NICE VIRTUAL INTERNSHIP PROGRAM

VIDEO ANALYZING SOFTWARE

USER DOCUMENTATION

PROBLEM STATEMENT:

Analysis of the video and audio stream from the Microsoft Teams calls and be able to verify the quality of the MP4 file in terms of blur, artifact, frame rate, pixels, and aspect ratio.

SOLUTION:

- Create a software using OPENCV python library for taking the video as input and analysing it to get various video metrics as output.
- The video metrics include: frame rate, audio and video bit rate, aspect ratio, blur and artifact detection, saturation , contrast , hue and brightness .

- Integrating this software with PROXIMA – the existing video analysis software of the company.

SOFTWARE AND HARDWARE REQUIREMENTS:

- Windows 7 or later, or Mac OS X 10.9 or later
- 64-bit operating system
- At least 4GB of RAM
- At least 500MB of free disk space
- A compatible video file format (MP4, AVI, MOV, WMV, etc.)

ADDITIONAL PACKAGES AND LIBRARIES USED:

Libraries:

- OpenCV
- NumPy
- Tesseract
- PyMediaInfo

Yolo files:

Dataset:

Coco. Names

https://www.kaggle.com/datasets/valentynsichkar/yolo-coco-data

YOLO Weights and configuration files:

Yolov3.cfg and yolov3.weights can be downloaded here:

https://pjreddie.com/darknet/yolo/

SYSTEM SETUP:

1. **Install the latest version of PYTHON https://www.python.org/downloads/**
2. **Install any code editor of your preference**
3. **Clone the repository attached below : https://github.com/H4CE/mp4verification/tree/test**

USAGE:

1) Open the Proxima folder in any code editor (Visual Studio Code, Sublime, PyCharm, etc.) 2) Run the master.py file.

3) The metrics to be analysed are:

- Aspect Ratio

- Audio bitrate (bits/sec)
- Video bitrate (bits/sec)
- Video Length (sec)
- Frame Rate(frames/sec)
- Brightness
- Saturation
- Contrast
- Hue
- Blur Detection (with and without video)
- Artifact/Object Detection (with video)

4) Select the desired video file from the system as input to the code.
5) Choose the option to be executed.
6) The output (along with the video if chosen) will be displayed on the GUI.

CODE MENU:

1) Video Metrics:

   All the properties except text and object detection will be displayed.

2) Colour Metrics:

Displays Brightness, Contrast, Saturation and Hue.

3)Blur Detection with video:

Displays the video and gives the blur detected as output.

4)Artifact/Object Detection:

Displays the video and gives the object detected in the video as output.

CONCLUSION:

The video is analysed successfully, in terms of the Video Metrics ,as per the user requirement.