**NICE VIRTUAL INTERNSHIP PROGRAM**

**VIDEO ANALYZING SOFTWARE**

**USER DOCUMENTATION**

**PROBLEM STATEMENT**:

Analysis of the video files from the NICE recording systems that receives videos and audios from Microsoft Teams and be able to verify the quality of the MP4 files in terms of video length , bit rates , aspect ratio , frame rate , Blur and Artifact detection, Object Detection and Gesture Detection.

**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, Object Detection , Gesture 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:**

* Python 3.9.13
* OpenCV (version 4.7.0)

(Command to install - pip install opencv 4.7.0)

* NumPy (already installed with python)
* Tesseract

(Command to install – pip install pytesseract)

* PyMediaInfo

(Command to install – pip install pymediainfo)

* tkinter

(Command to install – pip install tk)

* customtkinter

(Command to install – pip install customtkinter)

* mediapipe

(Command to install – pip install mediapipe)

* tenserflow

(Command to install – pip install tensorflow)

**Yolo files (Unzip the files and extract it in the Proxima folder):**

[https://www.kaggle.com/datasets/valentynsichkar /yolo-coco-data](https://www.kaggle.com/datasets/valentynsichkar/yolo-coco-data)

**Files included :**

**Coco.names dataset**

**YOLO Weights and configuration files**

**Hand Gesture Detection Model :**

<https://techvidvan.com/tutorials/hand-gesture-recognition-tensorflow-opencv>

**Files included :**

**Gesture.names dataset**

**Mp\_hand\_gestures Folder**

**SYSTEM SETUP:**

**1. Install the latest version of PYTHON** [**https://www.python.org/downloads/**](https://www.python.org/downloads/)

[**2.**](https://www.python.org/downloads/) **Install any code editor of your preference**

**3. Clone the repository attached below :**

[https://github.com/CKavathiya/mp4verification/tr](https://github.com/CKavathiya/mp4verification/tr%20) [ee/tes](https://github.com/CKavathiya/mp4verification/tree/test)[t](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.

1. 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)
   * Gesture Detection (with video)

1. Select the desired video file from the system as input to the code.
2. Choose the option to be executed.
3. 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.

5)Gesture 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.