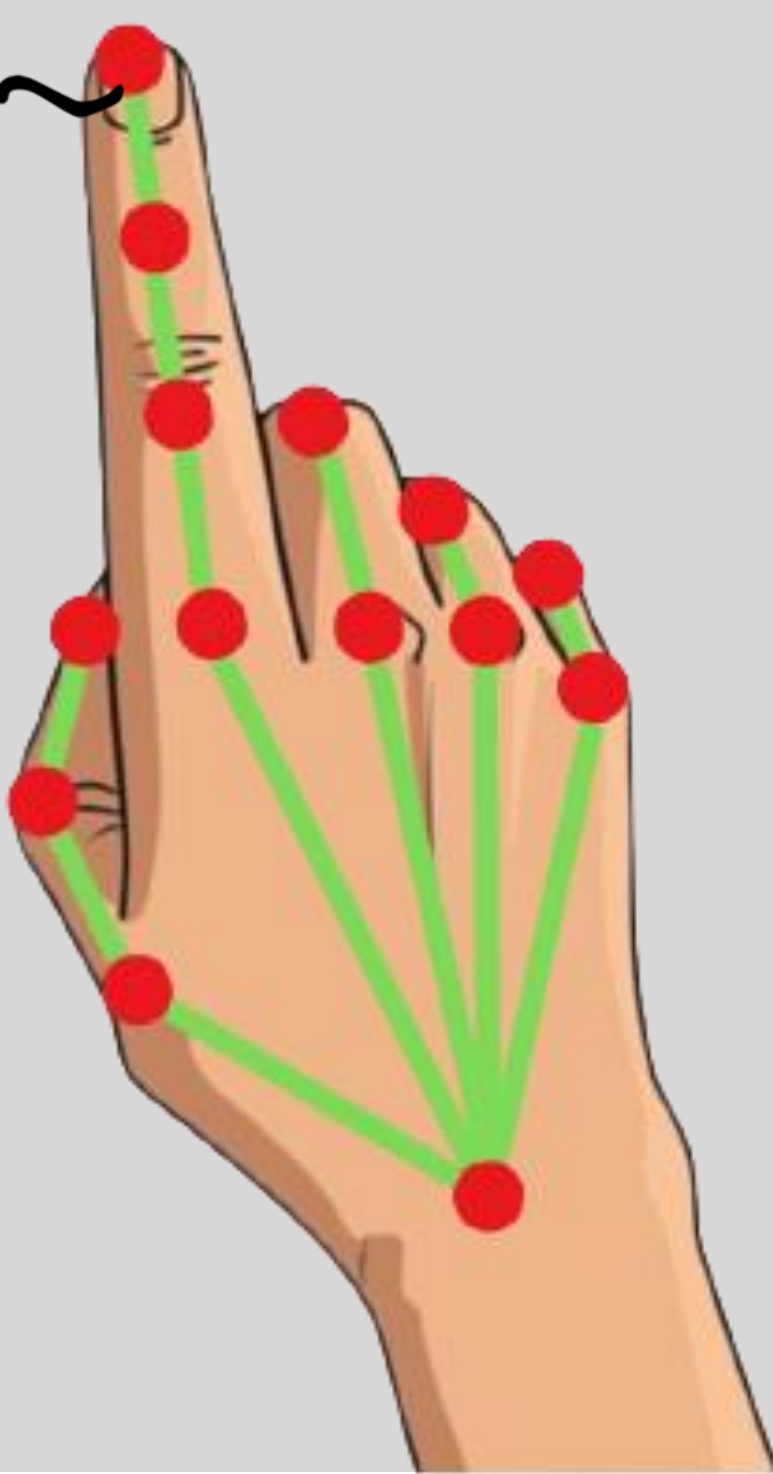


Draw in the Air



Air Drawing

Created by: Malam Vivek Kanji
MSc IT, Semester 2
IU2254100006

INTRODUCTION

This project uses computer vision and machine learning to create an Air Drawing tool. It utilizes OpenCV and Mediapipe libraries to detect and track hand landmarks, enabling users to draw in the air using their hand motions. Users can choose between a brush or eraser and adjust the size and color. The project showcases the power of computer vision and machine learning in creating an interactive user experience by combining various techniques such as image processing, object detection, and tracking.

TECHNOLOGIES

Front end: The program uses the OpenCV library for displaying the canvas and capturing frames from the webcam.

Back end: The program uses the MediaPipe library for hand landmark detection and mapping the position of the hand to a point on the canvas.

CONCLUSION

In conclusion, the Air Drawing project is a great example of the power of computer vision and machine learning. It allows users to draw on a virtual canvas using their hands, and combines various techniques such as image processing, object detection, and tracking. The project uses the OpenCV library for computer vision and the MediaPipe library for hand landmark detection and tracking. The program is designed for users who want to draw on a canvas using their hands, and provides options to select different colours and erase the canvas. Overall, the project demonstrates the exciting possibilities of combining computer vision and machine learning in creating interactive user experiences.

SNAPSHOTS



LIBRARIES

- **cv2:** OpenCV is a computer vision library used for image and video processing.
- **numpy:** NumPy is a library for numerical computations in Python.
- **mediapipe:** MediaPipe is a cross-platform framework for building multimodal machine learning pipelines.
- **collections:** The collections module provides alternatives to built-in types with additional functionality.
- **deque:** A deque is a double-ended queue.

ALGORITHM

- [1] Start reading the frames and convert the captured frames to HSV colour space.(Easy for colour detection)
- [2] Prepare the canvas frame and put the respective ink buttons on it.
- [3] Adjust the values of the mediapipe initialization to detect one hand only.
- [4] Detect the landmarks by passing the RGB frame to the mediapipe hand detector
- [5] Detect the landmarks, find the forefinger coordinates and keep storing them in the array for successive frames .(Arrays for drawing points on canvas)
- [6] Finally draw the points stored in array on the frames and canvas .

SYSTEM FLOW DIAGRAM

