**Code Project** : 25-1-D-3

**Project Name** : EyeNet AI-Driven Eye Conditions Detection using Video Analysis

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**Summary:**

*The eyes are a sensitive organ and are exposed to infections and bacteria, and as a result, there are several external eye diseases, including cataracts, conjunctivitis, and styes. These diseases significantly affect daily functioning and vision if not detected early. Despite technological advances, accessible and effective diagnostic tools remain limited, and diagnosis today is still time-consuming, can be an expensive process, and sometimes even requires specialized medical equipment.*

*This project presents* ***'EyeNet'****, an* ***end-to-end user-friendly*** *application designed to identify and classify external eye conditions with an emphasis on cataracts, conjunctivitis, and styes. Using advanced convolutional neural networks (CNNs), 'EyeNet' incorporates* ***DenseNet121*** *as its base model, enhanced with* ***attention mechanisms*** *to improve performance. The model was trained on a dataset of over 13,000 images in each class, with data augmentation techniques to improve robustness to changing conditions such as lighting changes and image noise. In our initial tests, we see promising accuracy of around* ***95% with DenseNet121****, and we speculate that further improvements in attention mechanisms are expected to increase performance.*

*‘EyeNet’ combines a FastAPI backend with a React-based frontend, providing a user-friendly and accessible interface for users to upload videos of their eyes and receive accurate and reliable diagnostic results. The project demonstrates the potential of advanced deep learning models combined with accessible, affordable and efficient technology, and we hope to bridge the gap that currently exists in the field of eye diagnosis and medical treatment.*

**Key Words:**

AI, Eye Disease, Video, Detection, Deep Learning

**Git Source:** [GalBitton/EyeNet-Eye-Disease-Detection](https://github.com/GalBitton/EyeNet-Eye-Disease-Detection)