

# 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 AI

E.g.: “ASIMO” in HONDA ; “Sophia” in Hanson Robotics

## Objectives

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

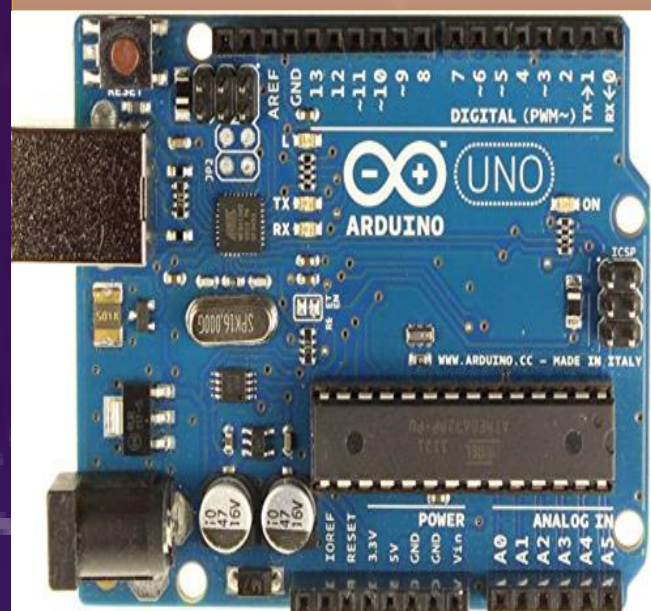
- look similar with human
- can simulate simple human being actions
- can recognize surroundings

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

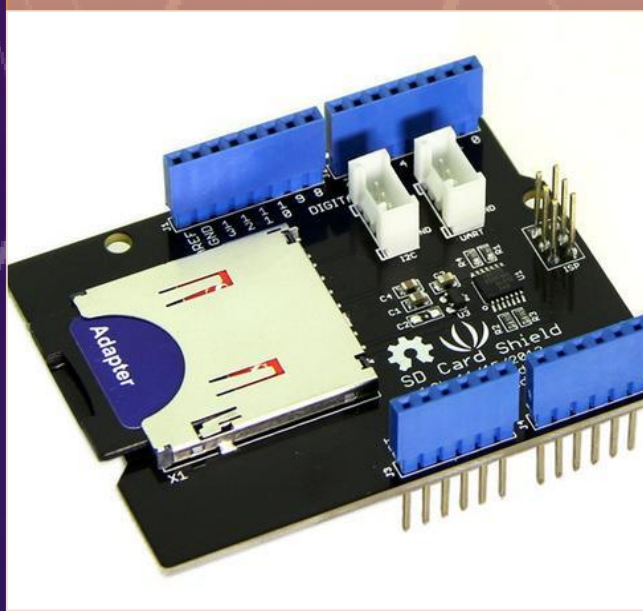
- Microcontroller
- servo motor
- ultrasonic etc.

