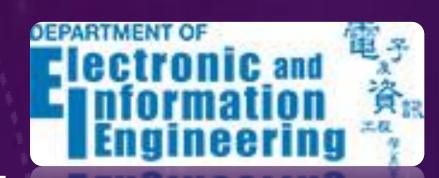
# 香港理工大學

#### The Hong Kong Polytechnic University Department of Electronic and Information Engineering **EIE4433 Honours Project**



# Human-like Robot (Top Half-Size)

#### Introduction

Human-like(Humanoid): In the shape of and/or acting in a fashion similar to a human being

Robot: A machine which can be programmable by a controller autonomous or semi-autonomous

Humanoid robot is a hot trend over the world, many big companies and industries built their own humanoid robot with Al

E.g.: "ASIMO" in HONDA; "Sophia" in Hanson Robotics

#### 00 b j e c t i v e s

To build a top half-size humanoid robot for reception use which

- look similar with human
- can simulate simple human being actions
- can recognize surroundings

by using some simple device/materials/software. eg.

- Microcontroller
- servo motor
- ultrasonic etc.

#### Methodology

Microcontroller: Arduino UNO R3



Arduino SD Card Shield



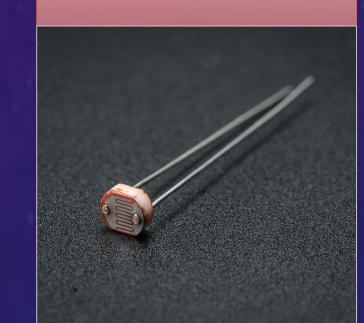
Servo motor: HL-ZX01S



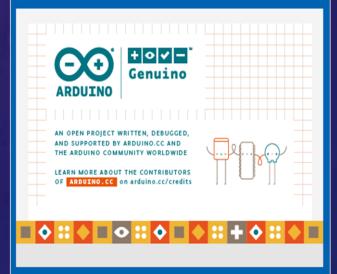
Ultrasonic sensor: HC-SR04



Other sensor: **Photoresistor** 



Programming software: Arduino IDE



Project Flow

Bulit two robotic arms Some drilling work on the aluminum angle

Bulit the body skeleton

Soldering works

Connect the wire to specific

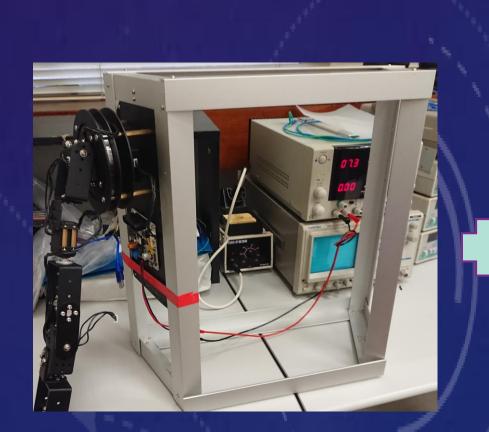
Programming

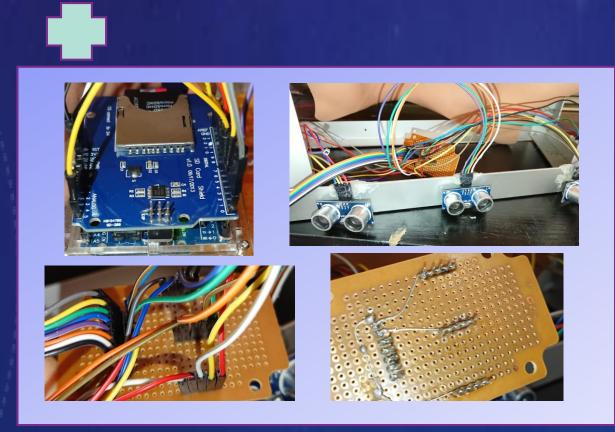
Decoration

Final product output

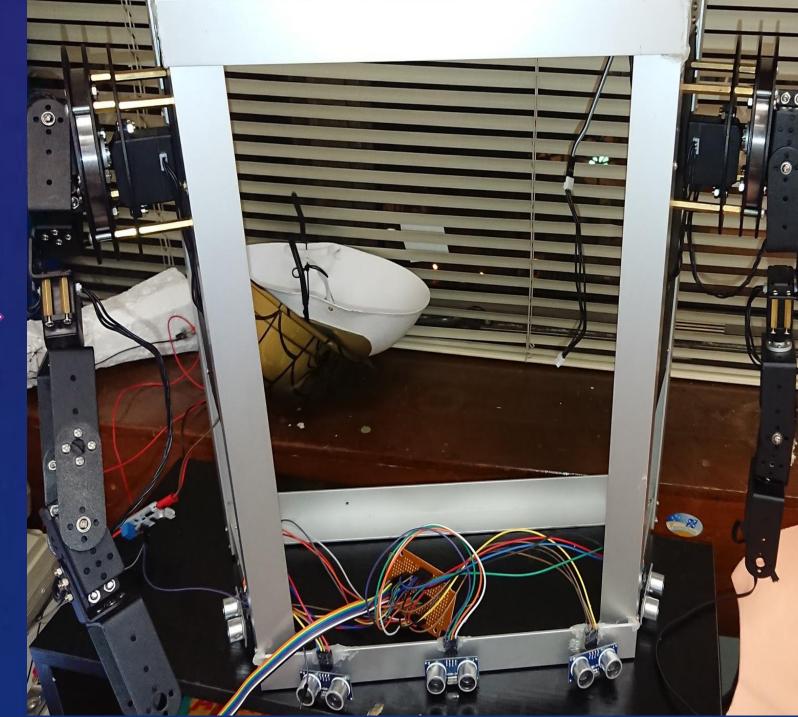
Production model & Implementation



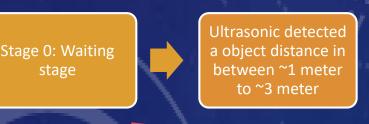








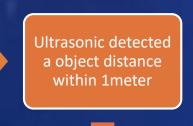
#### Demo Program Flow

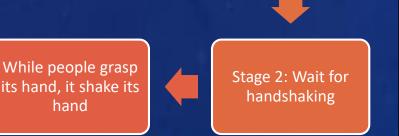






While people grasp





## Achievement



Displayed the humanoid robot in Hong Kong Electronics Fair(Spring Edition)

## Future Development

Upgrade the MCU

Add camera to recognize surrounding

Cooperate with a voice recognition system

Change the skeleton structure and material

Upgrading the servo motor

Two special stage:

Interrupt button 0: People grasp its arm and "teach" it a set of action (20s)

Interrupt button 1: Replay the learnt action in 2x speed (10s)

People leave, go

back to stage 0