



**INTRODUCTION TO AI
MINI PROJECT**

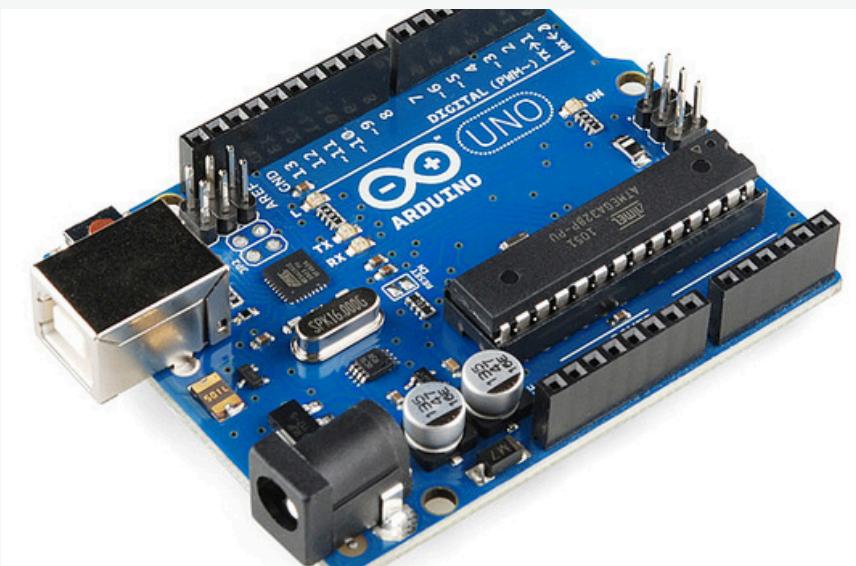
NONG POOKPUI

#Group 2

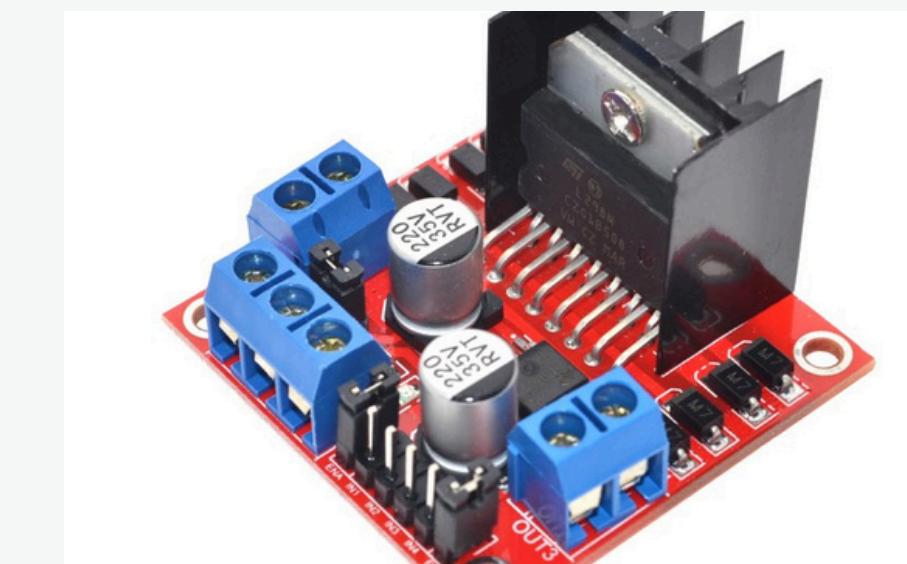
PROJECT PLANNERS

Project Manager : 65110131 Akesit Akkharasaksiri 65110141 Kunlanith Busabong 65110143 Pann Punyajaray 65110141 Paveetida Tiranatwittayakul		65110149 Rattapol Kitirak 65110150 Saranya Vichakyotin 65110153 Suchaya Tirapongporn 65110156 Theedhat Chankrut		Project Objective : Use AI to drive the car										
Collaborative		Major Tasks		Date										
Owners and Helpers				03/02	07/02	09/02	10/02	13/02	15/02	17/02	20/02	22/02		
(Theedhat, Kulanith)		1. Research		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
(Theedhat, Pann)		2. Discuss and list all components		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Pann, Paveetida)		3. Buy materials at Ban Moh		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Saranya)		4. Design and laser cut robot chassis		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Rattapol, Saranya, Suchaya)		5. Assembling and connecting circuit		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Akesit)		6. Coding robot direction movement		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Rattapol)		7. Tuning arduino board with python code		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Akesit, Rattapol)		8. Training OpenCV hand dataset		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
(Paveetida, Suchaya)		9. Decorate the robot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
(Saranya, Kunlanith)		10. Making presentation slides		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				Budget	Quantity	Price/unit	Price							
				- Mecanum Wheels	4	137.5	550							
				- Motor Driver L298N	2	70	140							
				- DC Motor 288:1	5	60	300							
				- Battery 7.4V 3000 Mah	1	-	250							
				- Decorations	6	-	58							
				- Acrylic Plate 30x40	1	-	135							
				Total :	19 Items	1433 Baht								

