CODING CLUB IITG

IMAGE SEGMENTATION

ML MODULE

CONTENT

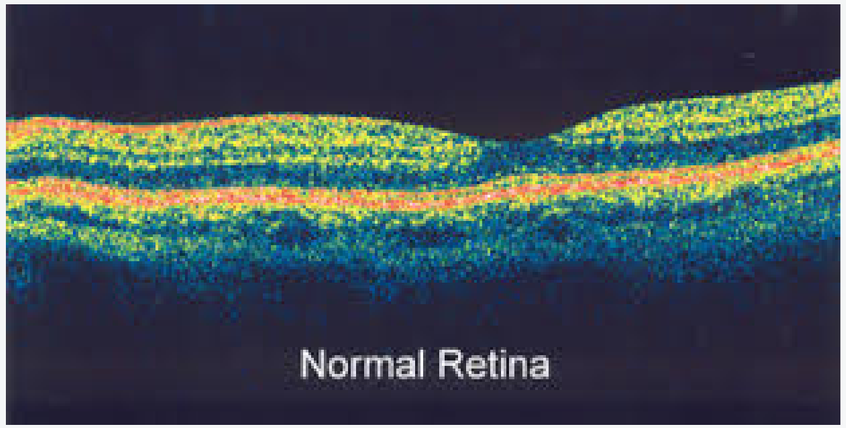
01	ABSTRACT
02 -04	DATASET
05	MODEL ARCHITECTURE
06	HYPERPARAMETERS
07	RESULTS
08	FUTURE SCOPES

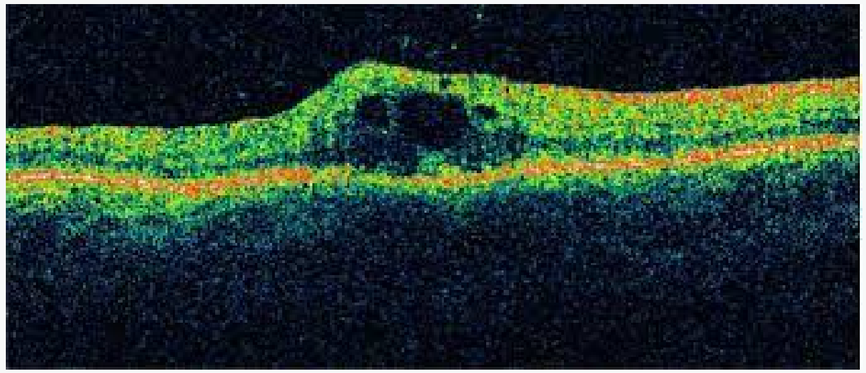
ABSTRACT

In an image classification task, the network assigns a label (or class) to each input image. However, suppose you want to know the shape of that object, which pixel belongs to which object, etc. In this case, you need to assign a class to each pixel of the image—this task is known as segmentation. A segmentation model returns much more detailed information about the image. Image segmentation has many applications in medical imaging, self-driving cars and satellite imaging, just to name a few.

DATASET

Images for segmentation of optical coherence tomography images with diabetic macular edema.





