

CS 577, Spring 2021
Project Proposal
Diabetic Retinopathy blindness detection using Deep Learning

Team Members:

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Papers:

Title: Detecting Diabetic Retinopathy using Deep Learning

Authors:

- Yashal Shakti Kanungo
- Bhargav Srinivasan
- Dr. Savita Choudhary

Year of Publication : 2017

Name of Publication: IEEE International Conference On Recent Trends in Electronics Information & Communication Technology (RTEICT)

Problem Statement:

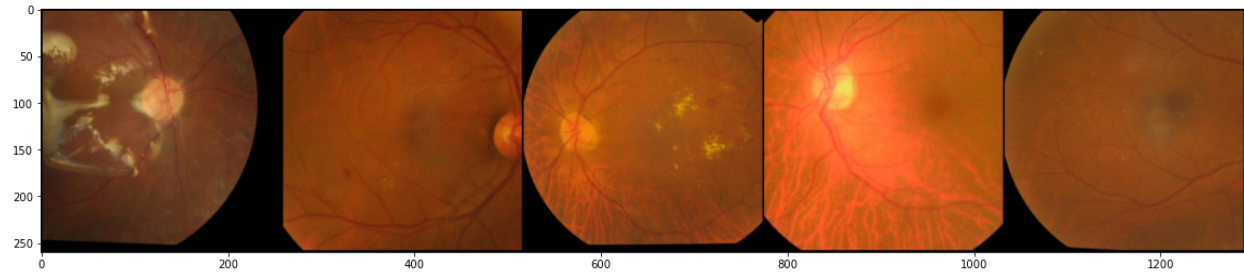
Diabetic Retinopathy is a medical condition of the eye caused by diabetics. It is most common in working age populations. One out of two people have been diagnosed with some severity of diabetic retinopathy. Generally, there is a need for human intervention to analyze eye fundus images and detect the severity of the condition. So there is a need for comprehensive and automated tools for the detection of diabetic retinopathy.

Data:

I will be using any of the two datasets given below:

- [Diabetic Retinopathy Detection | Kaggle](#) : Contains fundus images divided in multiple folders as the dataset is of size 100 GB .The images in the dataset come from different models and types of cameras, Some images are shown as one would see the retina anatomically and others are shown as one would see through a microscope condensing lens
- [APTOS 2019 Blindness Detection | Kaggle](#) : This is a similar dataset to the above one but with a reduced size of 9.5GB.

Sample Images in dataset:



Approach:

In this present project I am going to build a deep learning model which uses convolution neural networks to predict the severity of diabetic retinopathy by taking the images as input.

Build a convolution neural network model to predict the severity of diabetic retinopathy blindness which are

- 0 - No DR
- 1 - Mild
- 2 - Moderate
- 3 - Severe
- 4 - Proliferative DR.

The research paper suggests inception- v3 architecture for model building, main algorithm will be trying to build inception- v3 architecture.

Responsibilities :

- Image preprocessing by transforming into tensors
- Adding some noise or augmentation to images such as rotations, jitter etc..
- Convolution neural network architecture model building
- Cross validation, different loss, optimization parameters, regularizations.
- Evaluation on test dataset.

References:

- <https://drive.google.com/file/d/192dBTQrcr-ZZHJ9ZDyh6iml0jZ1YARul/view?usp=sharing>
- [Diabetic Retinopathy Detection | Kaggle](#)
- [APTOS 2019 Blindness Detection | Kaggle](#)