

## ABSTRACT

The retina is a vital organ consisting of delicate cells located at the back of the eyeball. Retinal damage can result in blindness. To identify retinal damage, direct consultation with a specialized doctor is recommended. The doctor will identify the cause of retinal damage by observing Optical Coherence Tomography (OCT) results, a process that typically takes a considerable amount of time. One suitable alternative is to perform retinal damage identification by utilizing digital images, allowing for rapid, effective, and efficient identification.

This research uses the Convolutional Neural Network (CNN) method to design a retinal damage identification system. This system is utilized to identify various types of retinal damage, including Choroidal Neovascularization (CNV), Diabetic Macular Edema (DME), and drusen. Input data consists of digital images from cell.com that have undergone preprocessing stages. There are 4000 digital images obtained via OCT which are divided into four classifications, with each classification comprising 1000 images.

The simulation and analysis results in this Final Project demonstrate that the employed model is capable of yielding promising outcomes. The model can achieve an accuracy rate of 90% in identifying retinal damage. These results were obtained by changing hyperparameters including, learning rate 0.001, optimizer RMSprop, batch size 8, epoch 30.

**KeyWords:** Convolutional Neural Network, Optical Coherence Tomography, Retinal damage.