**User Manual for Video Streaming, Recording, Hand Landmark Extraction and Object Detection**

**Prepared for: Haig’s Quality Printing**

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**Prepared by: Tarek Zahid**

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# Overview

This document provides instructions for running Python scripts developed for Haig’s Quality Printing. It outlines the setup, requirements, and usage of scripts related to:

* Streaming and Recording
* Hand Landmark Detection and Extraction
* Object Detection

# Setup and Installation

## Unzipping the installation folder

Unzip the provided installation folder to your desktop. This will create a folder on your desktop containing all the necessary scripts and files.

## Starting the terminal

1. Open Command Prompt (Terminal) on Windows:

* Press **Win + R** to open the Run dialog.
* Type **cmd** and press **Enter**. This will open the Command Prompt.

Or you can search for the app named Terminal from the start menu.

1. Navigate to the haigs\_app Directory:

* Once the Command Prompt is open, you need to change the directory to where the haigs\_app folder is located on your desktop.
* your username is YourUsername, type the following command and press Enter:

**cd C:\Users\YourUsername\Desktop\haigs\_app**

## Installing necessary python libraries

1. Ensure You Are in the Correct Directory:

* First, make sure you have navigated to the **haigs\_app** directory in the Command Prompt as explained earlier:

**cd C:\Users\YourUsername\Desktop\haigs\_app**

1. Run the following command to install all the libraries listed in the **requirements.txt** file:

**pip install -r requirements.txt**

# Execution and Usage

## Streaming

This section explains how to run the stream.py script to monitor RTSP streams, check their active status, and calculate the frame rate for each active stream. The script requires a file containing RTSP stream URLs and allows you to set the interval for refreshing the stream checks.

**Running the Script**

1. Open the Command Prompt:
   * Start by opening the Command Prompt on your Windows machine.
2. Navigate to the haigs\_app Directory:
   * Change the directory to where the stream.py script is located:

**cd C:\Users\YourUsername\Desktop\haigs\_app**

1. Prepare the Feeds File:
   * Ensure you have a text file (e.g., feeds.txt) containing the RTSP stream URLs. Each line in the file should be formatted as **stream\_name:url**.
2. Run the Script:
   * Execute the script using the following command, specifying the path to your feeds file and the refresh interval in minutes:

**python stream.py --feeds\_file feeds.txt --refresh\_time\_min 10**

1. To stop the script, press the q key at any time.

## Recording

This section explains how to run the record.py script to record RTSP streams using VLC, save the recordings as MP4 files, and handle non-recording periods. The script reads stream URLs from a file, checks for active streams, and records them for a specified duration, with the ability to stop recordings by pressing the 'q' key.

**Running the Script**

1. Open the Command Prompt:
   * Start by opening the Command Prompt on your Windows machine.
2. Navigate to the haigs\_app Directory:
   * Change the directory to where the record.py script is located:

**cd C:\Users\YourUsername\Desktop\haigs\_app**

1. Prepare the Feeds File:
   * Ensure you have a text file (e.g., feeds.txt) containing the RTSP stream URLs. Each line should be formatted as stream\_name:url.
2. Run the Script:

Execute the script using the following command, specifying the path to your feeds file and the recording parameters:

**python record.py --feeds\_file feeds.txt --record\_time\_min 1 --record\_max\_time\_min 100 --non\_record\_start 11:19 --non\_record\_end 11:20**

Adjust the parameters as needed:

* **--record\_time\_min:** Duration to record each stream in minutes.
* **--record\_max\_time\_min:** Maximum duration before the recording session ends.
* **--non\_record\_start:** Start time of the non-recording period in HH format.
* **--non\_record\_end:** End time of the non-recording period in HH format.

1. Press the q key at any time to stop the script and terminate recordings.
2. Hand Landmark Detection and Extraction

This section explains how to run the extract\_hand\_landmarks.py script to process videos, extract hand landmarks using MediaPipe, and save the results as CSV files. The script will process all videos in a specified input folder and create output files in a local folder named 'landmark\_extracts'.

**Running the Script**

1. Open the Command Prompt
   * Start by opening the Command Prompt on your Windows machine.
2. Navigate to the haigs\_app Directory:
   * Change the directory to where the extract\_hand\_landmarks.py script is located:

**cd C:\Users\YourUsername\Desktop\haigs\_app**

1. Prepare the Input Folder:
   * Ensure you have a folder containing your video files. The folder should be specified in the command line argument.
2. Run the Script:
   * Execute the script using the following command, specifying the path to your input folder:

**python extract\_hand\_landmarks.py C:\path\to\input\folder**

* Replace C:\path\to\input\folder with the path to your actual folder containing video files.

1. Check the Output:
   * The extracted hand landmarks will be saved as CSV files in a folder named 'landmark\_extracts', which will be created in the same directory where the script is run.

## Object Recognition

This section explains how to run the YOLO object detection script to perform inference on images and visualize the results. The script uses a trained YOLO model to detect objects in an image and displays the annotated image with bounding boxes and labels.

**Running the Script**

1. Open the Command Prompt:
   * Start by opening the Command Prompt on your Windows machine.
2. Navigate to the haigs\_app Directory:
   * Change the directory to where the infer.py script is located:

**cd C:\Users\YourUsername\Desktop\haigs\_app**

1. Prepare the Model and Image:
   * Ensure you have the YOLO model file (trained\_model.pt) and the image file in the local folder or specify their paths.
2. Run the Script:
   * Execute the script using the following command, specifying the path to your model file and the image:

**python infer.py trained\_model.pt path\to\image.jpg**

1. View Results:
   * The annotated image with detected objects will be displayed in a window.