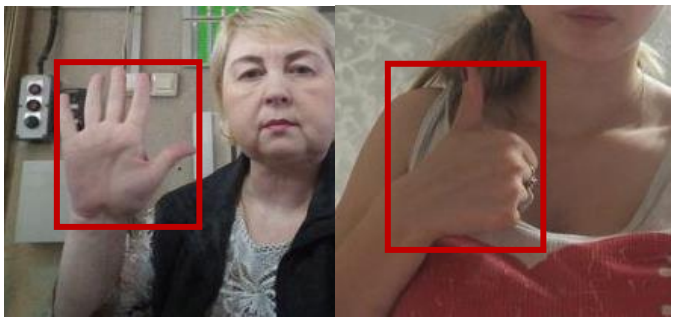
MODEL CARD

Hand Gesture Game

Model Details

This model has approximately 1.5 million parameters and is trained using YOLOv5 for gesture detection. The classes include "Palm" and "Like." It is capable of real-time inference on webcam images, with an inference time of approximately 160ms on the VA8801 platform, equivalent to 6.25 frames per second (FPS), and an accuracy exceeding 90%.



The red boxes respectively detect two gestures: “Palm” and “Like”

Model Specifications

Model Type : Convolutional Neural Network

Model Architecture : Yolov5n with customized backbone for VA8801

Input : 3*320*320

Output : [class,x0,y0,x1,y1]

Class :

(1) "Palm" (fingers closed or open), positive and negative 90 degrees

(2) "Like" (front and back), positive and negative 90 degrees.

Application

Gesture-controlled products: Photo sticker machines, interactive games

Application example: The center point of the BoundingBox can be calculated through the coordinates of the Output. Subsequently, check whether the center point is within the trigger or sensing area.

Limitation

(1) Not easily detected beyond a distance of four meters.

(2) Not supported under lighting conditions with less than 30 lux.

(3) Tilt angle not exceeding 30 degrees; better performance at eye level.

Training Data

Hagrid – Hand Gesture Recognition Image

Subsets : stop, palm, like

Total : about 1000 images

You can use it for image classification or image detection tasks, it can be used in video conferencing services (Zoom, Skype etc.)

There are some images have no_gesture class if there is a second free hand in the frame, so we trained the model without no_gesture class. The people here are from 18 to 65 years old, which was collected mainly indoors with considerable

variation in lighting, including artificial and natural light. The dataset includes images taken in extreme conditions such as facing and backing to a window. Also, the subjects had to show gestures at a distance of 0.5 to 4 meters from the camera.

- Reference

https://github.com/hukenovs/hagrid