MATERIALS



ARDUINO UNO



MOTOR DRIVER
L289N *2



DC MOTOR *4
120:1



MECANUM
WHEELS *4

MATERIALS



NUTS AND
SCREW 3M



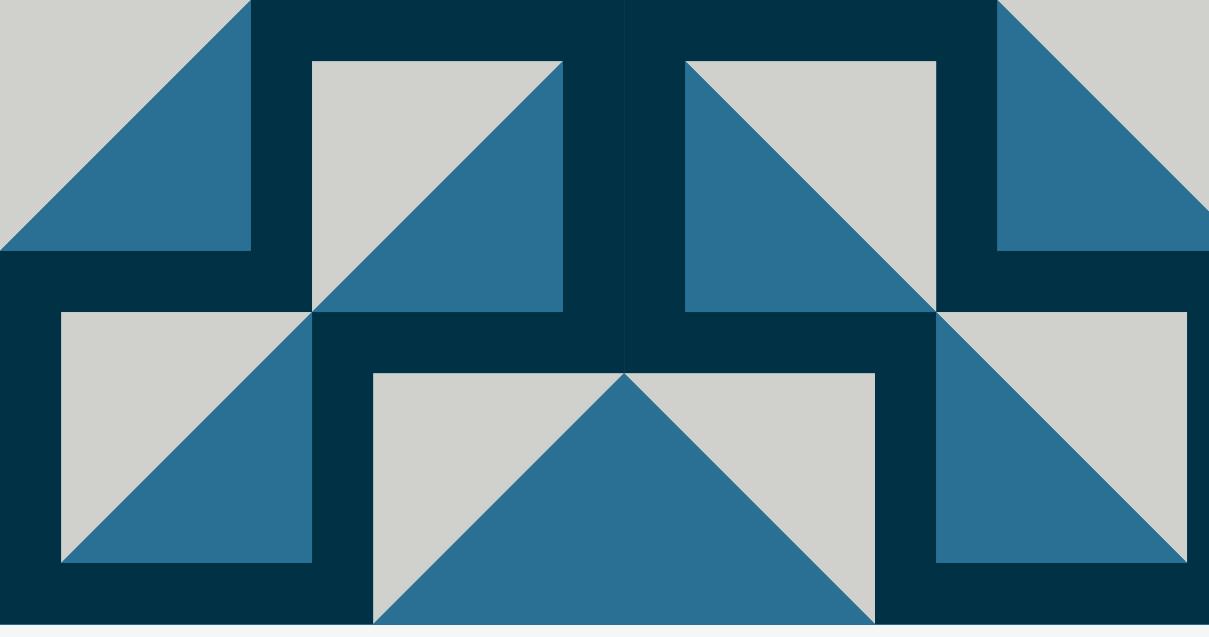
ACRYLIC BOARD
5MM



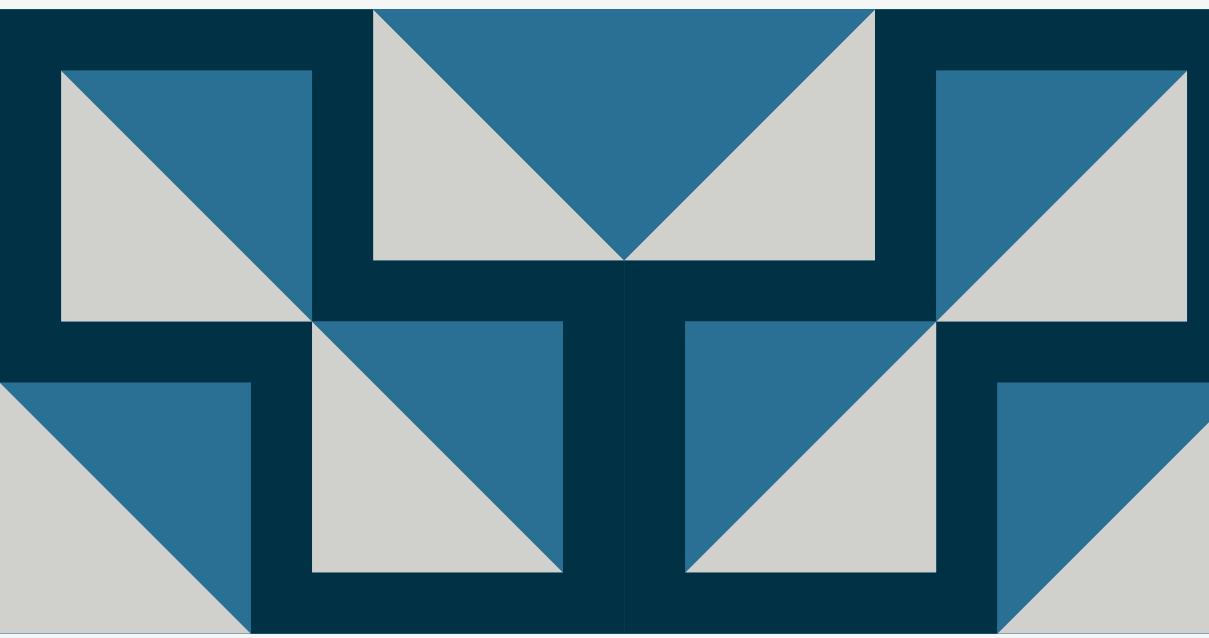
RECHARGEABLE
LITHIUM ION
BATTERY



JUMPER WIRES

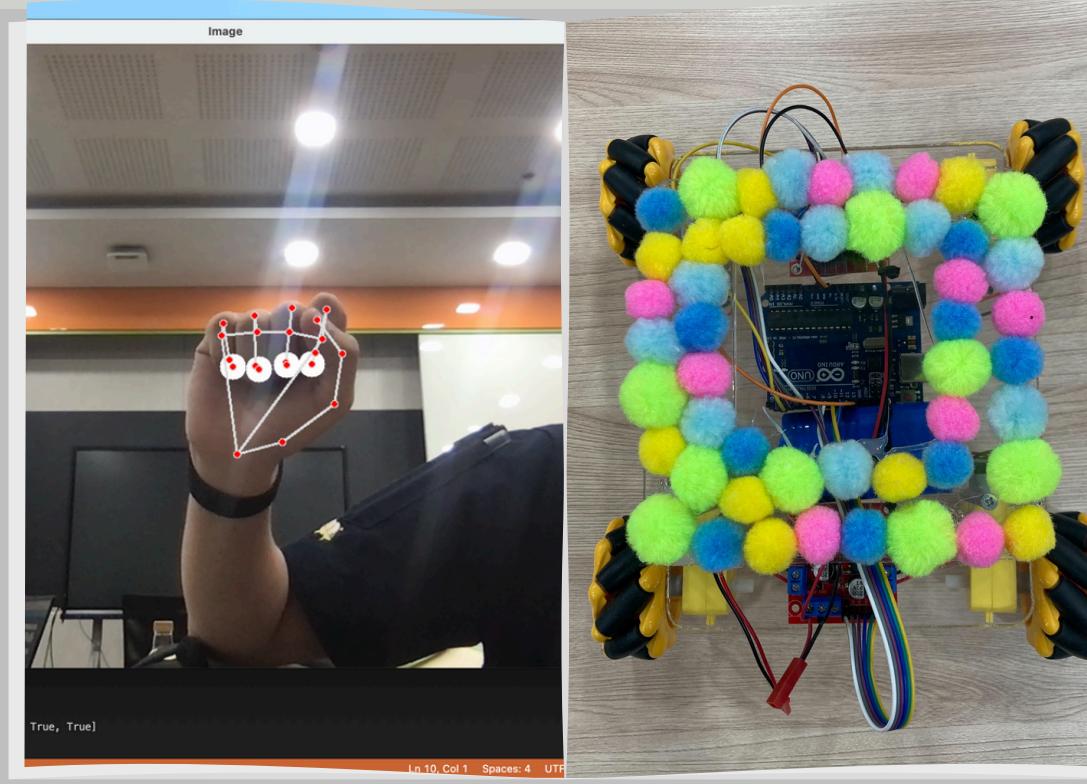


Code workflow

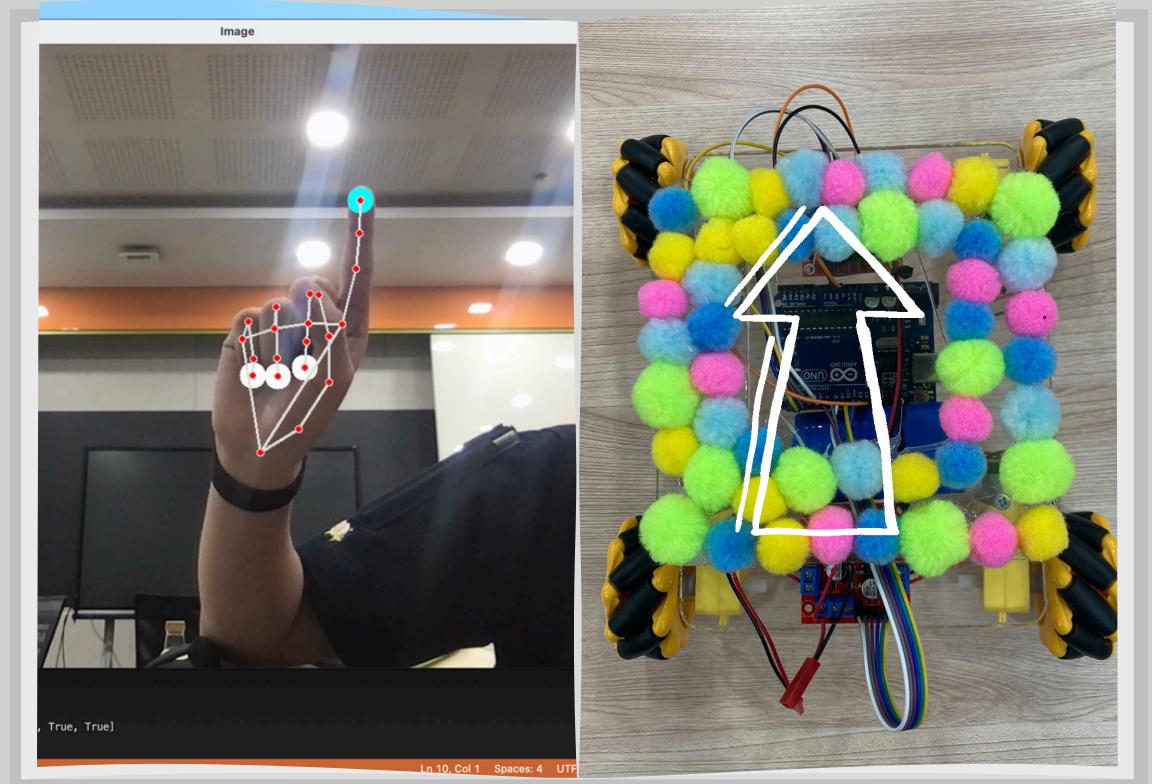


- Import the essential libraries (Mediapipe, Serial, CV2, Time)
- Setting up the camera
- Configures the hand detection model
- Sets up the finger tip and thumb tip landmarks
- In a loop, it reads frames from the camera, detects hands, and gets the landmarks of the hands.
- It calculates the positions of the finger tips and determines if the fingers are folded or not.
- Based on the finger fold status and the position of the thumb tip, it sends commands to the connected device.
- It displays the camera feed with the detected hand landmarks and also showing the FPS (fram rate per second).
- After calculating the positions, receiving a total of 9 different signals (0-8) that will be sent to the arduino to control the motor