One with diabetic macular edema

DATASET

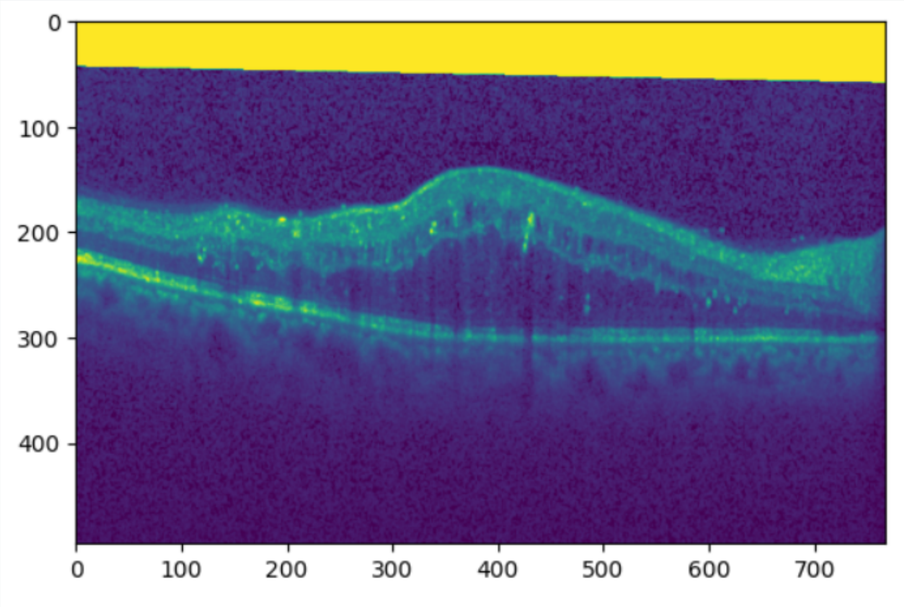
Contains 10 MATALB files for 10 Subjects

Each MATLAB file contains :

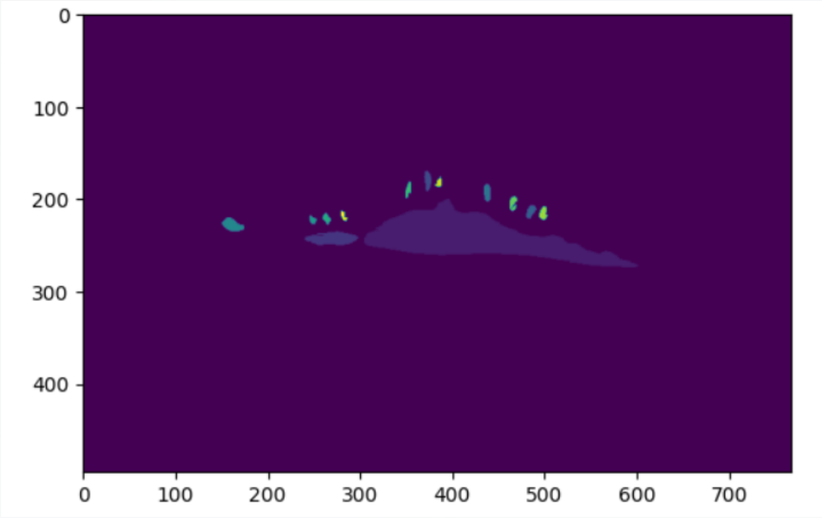
61 retina images , and their manually segmented diabetic edema part of the fluid layer, and automatically segmented images using DME

We have trained our model on just the images, and segmented it.

