

1 Usage Instructions for Virtual Notepad with Hand Gesture Recognition

Prerequisites:

- Ensure you have the required libraries installed
- `pip install opencv-python mediapipe tensorflow numpy`

Running the Application:

1. Start the Application:
 - Run the script in your Python environment.
 - The application will access your default webcam and display the virtual notepad interface.

User Interface Overview:

- The interface consists of a black bar at the top with color selection icons, an eraser icon, and a dropdown menu.
- The main drawing area is displayed below the black bar.
- Hand gestures are used to interact with the notepad.

Hand Gestures and Actions:

1. Drawing on the Canvas:
 - **Select a Color:** Use the index and middle fingers to point at the desired color icon on the top bar. Close the middle finger and use only the index finger to draw.
 - **Red Color:** Move the middle finger to the red icon area (rightmost color icon).
 - **Green Color:** Move the middle finger to the green icon area.
 - **White Color:** Move the middle finger to the white icon area.
 - **Blue Color:** Move the middle finger to the blue icon area (leftmost color icon).

- **Draw:** After selecting a color, close the middle finger and use the index finger to draw on the canvas.

2. Erasing the Drawing:

- **Select the Eraser:** Point at the eraser icon using the index and middle fingers. Close the middle finger and use only the index finger to erase.
- **Erase:** Move the index finger over the area you want to erase.

3. Predicting Characters:

- **Select Predict:** Point at the "PREDICT" text on the top bar using the index and middle fingers.
- **Predict:** The application will process the drawing on the canvas and display the predicted character(s) at the bottom of the screen.

4. Clearing the Canvas:

- **Select Clear:** Point at the "CLEAR" text on the top bar using the index and middle fingers.
- The canvas will be cleared, and you can start drawing again.

5. Using the Dropdown Menu:

- **Open the Menu:** Right-click on the "more" icon (three dots) at the top right corner of the screen.
- **Select an Option:**
 - **Save:** Click on "save" to save the current canvas as an image file.
 - **Exit:** Click on "exit" to close the application.
 - **Help:** Click on "help" for instructions

Additional Notes:

- **Saving the Canvas:** When you save the canvas, an image file with a timestamp will be created in the current directory.
- **Exiting the Application:** You can also press the 'q' key to exit the application.