

CSE 472 Project Proposal

Retinal Disease Classification

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Problem Definition

We wish to work on a project to create a system for diagnosing retinal illnesses based on machine learning. The project's objective is to use retinal images to recognize and classify various retinal illnesses, including age-related macular degeneration and diabetic retinopathy. A label identifying the presence or absence of a certain illness will be produced by the system after receiving an input retinal picture. The goal is to enhance the precision and accuracy of illness detection and diagnosis, which will eventually improve patient outcomes.

Dataset

<https://www.kaggle.com/code/vexxingbanana/retinal-disease-classification/data>

The training dataset consists of 1920 sample images, whereas the test set and evaluation set both contain 640 sample images.

The three datasets are each accompanied by a CSV file.

Architecture

Convolutional Neural Network (CNN)

Performance Metrics

Classification metrics:

1. Accuracy: the proportion of correctly classified samples.
2. Precision: the proportion of true positive predictions among all positive predictions.

Diagnostic metrics:

1. Sensitivity: the proportion of true positive predictions among all actual positive samples (also known as recall).
2. Specificity: the proportion of true negative predictions among all actual negative samples.