DATASET



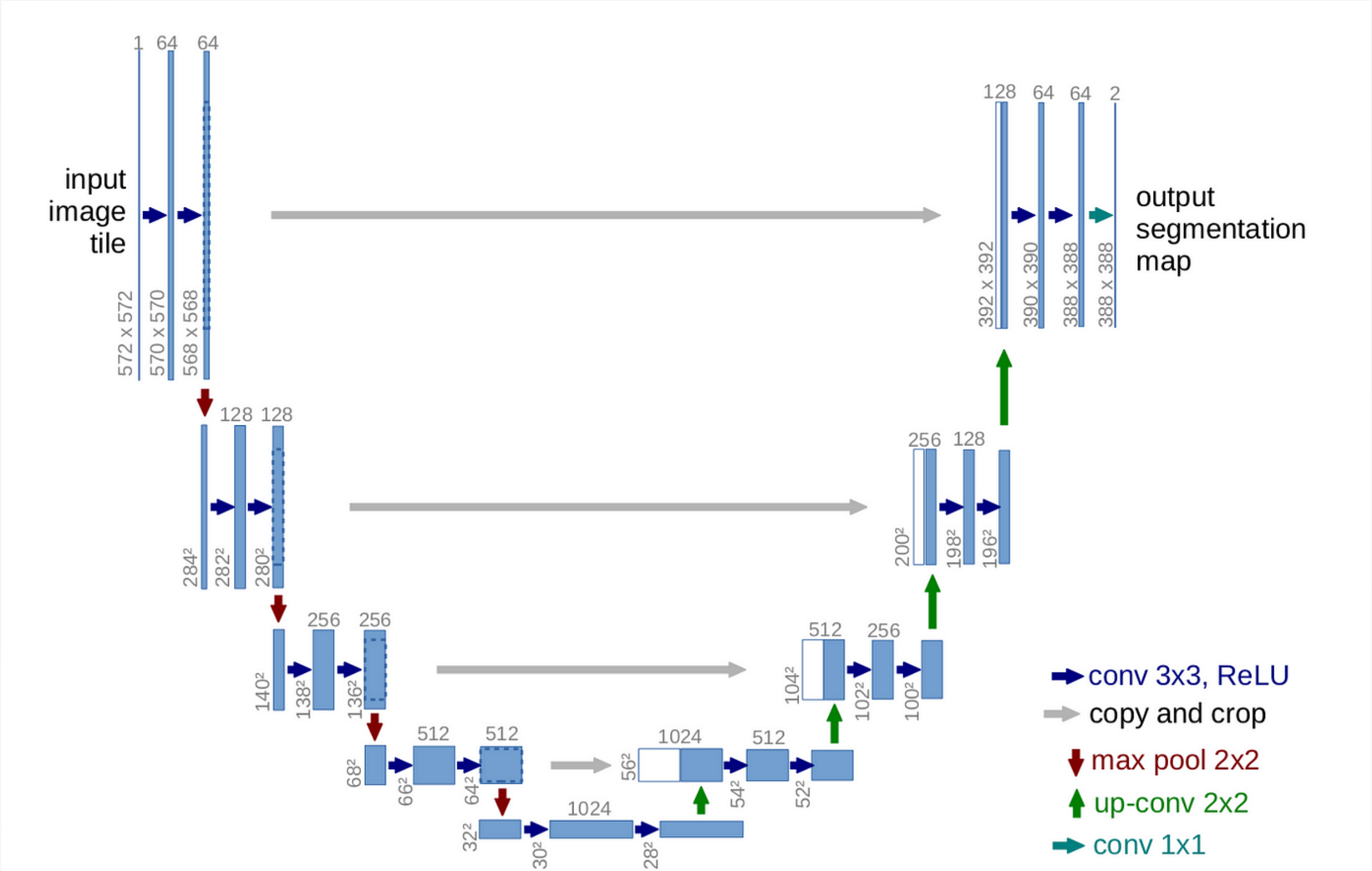
Image[25]



ManualFluid1[25]

