LOKII-CE Gesture and Posture function
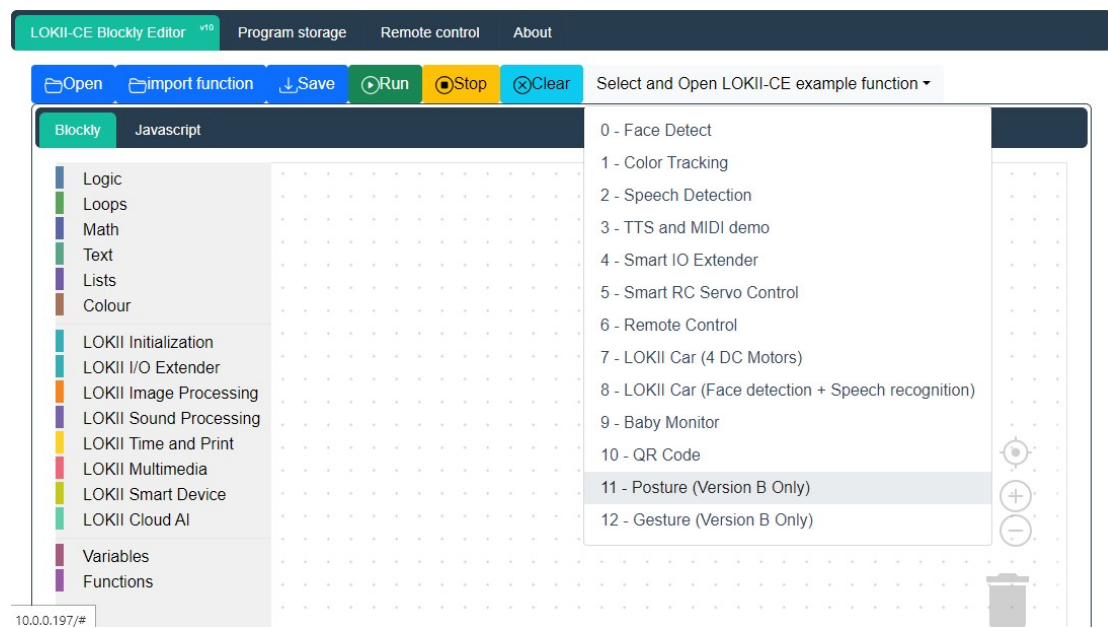
Only " LOKII-CE board Version B" has Posture and Gesture functions.

Please make sure the firmware are at least:
- LOKII prefix version: 1.37B or bigger
- LOKII suffix version: 123B or bigger

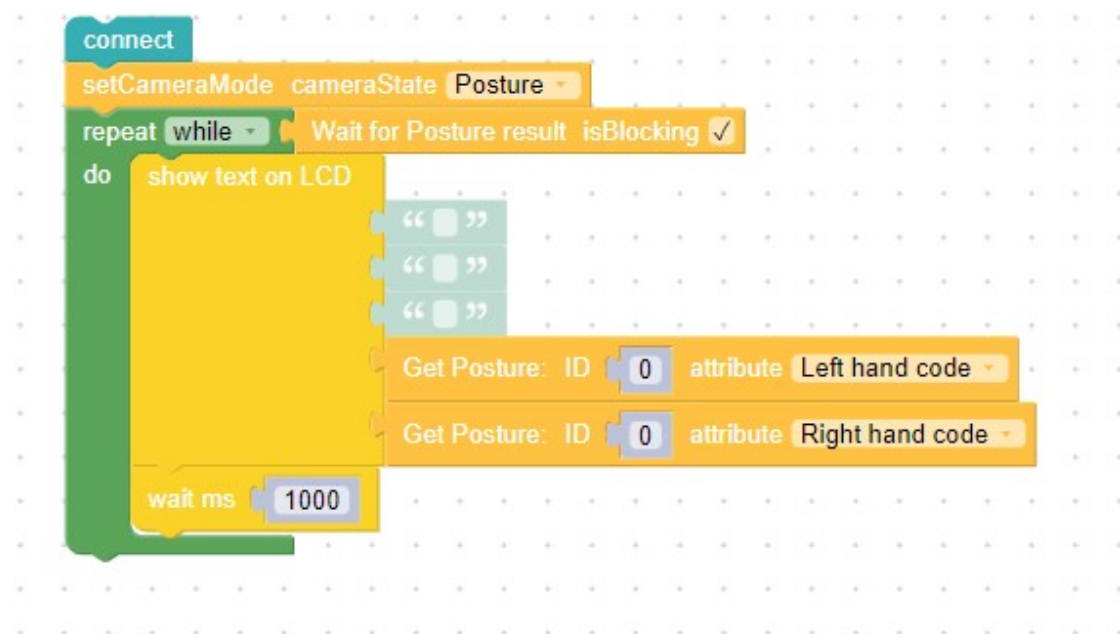## Firmware Version: LOKII-1.37B-123B

When power up with Blockly Editor, you can find the Gesture and Posture function in the example list:

