PROJECT OVERVIEW STATEMENT

Project Name	Diagnosis of diabetes retinopathy

Problem/Opportunity

Early diagnosis and intervention of diabetes retinopathy (DR) is very important. Although professional ophthalmologists manually analyze fundus images accurately, the efficiency is low and the cost is high, especially in rural areas and areas with scarce medical resources and personnel. We hope to use AI technology to assist doctors in making more efficient judgments of lesion areas, handling more cases in a timely manner, and providing time for treatment

Goal

AI systems can quickly process a large number of fundus images, improve diagnostic efficiency, shorten patient waiting time, and automatically generate reports.

AI can achieve remote diagnosis through mobile devices, greatly increasing the popularity of DR screening and reducing reliance on professional medical personnel.

Objectives

1. Collect a large amount of high-quality fundus image data, annotate it by professional ophthalmologists, and construct training and testing datasets.

2. Train the system to accurately receive the original fundus images and perform enhancement processing and correct segmentation on them;

3. The system can use deep learning algorithms (such as Resnet) to accurately identify lesions and label the degree of lesions;

4. The system has a friendly UI that can automatically generate feedback (such as reports) and engage in certain dialogue interactions with professional medical staff.

5. Test and evaluate the system in a real clinical environment to verify its accuracy, reliability, and practicality

Success Criteria

The system has a high recognition accuracy, can distinguish different types of lesions and annotate them clearly, can quickly process single images, has a friendly UI interface, has certain interactive functions, and supports the input of multiple images.

Assumptions, Risks, Obstacles

1. Capable of obtaining sufficient quantity and quality of ophthalmic image data.

2. Develop effective deep learning algorithms for identifying DR lesion features.

3. The hardware and software resources required for system development can be guaranteed.

4. Data privacy and security issues need to be safeguarded.

5. The generalization ability of the model is insufficient, and the accuracy needs to be clinically tested.

6. The training and optimization of deep learning models require a large amount of computing resources and have certain economic costs.

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