Project Title: Hands-Free Manga Navigator

Description:

* This project is a Python-based application that allows users to navigate through manga chapters captured by a webcam. The application uses computer vision techniques for hand detection, gesture recognition, and web browsing control to provide a hands-free manga reading experience.
* The MediaPipe Hands library can accurately detect landmarks (the locations of joints and fingertips) on a hand. Using these landmarks, I was able to leverage the program’s ability to detect how the hand is oriented on the camera (whether it is facing up, down, left, or right). Furthermore, I was able to accurately track which finger is currently held up. With this in mind, I was able to develop a way for this program to recognize a certain gesture/hand positioning and perform a command that is mapped to that gesture/hand positioning – that being a manga navigator.

System Requirements:

* Python
* OpenCV
* MediaPipe Hands
* PyAutoGUI
* BeautilfulSoup
* Tkinter
* Web browser (Chrome Firefox, Brave, etc.)
* Webcam

Usage:

1. Run ‘python main.py’
2. Position yourself in front of webcam
3. A GUI will pop up along with the live feed. Tilt hand left/right to navigate between chapters.

A person holding a hand

Description automatically generated

1. To choose a manga chapter, close your fingers. The chapter will be pulled up on a browser.

A person holding a hand with red dots

Description automatically generated

1. The following gestures allow you to scroll up and down (make sure your mouse is hovering over the browser and not another application):

Scroll down:

A screen shot of a hand

Description automatically generated

Scroll down faster:

A person holding a hand

Description automatically generated

Scroll up:

A hand with a hand drawn in the middle of the fingers

Description automatically generated with medium confidence

Scroll up faster:

A person's hand with lines and points

Description automatically generated

1. To go to the next chapter, hold your hand sideways to the right and stick out only your index and pinky. When done properly, two green ‘+’ signs will appear. Drag your hand past these signs and the next chapter will load in the browser. To go to the previous chapter, the do the same but towards the left. Two blue ‘+’ signs’ will appear this time.

Next chapter:

A person holding up their hand

Description automatically generated

Previous chapter:

A person's hand with a hand gesture

Description automatically generated

1. When in a situation to quickly go to another tab or go to MyWings, hold down an upside-down peace sign. This will close your current chapter and redirect you to a MyWings tab. For this feature, I wanted the python script to terminate, but I did not implement this.

A person with a hand drawn on it

Description automatically generated