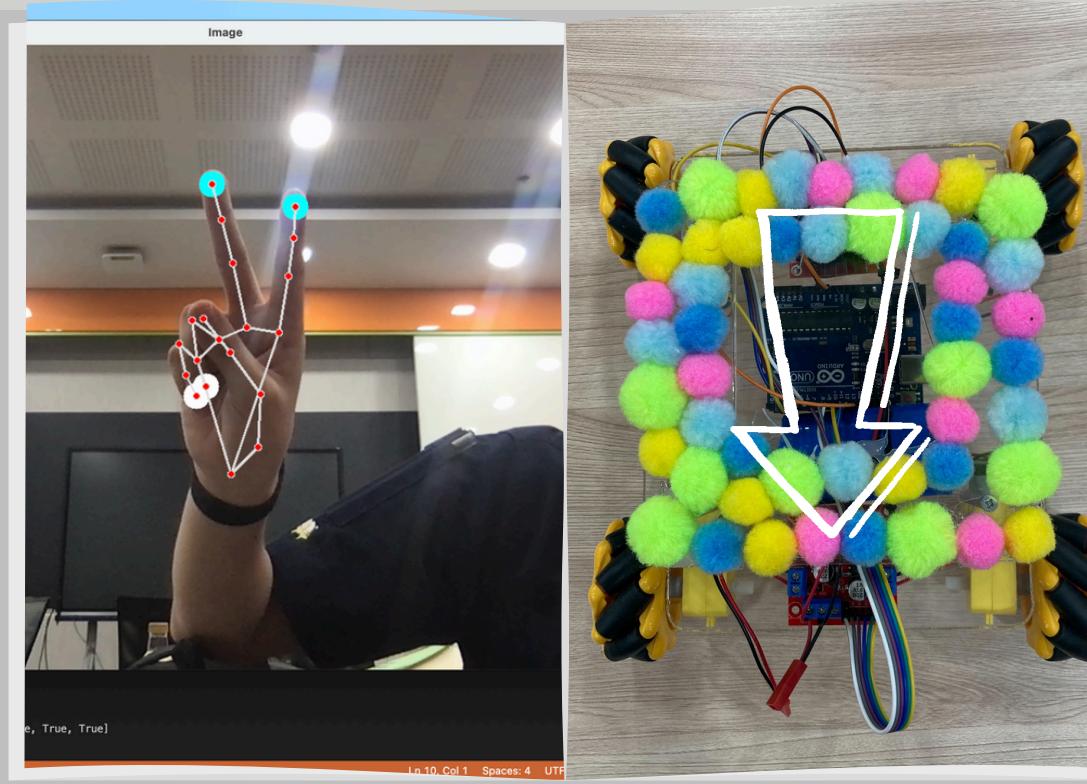
PERFORMANCE



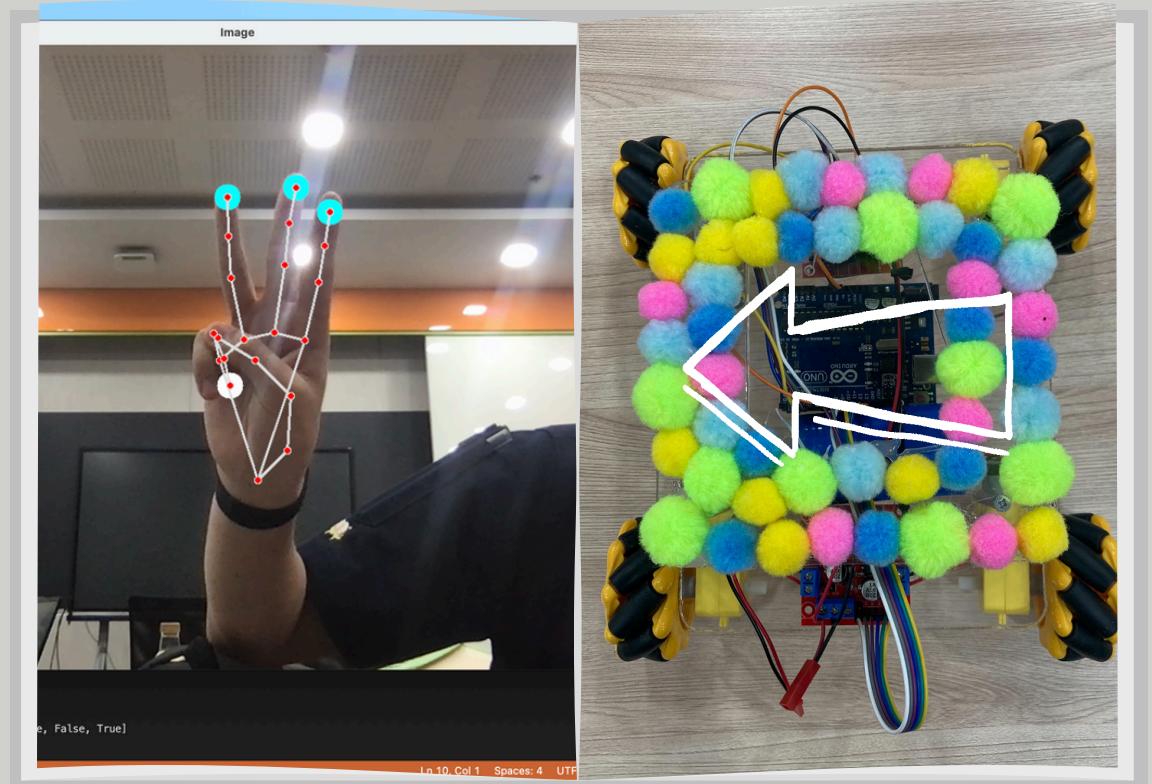
signal : 0
stop



signal : 1
forward

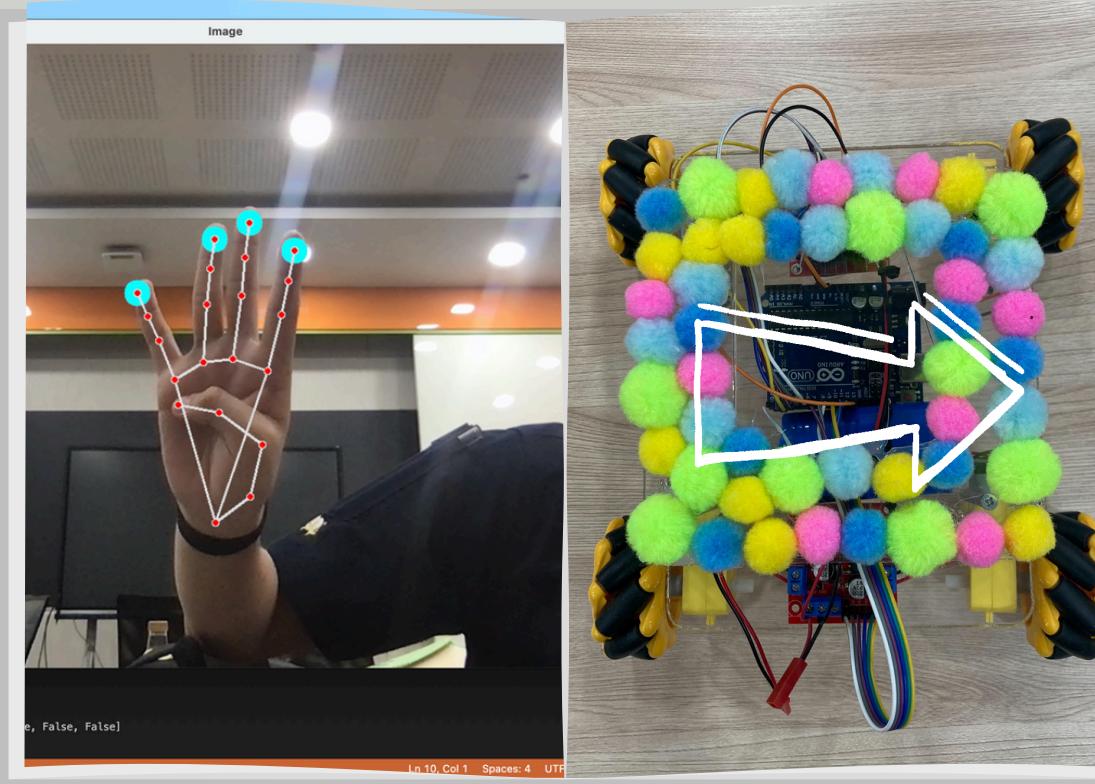


signal : 2
backward

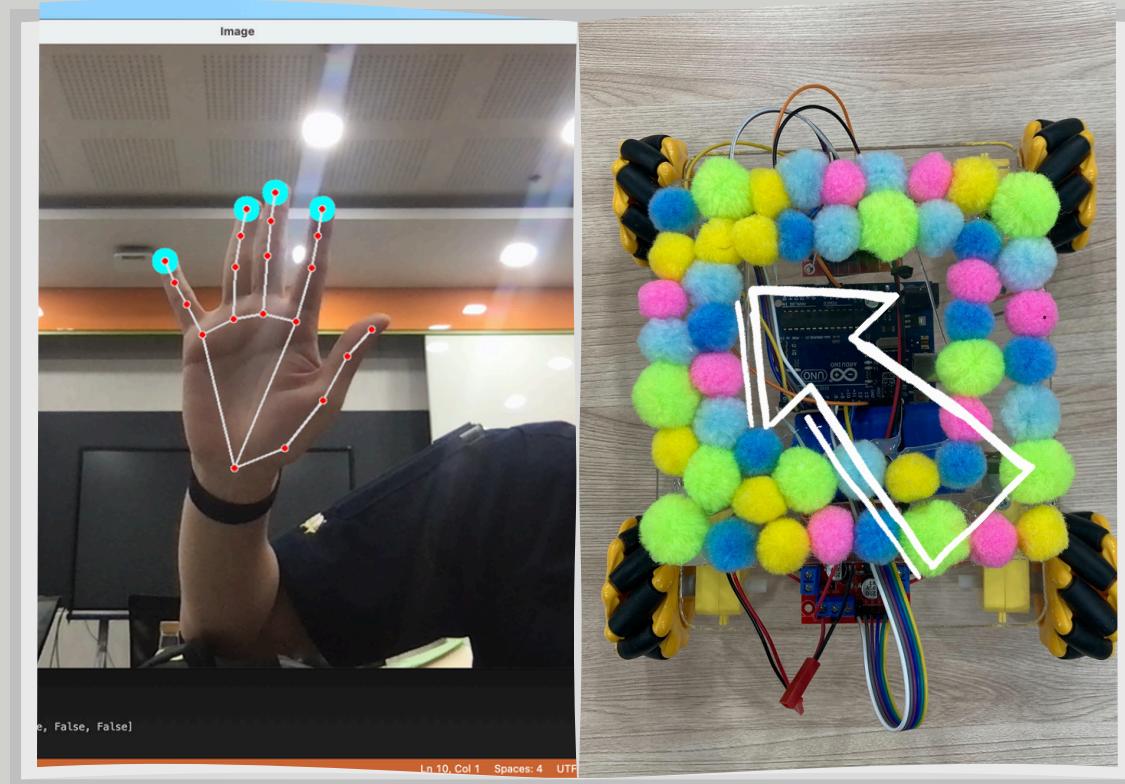


