

# Detection of Cyst(CME) in OCT images using deep learning

Group Members(TEIT):-

Palak Keni - 2016140026

Prajakta Kini - 2016140027


Anushree Kulai -2016140033

# Problem Statement:-

The goal is to automatically detect the appearance of Cystoid Macular Edema (CME) in Optical Coherence Tomography (OCT) images. The deep learning technique used, Convolutional Neural Networks, takes as an input patches of pixels from within the retina. These patches were generated from previous segmentation of retinal images. A further segmentation of the retina is performed using 4 an image processing algorithm called SLIC. Every super pixel thus generated, after being labeled as in the OCT scan, is fed into the neural network to detect the cyst.



# Introduction

- Optical coherence tomography (OCT) is an imaging technique that uses coherent light to capture high resolution images of biological tissues.
  - OCT images can be used to diagnose many retina related eyes diseases.
  - Our goal is to develop a system that can process large amounts of OCT images, automatically singling out images that show CME and quantify the cysts.
  - This process uses mobilenet model and keras model of tensorflow model to classify images as cyst present or not.
  - Adding our own idea to given problem statement, we are also classifying them further into 4 classes out of which one without cyst and remaining three with cyst present.
- 

(Cont.)

- These 2 classes are:-
  - Cyst
  - Normal
  - Also Using the seed super-pixels that define the cyst super-pixels and negative super-pixels that define non-cyst super-pixels, both found in the seed detection process earlier, we will find a cut in the graph that holds the cyst pixels on the one side and all other pixels on the other.



# About the dataset

- We have used Retinal OCT images dataset from kaggle by Paul Mooney.
- This dataset contains test and train folders which have further classified in 4 subclasses.
- Dataset mainly contains jpg images of retina under OCT scan.
- These images are fed to Convolutional neural network using tensorflow to predict the output.



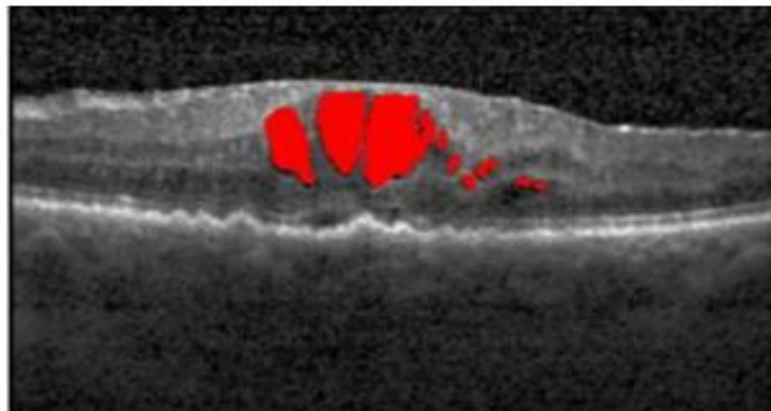
# Technology stack

- Optical Coherence Tomography (OCT)
- Tensorflow
- Convolution Neural network
- Keras Library
- Classification model

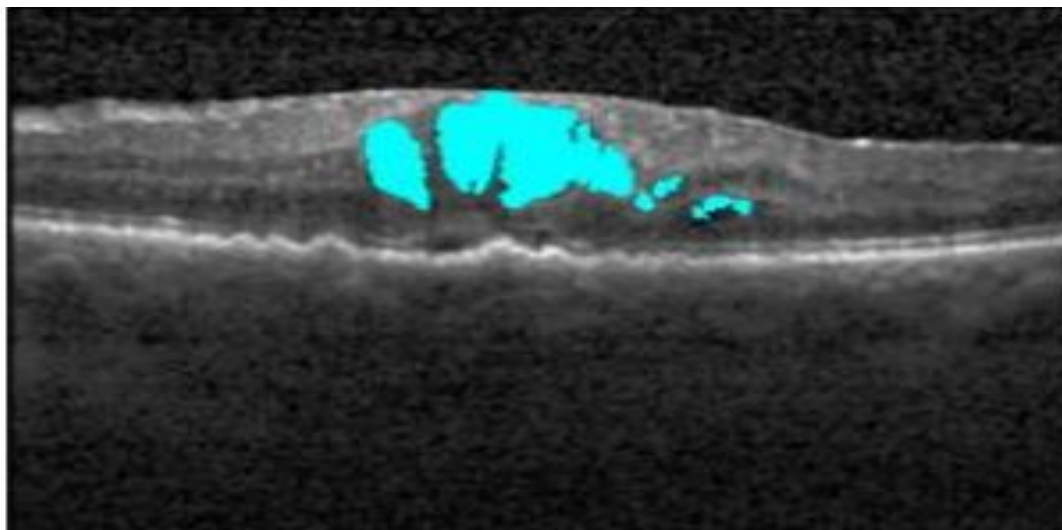


# Testing the model

- When we trained the model using train data and then tested it on the test data we got our predictions.
- We got accuracy of about 75 - 85%
- These predictions which we got are displayed below.



Manual Annotation



Detected Cysts



# Thank You

