

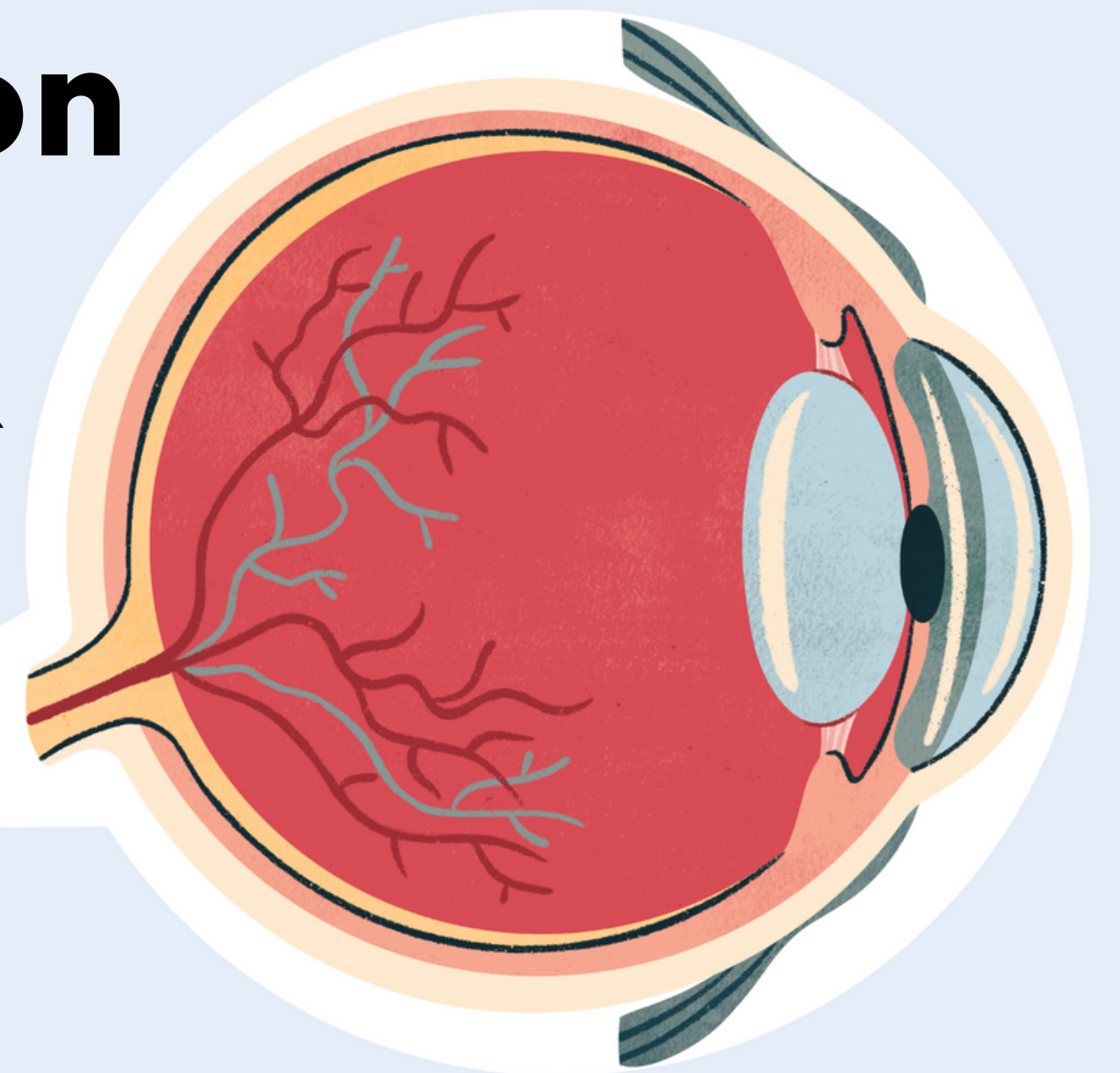
AI TO DIAGNOSE DIABETIC EYE HEALTH

MOTIVATION: People with diabetes are at risk of losing their eyesight, but this can be prevented by prompt screenings.