signal : 3
slight left

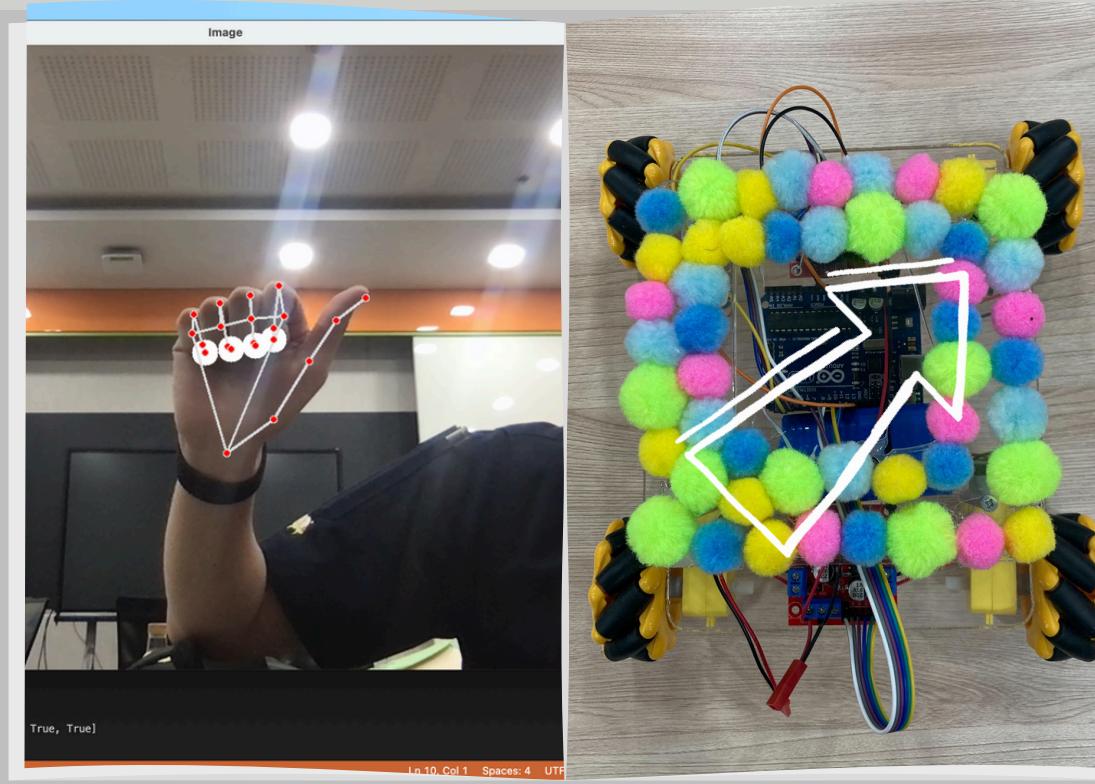
PERFORMANCE



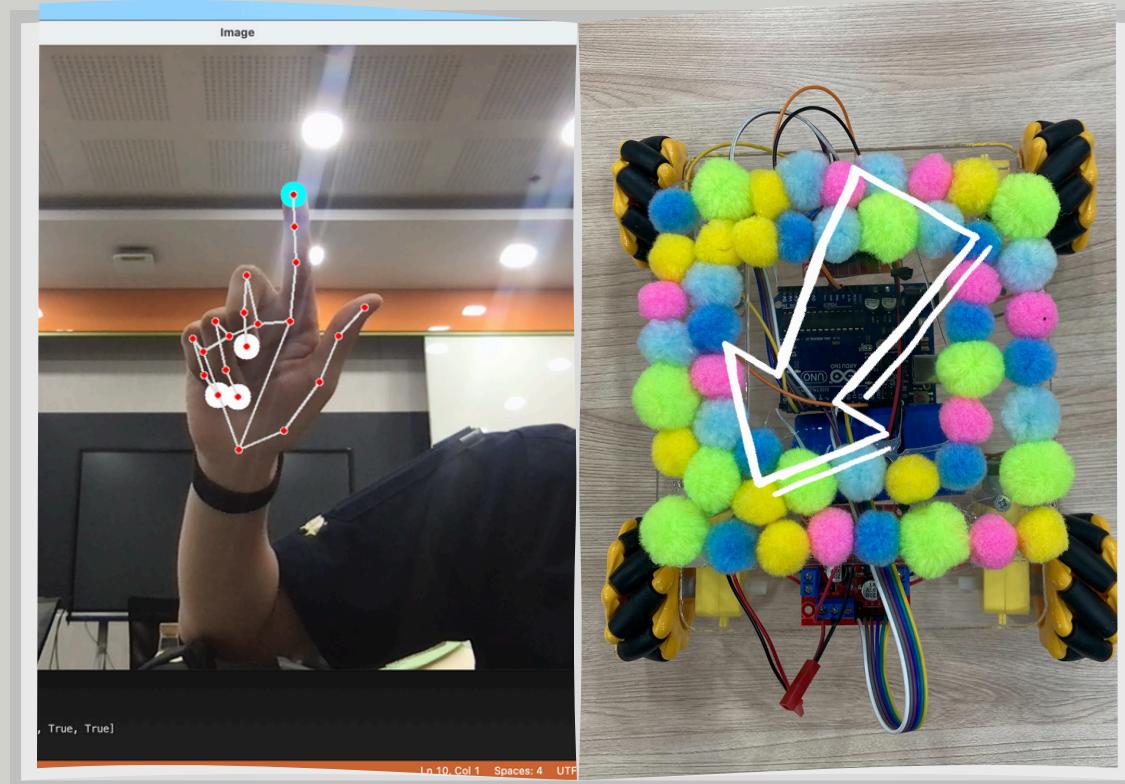
signal : 4
slight
right



signal : 5
front
slight
left

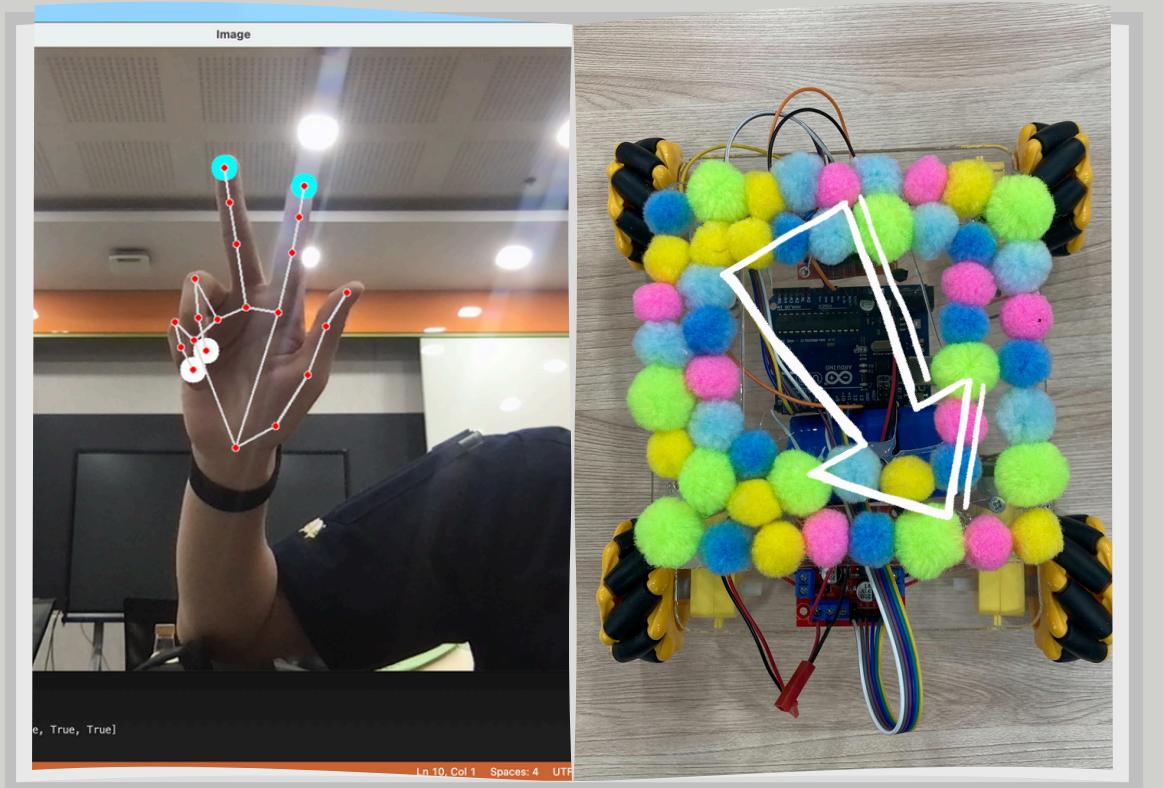