## Methodology

Microcontroller :  
Arduino UNO R3



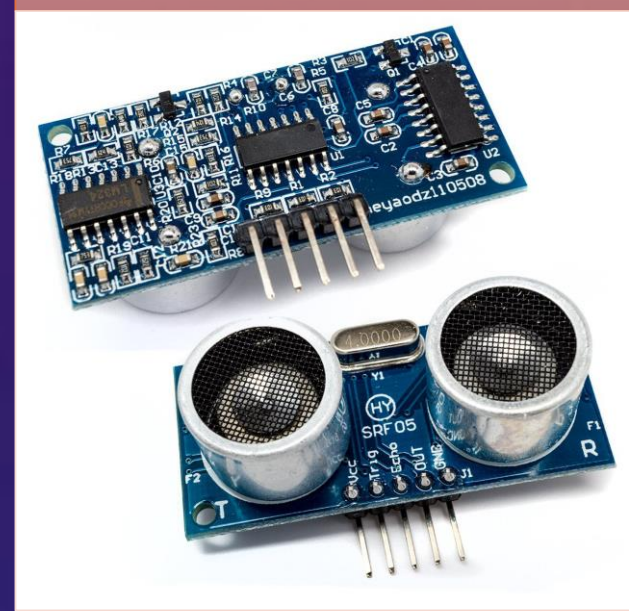
Arduino SD Card Shield



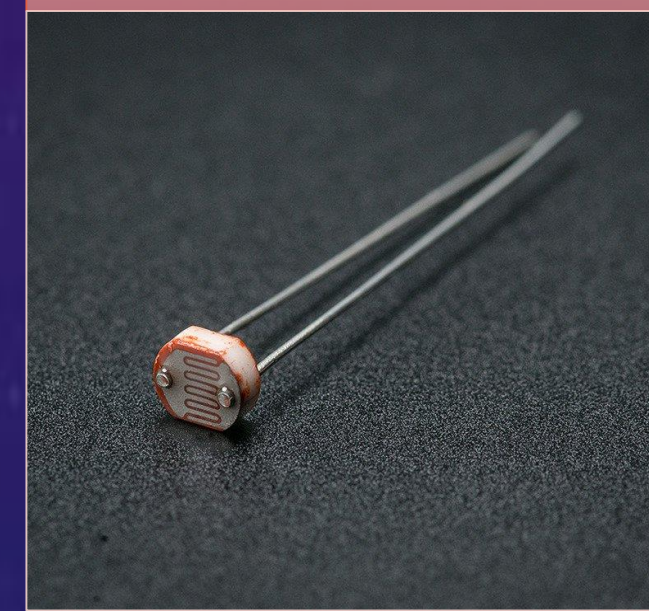
Servo motor :  
HL-ZX01S



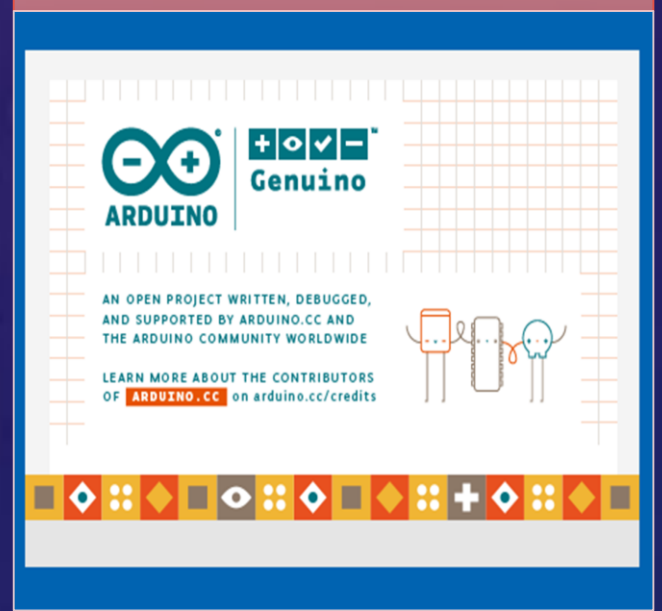
Ultrasonic sensor :  
HC-SR04



Other sensor :  
Photoresistor