MODEL USED

UNET



HYPERPARAMETERS

BATCH_SIZE = 64

EPOCHS = 1000

THRESHOLD = 0.3

LEARNING_RATE = 0.005

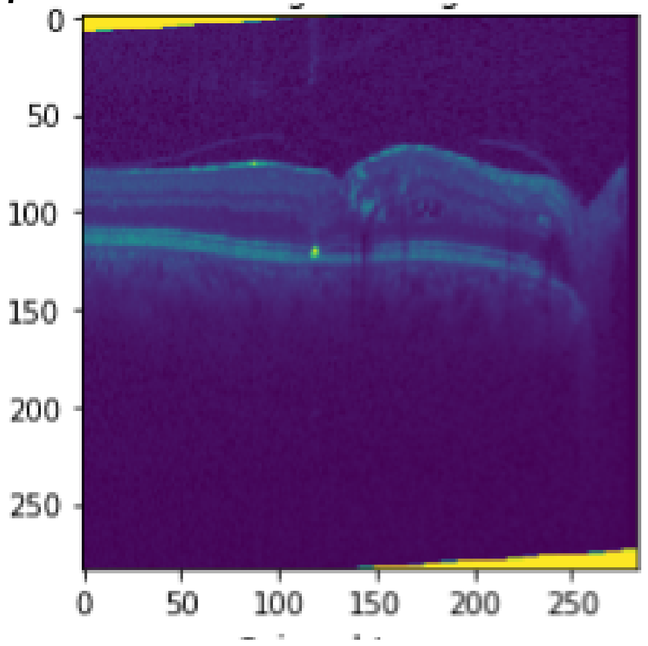
MOMENTUM = 0.99

LOSS FUNCTION = CROSS ENTROPYLOSS

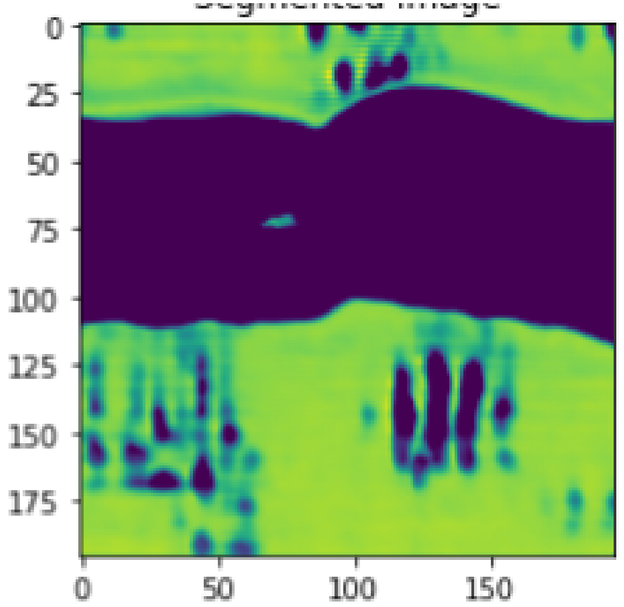
OPTIMIZER = SGD

RESULTS

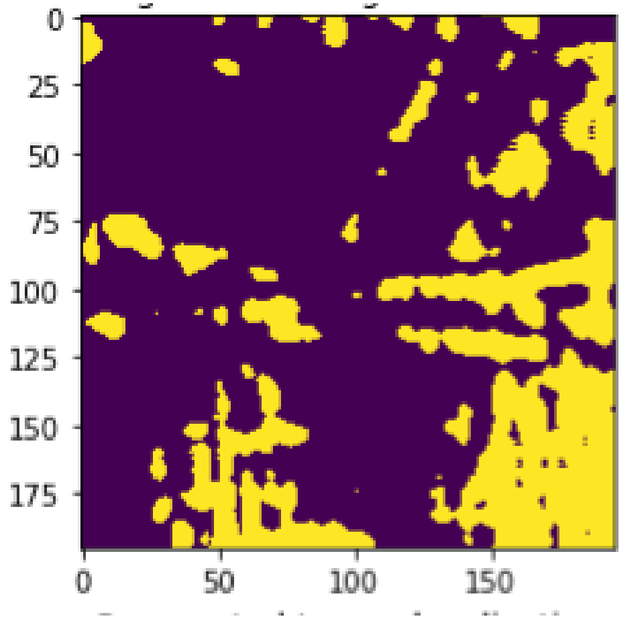
Image



Segmented Image



Segmented Image with Localization



FUTURE SCOPES

USING DIFFERENT MODELS LIKE DEEPLAB AND MASKRCNN

PREPROCESSING THE IMAGE , BEFORE GIVING INPUTS TO THE MODEL

BUILDING A BINARY CLASSIFIER TO ACTUALLY PREDICT WHETHER A PERSON HAS DIABETIC MACULAR EDEMA

THANK YOU