SUNGJU PARK

HIGH SCHOOL/JUNIOR

I am a highly motivated high school student who is passionate about the intersection of computer science and ophthalmology/medicine, and I am determined to utilize my skills and knowledge in technology to contribute to improving healthcare outcomes for patients, while continuously seeking opportunities to expand my skill set.

Contact

Phone
+82) 10-7928-7703

Email
psj03283@gmail.com

Location
Seoul, South Korea

LinkTree
Link in Bio

Education

2020-2024
High School Diploma
Seoul Scholars International

Interests

- **Medical Imaging**
- **Ophthalmology**
- **Fundus Photography**
- **Ocular Disease**
- **Artificial Intelligence**
- **Machine Learning**

Language

English: Fluent
Korean: Fluent
Spanish: Intermediate

Research Experience

2022-2023
Vision AI I Artificial Intelligence, Deep Learning

Human Eye Fundus Screening System

VisionAI is an advanced AI program that leverages a sophisticated model to classify and analyze 24,000 fundus photographs into four categories (normal, cataract, glaucoma, and diabetic retinopathy) based on diagnostic data. This model has been integrated into a website, providing an efficient and effective diagnosis of fundus diseases. The machine learning algorithm utilized in this model is Convolutional Neural Network (CNN), which is specialized in image processing. The network has been configured using EfficientNet, and hyperparameter optimization has been used for fine-tuning. This approach has resulted in a highly accurate model, achieving an accuracy of 90.8% and other outstanding evaluation results. Through this collaborative research, we aim to provide patients with detailed and accurate reports of their fundus disease diagnosis. Overall, Vision AI represents a significant step forward in the field of medical diagnosis, leveraging cutting-edge technology to improve the accuracy and efficiency of fundus disease diagnosis and ultimately enhance patient care.

Publication: Journal of Student Research

2023-Present
Vision Capture I Hardware, Raspberry Pi

Low Cost Non-mydriatic Fundus Camera Development

Vision Capture is a low cost non-mydriatic fundus camera designed to allow patients to capture their own fundus images without the need for mydriatic drugs. Traditional fundus examinations require the use of mydriatic eye drops and the expertise of an ophthalmologist using an ophthalmoscope or lens, which can take up to 40 minutes. Eye fundus cameras are commonly used for this purpose but can be prohibitively expensive. I developed a low-cost alternative using affordable materials to address this issue. The camera utilizes a Raspberry Pi 4B model, a High-Quality camera module, and a micro sd card to capture fundus images. The goal of providing a cost-effective option for fundus imaging is to increase accessibility for patients and doctors alike, facilitating more efficient and accurate diagnoses.

Projects

2020-Present
Nonprofit Organization I Eye Health Awareness

WidVision: Together With Blind Community

WidVision is a non-profit organization that is dedicated to improving the quality of life for individuals with visual impairments. The organization operates through three branches: the Central Executive Office, the IT Office, and the PR Office. Each branch operates under the shared motto of "Together with Blind Community" and works towards a common goal. The WidVision Program offers students a unique opportunity to contribute to the visually impaired community through volunteer work, research, and writing. This initiative not only allows students to expand their knowledge and understanding of the challenges faced by visually impaired individuals but also provides them with an opportunity to make a positive impact.

Organization: Website

2023-Present
WidVision Affiliated I Braille Block Investigation

Braille Sidewalk Block Analysis in Daechi 2-dong

This analysis aims to assess the state of Braille sidewalk blocks in Daechi 2-dong and create detailed maps to aid in their identification. The analysis will divide the study area into smaller regions, allowing for a more comprehensive assessment. According to the Transportation Convenience Promotion Act, Braille sidewalk blocks are a crucial aspect of ensuring the mobility of visually impaired individuals. It is essential to assess the current state of Braille sidewalk blocks and to determine if any areas are not in compliance with the regulations or if any damaged sidewalk blocks need to be repaired.