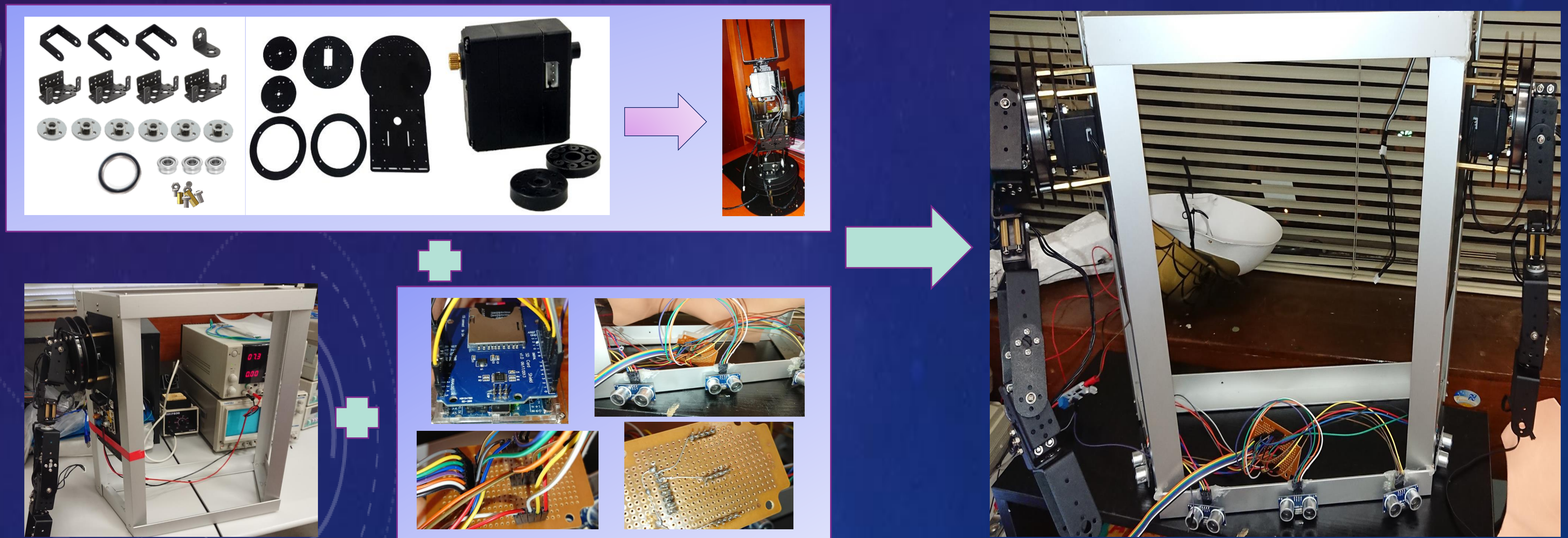
Programming software :  
Arduino IDE



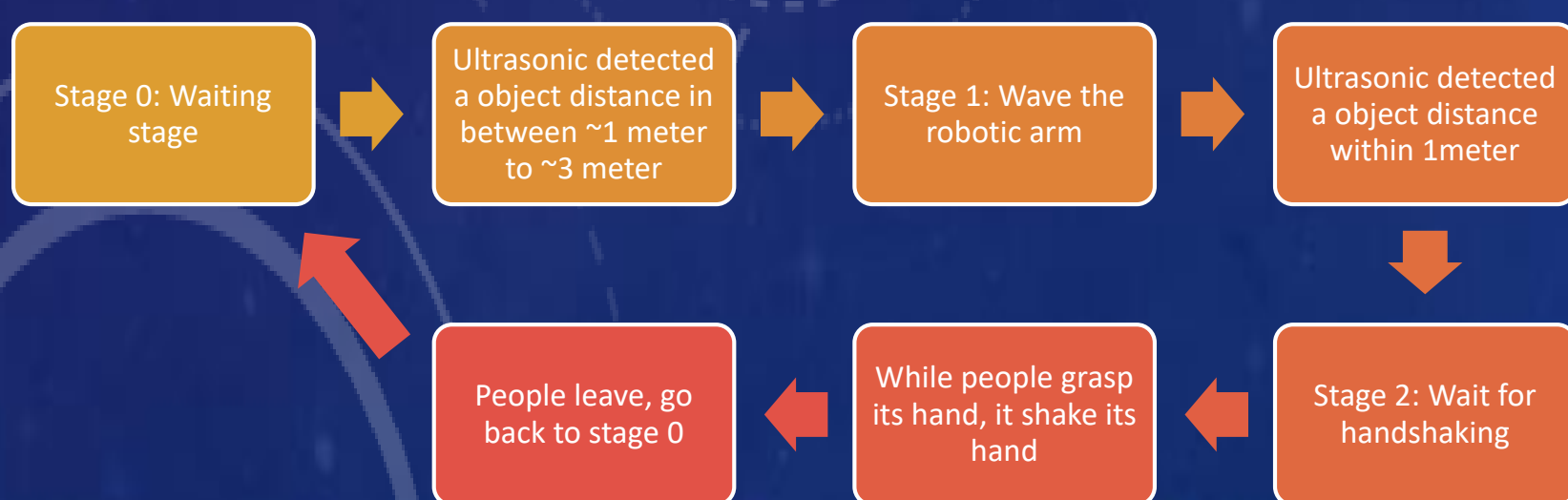
## Project Flow



## Production model & Implementation



## Demo Program Flow



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)

## 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