Diabetic retinopathy (DR) ranks among the leading causes of preventable blindness worldwide. With diabetes on the rise, prompt access to eye screenings means eye damage caused by diabetes can be detected, and treatment can be initiated to prevent vision loss. New Zealand's current manual screening process is slow and relies on professionals for image analysis, causing bottlenecks that hinder expanding patient care.

BY 2040, OVER
600 million

PEOPLE WITH
DIABETES WILL
REQUIRE REGULAR
EYE CHECKS



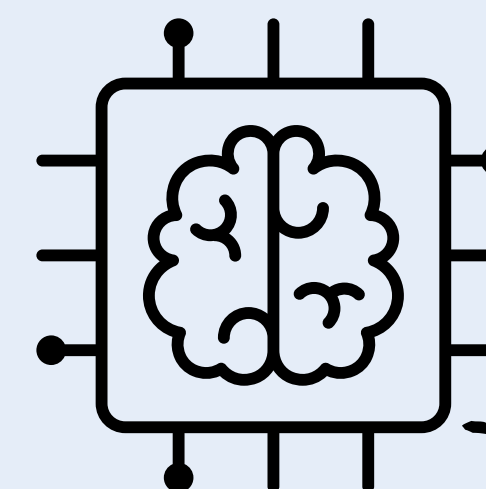
1. Retinal image.



2. Upload to web.



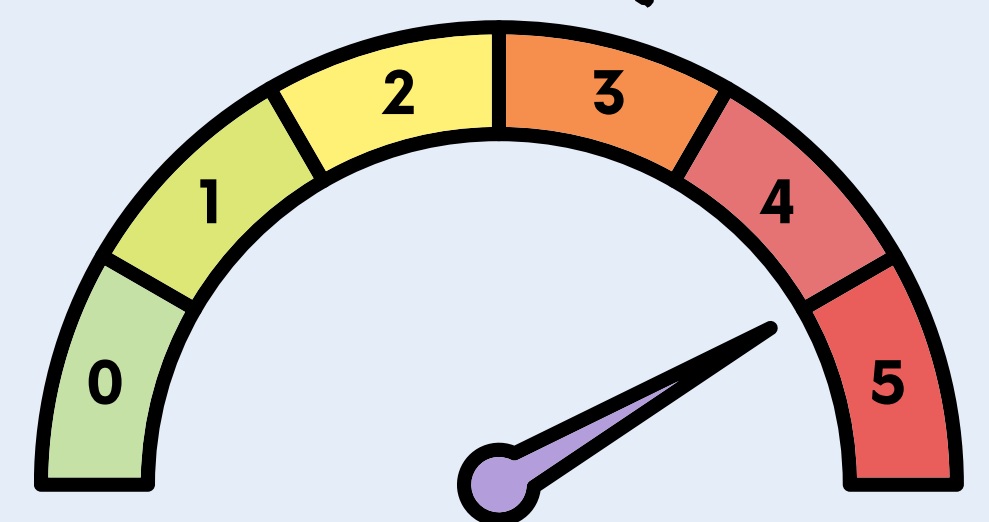
3. Input to model.



4. Output prediction.



5. DR grade



DR grade scale recommended by the Ministry of Health NZ.

- 0 - Healthy
- 1 - Minimal DR
- 2 - Mild DR
- 3 - Moderate DR
- 4 - Severe DR
- 5 - Proliferative DR

OBJECTIVE: The aim is to use machine learning to automate the DR screening process for NZ.

So, if early detection can help prevent blindness, let's improve the system so more people can access prompt screenings.

Automating screenings can assist in detecting and grading the severity of the disease. While previous studies have explored this, there is still room for improvement with a machine learning model tailored for New Zealand.

To address this, a machine learning model was trained on New Zealand-specific retinal images, aiding medical professionals in accurately classifying DR stages, improving healthcare access, and ensuring timely intervention for affected individuals.

OUTCOME: <95% accuracy in predicting DR grades.

Machine Learning Model Summary

- Type: Supervised Classification.
- Method: Transfer learning with ResNet50 as the base model.
- Input: Retinal images from Auckland University.
- Output: DR grade on a scale from 0 to 5.
- Tech Stack: TensorFlow, Python, LabelStudio, Jupyter Notebook.



95%

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