Posture Example

To enable Posture detection, set camera mode to "Posture", then wait for a valid posture result using "Wait for Posture result". Once there is posture detected, we can use "Get Posture ID: attribute:" function to retrieve the result.
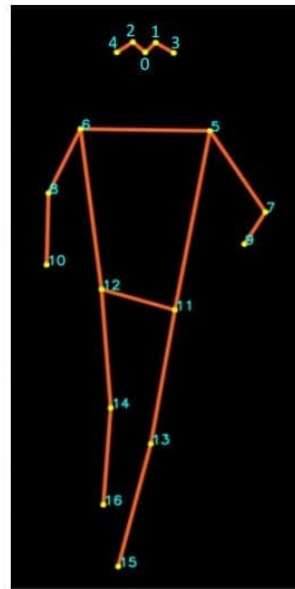
For example, this demo waits for posture result and shows the left hand code and right hand code on LOKII-CE LCD Screen.
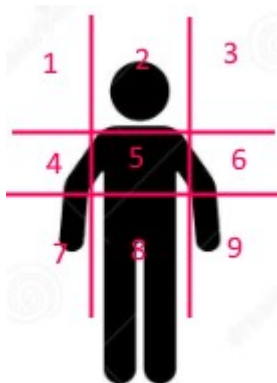
Posture detection Fact:

Index	Key point
0	Nose
1	Left-eye
2	Right-eye
3	Left-ear
4	Right-ear
5	Left-shoulder
6	Right-shoulder
7	Left-elbow
8	Right-elbow
9	Left-wrist
10	Right-wrist
11	Left-hip
12	Right-hip
13	Left-knee
14	Right-knee
15	Left-ankle
16	Right-ankle

- Posture detection can detect up to 3 postures at the same times. The biggest posture will be indexed in result ID = 0, the smallest posture will be indexed in result ID: 2.
- Posture detection can work when the camera can capture the full body of the human (include head and four limbs) If a full body is not presented in the camera, result might be inaccurate.
- Posture detection can work when the human bodies is not overlapped with each other.
- Posture detection can work if the hands are put in front of the human body.
- Posture detection can provide body results:
    1) Posture rectangular boundary (x, y, width, height). The maximum bounding box is 320x240 pixel.
    2) Posture hand code number.
    3) 17 - feature points (x,y) coordinates

Posture hand code [1- 9] (position of hand):

When posture is detected, LOKII-CE can output the result as a hand code. Each hand code depict the position of a hand in related to the human body in this diagram.

For example, if a user raise up his left hand to left-top corner and put down his right hand to right-bottom corner, the detected left hand code = 1, right hand code = 9.

"Get Posture ID: attribute: " block can be used to retrieve the posture result.

"Get Posture Feature Points' list: ID " block can be used to retrieve 17 features points as an array from the posture. The array format likes:
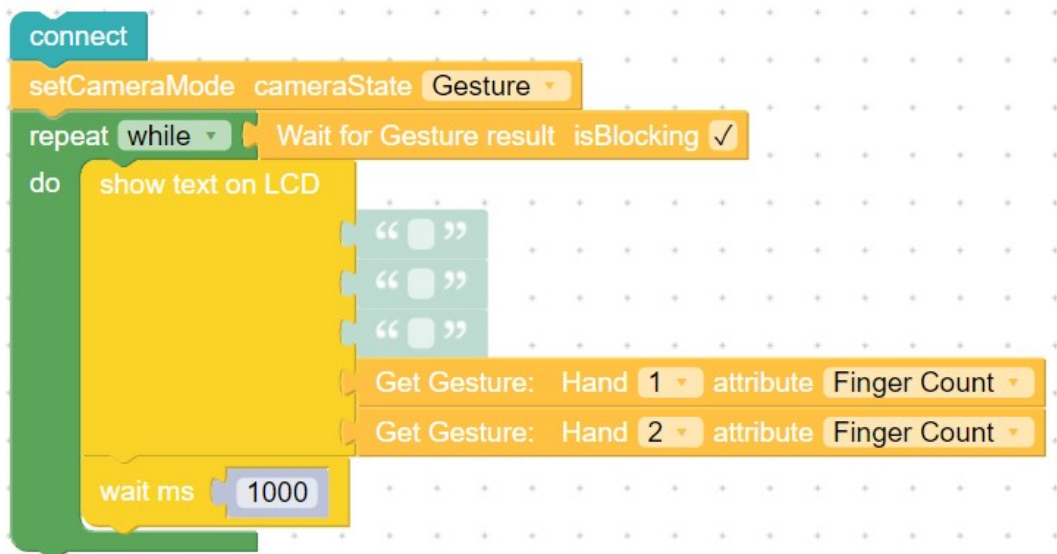[x0,y0,x1,y1,x2,y2, …..   x16,y16]

These data can be used for user-defined posture recognition.
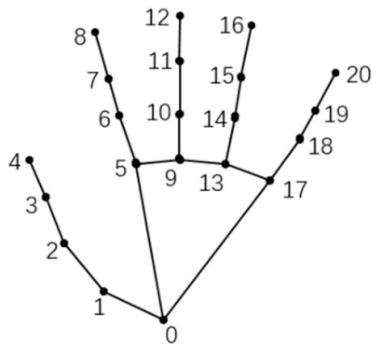
Gesture Example

To enable gesture detection, set camera mode to "Gesture", then wait for a valid gesture result using "Wait for Gesture result". Once there is gesture detected, we can use "Get Gesture ID: attribute:" function to retrieve the result.

For example, this demo waits for gesture result and shows the finger count for both hands on LOKII-CE LCD Screen.

Gesture detection Fact:

- Gesture detection can detect up to 2 hands from a human at the same times.
- Gesture detection can work if the human head and hands are presented in the camera image.
- Gesture detection cannot distinguish left or right hand.
- Gesture detection can provide finger results:
    1) Hand rectangular boundary (x, y, width, height). The maximum bounding box is 320x240 pixel.
    2) Hand finger count (Finger count from 0 to 5)
    3) 21 - feature points (x,y) coordinates (This feature will be supported in future)

"Get Gesture ID: attribute: " block can be used to retrieve the gesture result.