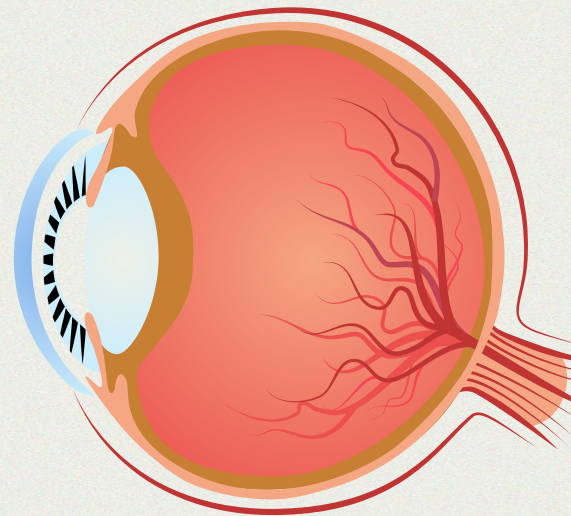# Diabetic Retinopathy Classification

Using a Convolutional Neural Network (CNN)

Benjamin Gelman Fall 2024 Curriculum

Dataset

- 3,662 PNG images
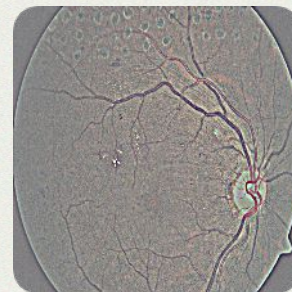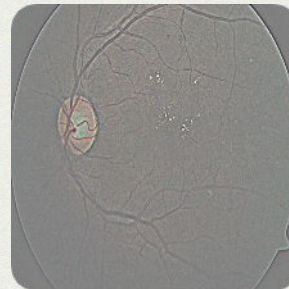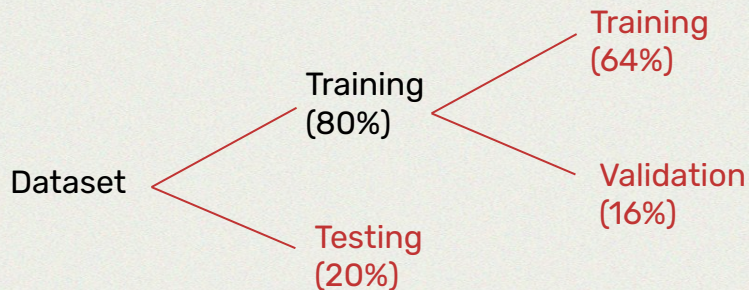- Sorted into different categories depending on disease severity

No_DR
(1,805)

Mild
(370)

Moderate
(999)

Severe
(193)

Proliferate_DR
(295)

Dataset

Training
(80%)

Testing
(20%)

Training
(64%)

Validation
(16%)

Image Preprocessing

- Research paper concludes that CLAHE image processing and green channel extraction enhances DR images

Original   Enhanced

Multiple Image Classification using CNN

- ResNet-18 model was used
- Achieved testing accuracy of approximately **80%**
  - Most likely due to small dataset (only ~3,500 images)

Training and Validation Accuracy

Training and Validation Loss
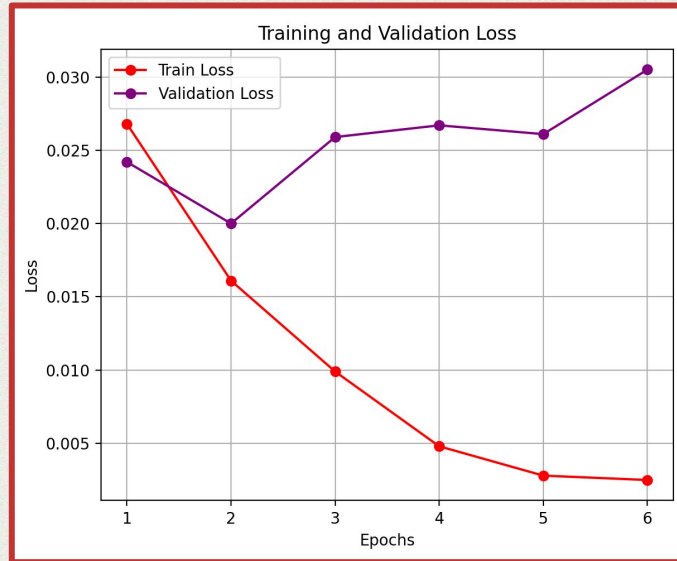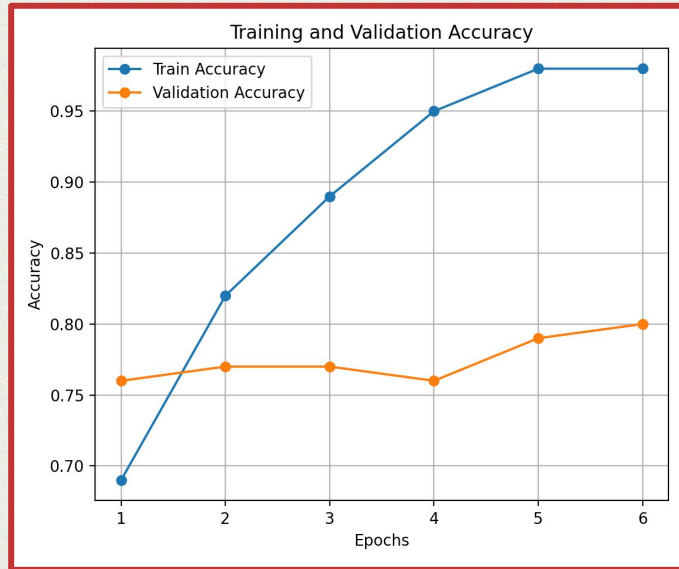
Binary Classification using CNN

- Took dataset and modified it so that anything that is not "No_DR" is labeled as "Yes_DR"
- ResNet-18 model was also used
- Achieved testing accuracy of approximately **97%**