

# Finger control

---

## Introduction

MediaPipe is an open source data stream processing machine learning application development framework developed by Google. It is a graph-based data processing pipeline for building and using multiple forms of data sources, such as video, audio, sensor data, and any time series data.

MediaPipe is cross-platform and can run on embedded platforms (Raspberry Pi, etc.), mobile devices (iOS and Android), workstations and servers, and supports mobile GPU acceleration. MediaPipe provides cross-platform, customizable ML solutions for real-time and streaming media.

The core framework of MediaPipe is implemented in C++ and provides support for languages such as Java and Objective C. The main concepts of MediaPipe include Packet, Stream, Calculator, Graph and Subgraph.

Features of MediaPipe:

- End-to-end acceleration: Built-in fast ML inference and processing accelerates even on commodity hardware.
- Build once, deploy anywhere: Unified solution for Android, iOS, desktop/cloud, web and IoT.
- Ready-to-use solutions: cutting-edge ML solutions that showcase the full capabilities of the framework.
- Free and open source: frameworks and solutions under Apache2.0, fully extensible and customizable.

## Finger control

Source code location: /home/pi/yahboomcar\_ws/src/yahboomcar\_mediapipe/scripts

Click the [F key] to switch the recognition effect. The effect of the image can be controlled by the distance between the thumb and index finger (open/close).

If you want to exit the program, you can press q in the preview window or press Ctrl+C in the terminal to terminate the program!

### 1. USB camera

```
cd /home/pi/yahboomcar_ws/src/yahboomcar_mediapipe/scripts
python3 05_HandCtrl_USB.py
```



pi@raspberrypi: ~/yahboomcar\_ws/src/yahboomcar\_mediapipe/scripts

File Edit Tabs Help

```

pi@raspberrypi:~/yahboomcar_ws/src/yahboomcar_mediapipe/scripts $ python3 05_HandCtrl_CSI.py
[0:06:03.892423412] [2010] INFO Camera camera_manager.cpp:284 libcamera v0.1.0+118-563cd78e
[0:06:03.906036060] [2028] INFO RPI pisp.cpp:653 libpisp version v1.0.2 fa44a258644a 22-11-2023 (21:59:22)
[0:06:03.916517782] [2028] INFO RPI pisp.cpp:1112 Registered camera /base/axi/pcie@120000/rp1/i2c@80000/imx219@10 to CFE dev
ice /dev/media0 and ISP device /dev/media1 using PiSP variant BCM2712_C0
[0:06:03.917852375] [2010] INFO Camera camera_manager.cpp:284 libcamera v0.1.0+118-563cd78e
[0:06:03.936914393] [2031] INFO RPI pisp.cpp:653 libpisp version v1.0.2 fa44a258644a 22-11-2023 (21:59:22)
[0:06:03.949955208] [2031] INFO RPI pisp.cpp:1112 Registered camera /base/axi/pcie@120000/rp1/i2c@80000/imx219@10 to CFE dev
ice /dev/media0 and ISP device /dev/media1 using PiSP variant BCM2712_C0
[0:06:03.950000000] [2031] INFO RPI pisp.cpp:1112 Registered camera /base/axi/pcie@120000/rp1/i2c@80000/imx219@10 to CFE dev
ice /dev/media0 and ISP device /dev/media1 using PiSP variant BCM2712_C0

```

dst

FPS : 9

58%

(x=978, y=91) ~ R:0 G:0 B:0