**PROJECT PROPOSAL**

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**PROBLEM STATEMENT**:

* Diabetic Retinopathy Detection Using Vision transformers (ViT) and display result through a web app.
* Classifying the different stages of diabetic retinopathy-mild, severe, proliferative, mild proliferative.

**LITERATURE SURVEY:**

# 1 . Development and Validation of a Deep Learning Algorithm for Detection of Diabetic Retinopathy in Retinal Fundus Photographs:

# The reference standard used for this study is the majority decision for all ophthalmologists graders.

# Nature of algorithm can be a limitation in which neural network is only provided with the image and associated grade without explicit definition of features.

# 2. Transfer learning based detection of diabetic retinopathy from small dataset:

# Transfer learning from an already trained convolutional neural network can be used to reduce cost of training from scratch and to train with small dataset for deep learning.

# In this paper a pretrained inception-v3 model has been used to take advantage of its inception module to detect diabetic retinopathy.

# 3. Deep learning approach to detect diabetic retinopathy:

# Early detection of a disease is very important for success of treatment.

# Proposes a multi stage approach of transfer learning which makes use of similar datasets with different labeling.

# Proposes an automatic deep learning based stage detection of diabetic retinopathy by single photography of human fundus.

# 4. ViT-DR: Vision Transformers in Diabetic Retinopathy Grading Using Fundus Images.

# Proposes Vision Transformer (ViT) based DR severity classification method. In this work, the fundus images are initially divided into non-overlapping patches to retain location information.

# Then, the flattened patches are converted into sequences before going through a linear and positional embedding process.

# The generated sequence is then fed into several multi-head attention layers, which produce the final representation. The first token sequence is fed into a softmax classification layer in the classification stage, which produces the recognition output.

**FRAMEWORK USED:**

Tensorflow

**DATASET USED:**

Kaggle dataset oraganised by EyePacs –the largest dataset of fundus images for diabetic retinopathy.

**REFERENCES:**

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