***Image Contrast Adjustment and Enhancement***

Color Retinal image enhancement project deals with enhancing the quality of the image of an eye. So basically, retinal imaging is a process of capturing retinal images of an eye which are very complicated and requires a lot of processing and sophisticated machines are used to capture those images. Now when we look at one of those images, we might see that the images might be kind of little blur or brightness might be low or high. So here we have applied some techniques, such as contrast adjustment and increasing the luminosity of the images to enhance the quality of an eye which might help the doctors or professional working on this domain to get a clear view of the project/image they are looking for.

***Base Paper***

1. https://www.academia.edu/51841498/Analytical\_Adjustment\_of\_Image\_Contrast

***Project Methodology***

So, in order to get the contrast adjustment and enhancement unlike traditional Image Enhance library, we have gone with Equalization histogram where we have converted our image in the form of a histogram and wherever we found that the bins are clustered around, the equilize\_hist(), that we are going to use, what it does is it will stretch out that portion of image making the specific object in that image to be highlighted than usual. Apart from this technique we have also used some basic OpenCV filters to enhance the quality of an image such as Adjusting the brightness using filters, threshold adjustment, sharpening the image.

***Steps to Run the code.***

**Note:** Make sure you have added path while installing the software’s.

<https://techieyantechnologies.com/2022/06/get-started-with-creating-new-environment-in-anaconda-configuring-jupyter-notebook-and-installing-libraries-using-requirements-txt-2/>

1. Install the prerequisites/software’s required to execute the code from reading the above blog which is provided in the link above.
2. Press windows key and type in anaconda prompt a terminal opens up.
3. Before executing the code, we need to create a specific environment which allows us to install the required libraries necessary for our project.

* Type conda create -name “env\_name”, e.g.: conda create -name project\_1
* Type conda activate “env\_name, e.g.: conda activate project\_1

1. Make sure you are in the correct path in your terminal, where you have saved your executable file/folder. E.g.: cd A:\project\AI\Completed\project\_name, then press enter.
2. Install necessary libraries from requirements.txt file provided.
3. Run pip install -r requirements.txt or conda install requirements.txt (Requirements.txt is a text file consisting of all the necessary libraries required for executing this python file. If it gives any error while installing libraries, you might need to install them individually.)
4. Run main.py "path of image to test" in your anaconda terminal, ex: main.py test\_data/01.jpg, and make sure to change the path where your executable files are located, please follow the link on how to set up anaconda environment to execute files.

***Data Description***

Specifically, we didn't use any kind of dataset since we are trying to load the images manually and applying filters on top of it, so we haven’t used any datasets.

***Issues Faced.***

1. We might face an issue while installing specific libraries.

2. Make sure you have the latest version of python, since sometimes it might cause version mismatch.

3. Adding path to environment variables in order to run python files and anaconda environment in code editor, specifically in visual studio code.

4. Refer to the Below link to get more details on installing python and anaconda and how to configure it.

<https://techieyantechnologies.com/2022/06/get-started-with-creating-new-environment-in-anaconda-configuring-jupyter-notebook-and-installing-libraries-using-requirements-txt-2/>

***Note:***

**All the required data hasn’t been provided over here. Please feel free to contact me for any issues.**

***Let’s Connect***

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***Yes, you now have more knowledge than yesterday, Keep Going.***

***Results***