signal : 6
front
slight
right



signal : 7
back
slight
left

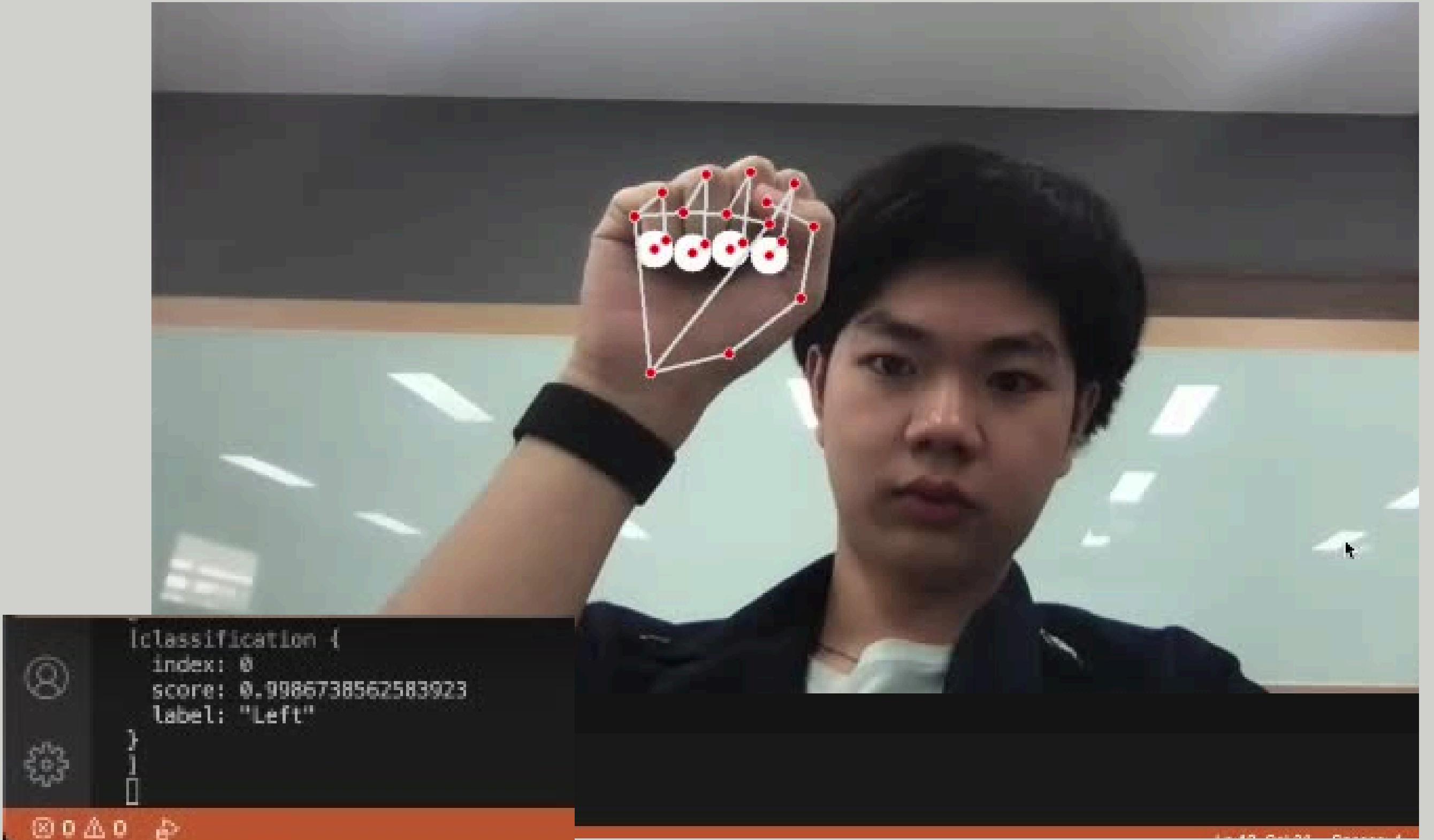
PERFORMANCE



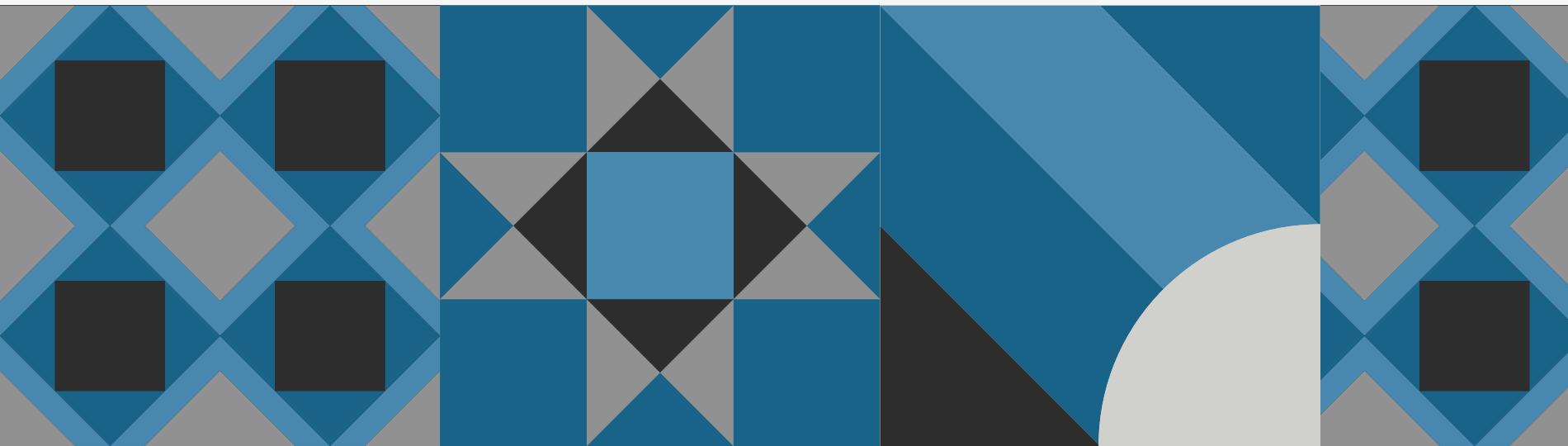
signal : 8
back slight right

CONFIDENCE

confidence score is around 95-99%



ANALYZE



ERROR

- The Arduino cannot receive the data in real-time.
- The outcome not stable and not immediately as it should be.
- 1 Broken motor
- Teachable machine cannot be used (not precise), we use media pipe instead.
- At first when we can't connect arduino and python because it use same port.

THEORY

- Microcontroller Board (Arduino UNO)
- Motor Controller (Motor Driver)
- Library (Serial / MediaPipe / Time / CV2)

**THANK YOU
FOR LISTENING!**

