI-driven content understanding.

Publications

Jinyoon Kim, Tianjie Chen, Hien Nguyen, and Md Faisal Kabir. (2024). YOLO-SCSA: Enhanced YOLOv8 with Spatially Coordinated Shuffling Attention Mechanisms for Skin Cancer Detection, In *Proceedings of IEEE International Conference on Machine Learning and Applications 2024 (ICMLA 2024)*. Submitted on 31 Jul 2024.

Jinyoon Kim, Tianjie Chen, and Md Faisal Kabir. (2024). Automated Image Segmentation Using Self-Iterative Training and Self-Supervised Learning with Uncertainty Scores. In *Book of Recent Advances in Deep Learning Applications: New Techniques and Practical Examples, Chapter 1.*

Jinyoon Kim and Md Faisal Kabir. (2023). Automated Data Labeling for Object Detection via Iterative Instance Segmentation, In *Proceedings of International Conference on Machine Learning and Applications 2023 (ICMLA 2023)*, pp. 845-850.

Project Experience

Jinyoon Kim. (2024). Participating in the ISIC 2024 Skin Cancer Detection competition on Kaggle, developing a high-performance skin lesion classification model. *In Progress*.

- To develop a high-performance model for skin lesion classification in the ISIC 2024 Skin Cancer Detection competition on Kaggle
- Developed a model that utilizes ensemble learning with EfficientNet and other deep learning architectures to achieve high performance
- Participating in the competition and developing a classification model with high performance in the competition

Jinyoon Kim and Tianjie Chen. (2023). Development of the Skin Cancer Detection Web App for Capstone Project

- To create a web application for skin cancer detection, making it accessible and user-friendly
- Developed the application using YOLOv8, combined ISIC datasets, and implemented confounding factors removal and interpretability techniques
- Successfully created a PWA-based web application, ensuring wide accessibility and transparent diagnostic processes through visual interpretability

Jinyoon Kim, Aditya Kendre, et al. (2023). Machine Learning Project: Face Recognition Program.

- To build a face recognition system with high accuracy and feature extraction capabilities
- Developed the system using fine-tuned ResNet and implemented a Top k features algorithm for enhanced feature extraction
- Created a model that can accurately classify the group members of the team through face recognition

Jinyoon Kim. (2023). Plant Village Demo: Machine Learning Classification on Mobile Application.

- To create a mobile application for detecting plant diseases using neural networks
- Developed and fine-tuned MobileNet for plant disease detection on mobile devices
- The application runs efficiently and accurately classifies images of plant diseases in a mobile environment

Service

Mar. 2020 – Sep. 2021 Republic of Korea Army, Signal Intelligent Agent.

- Fulfilled national duty of a Korean citizen by serving a national army
- Experienced teamwork alongside fellow soldiers and learned the importance of maintaining discipline in challenging and tedious environments.