# WidVision Business Proposal


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**General Introduction**

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 distinct branches, including 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 by engaging in 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 it also provides them with an opportunity to make a positive impact.

Currently, WidVision is in the process of obtaining official non-profit registration. Among the many projects that WidVision has undertaken, we would like to introduce two of our flagship products. The first is "Vision AI," a cutting-edge human eye fundus screening system that is based on advanced AI deep learning technology. The second is "Vision Capture," a low-cost non-mydriatic fundus camera that is designed to improve the early detection of ocular diseases in low-resource settings. At WidVision, we are committed to promoting inclusivity and improving the lives of those with visual impairments. Our innovative products and programs are a testament to our dedication to this cause, and we are proud to work alongside the blind community towards a brighter future.

**The Idea**

One of our esteemed team members, Sungju Park, has been involved in volunteering at an ophthalmology clinic for more than 4 years. During her time at the clinic, she was deeply moved by the number of patients who were unable to receive treatment due to financial constraints. This unfortunate reality is not limited to the hospital where Sungju volunteered, but is also prevalent worldwide. According to the World Health Organization (WHO), there are 339 million individuals globally who are visually impaired, with 43 million among them being blind. Moreover, developing

countries account for 90% of the visually impaired population, highlighting the need for external aid due to poor medical infrastructure and economic challenges.

Many of those affected by visual impairment suffer from "avoidable blindness," which can be treated with simple eye care and surgery. This realization was the driving force behind Sungju's inspiration to develop a free eye disease diagnosis system and low-cost fundus camera to provide greater access to care for financially disadvantaged patients. Our product is designed to address the need for universal improved eye health welfare, helping to ensure that all individuals have access to the care they need, regardless of their financial circumstances.

**The problem**

The current state of health assurance worldwide is characterized by the high cost of medical treatment, leading to individuals forgoing hospital visits and opting for self-treatment using over-the-counter medication purchased from pharmacies. This trend highlights the importance of promoting greater awareness and understanding of diseases, in order to address global health issues effectively. To this end, our organization has developed a free eye disease diagnosis system and low cost fundus camera that aims to provide individuals with greater access to medical care, without the burden of high medical costs. By offering this innovative tool, we hope to help address the challenges associated with expensive medical expenses, and improve the health and well-being of individuals worldwide.

**Business Opportunity**

Our organization can establish partnerships with several non-profit organizations, as well as government bodies in developing countries, to provide free eye diagnosis services through our innovative diagnosis system and fundus camera during medical volunteering. Through these collaborations, we aim to deliver our products to individuals who suffer from severe eye diseases and require prompt diagnosis and treatment.

Our AI solution program and low-cost fundus eye camera can also be showcased to hospitals, enabling doctors to leverage these tools for improved diagnosis and reduced decision-making time. By utilizing our products, doctors can enhance the accuracy of their diagnoses, resulting in better treatment outcomes and a higher number of patients treated in a shorter amount of time. In this way, our organization is committed to leveraging technology and collaborative partnerships to enhance the quality and accessibility of medical care for individuals worldwide.

**Product design #1: Vision AI**

Our organization has developed Vision AI, 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, which provides an efficient and effective means of diagnosing 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%, as well as 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.

**Product design #2: Vision Capture**

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 they can be prohibitively expensive. To address this issue, our team developed a low cost alternative using affordable materials. The camera utilizes an Arduino Uno, camera module, and convex lens to capture high-quality fundus images. By providing a cost-effective option for fundus imaging, we aim to increase accessibility for patients and doctors alike, facilitating more efficient and accurate diagnoses.

**Target customers**

Our first targeted customers are medical professionals, particularly doctors and medical workers. We recognize that the cost of a non-mydriatic Fundus Camera is often too expensive for individual clinics. To help address this, our organization offers a low-cost fundus camera that allows medical professionals to capture fundus images at a more accessible price point. In addition, our Vision AI program can provide assistance in diagnosing fundus diseases, ultimately leading to more efficient diagnosis and treatment plans for patients. We believe that this can help medical professionals to increase the number of patients they are able to treat, while also reducing the time and resources required for diagnosis.

Our second targeted customers are worldwide patients, who are suffering from eye diseases. By utilizing our low cost fundus camera, patients can obtain high-quality fundus images, and our AI diagnosis system can provide accurate diagnosis reports. This can provide patients with guidance on the appropriate treatment and further direction for curing their eye conditions.

**Value proposition**

Our organization, through the development of Vision AI and Vision Capture, aims to provide greater access to medical opportunities for individuals in need, particularly those who may not have the financial means to acquire expensive medical equipment. Our products not only address the issue of "avoidable blindness," but also have potential for the creation of additional related products. Currently, we are working on the development of a glaucoma detection program, which will utilize optic disc ratio calculations for increased accuracy in diagnosis. We are committed to improving social welfare through the use of our innovative products.