

INTERMEDIATE ARTIFICIAL INTELLIGENCE CAMP

Technical sheet

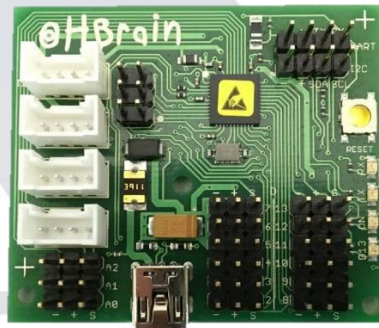
OhBot Robotic Head 2.1 – SOLD SEPARATELY

What's in the box?



Main control board:

This is the brain for every project in this course. This microcontroller board interprets the user's computer program and sends electrical signals to the robot's actuators and sensors.



Main characteristics:

- Based on ATmega32U4 Microcontroller
- 12 digital GPIO pins
- 4 analog pins
- USB interface for power and communication 5V 1A
- 2x I2C communication pins

Robotic head assembly:

The robotic head is made from laser-cut acrylic parts that resemble a humanoid face. The head movement is controlled by 7 servomotors; each servomotor controls a single movement. A set of backlit eyes is also included in the assembly.


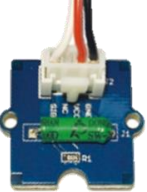

Part list:

- Acrylic structural parts
- 6 FS90 micro servomotors
- 1 FS5103B servomotor
- Metallic nose
- 2 plastic lips
- 2 backlit plastic eyes
- 4 connecting wires
- Cabling from each motor to main control board

Sensors

Sensors are used to collect data from the environment. Each sensor must be connected to the main control board and programmed individually.

The main control board can connect to any 3-wire digital sensor, making it compatible with generic electronic components.

Sensor list			
Picture	Name	Quantity	Function
	Touch sensor	1	Determines whether it is being touched by a human finger or not.
	Tilt sensor	1	Determines whether the surface to which it is mounted is set horizontally or vertically.
	Light intensity sensor	1	Determines ambient light intensity. Ranges from 0 to 100%.

Minimum Hardware Requirements

Windows 10 – Home edition or higher. Memory: 4GB RAM, 60MB ROM.

System architecture: x64

Development software:

This course uses OhBot Software 1.44.0.0 as its main development tool. To download, follow the link: <https://www.microsoft.com/store/productId/9PMNNRJ2KB3S>

OhBot Software

Based on scratch programming, OhBot Software is a simple and powerful tool to develop every project included in the Artificial Intelligence field. This software controls the robot's mechanical movement, computer vision systems, and communication with Microsoft Azure's cognitive services.

Main characteristics:

- **Computer vision:** movement detection, facial features recognition, light intensity detection, color identification, and age calculation.
- **Natural language processing:** voice-to-text and text-to-voice conversion
- **Web services:** request information from any API-enabled website such as Wikipedia and Wolfram Alpha.
- **Multiple instances communication:** send and receive messages to and from another robotic head within the same network.

Microsoft Azure



To use the cognitive services, a personal Microsoft azure account must be set up following the instructions stated in the "Quick start guide" included in this course. An internet connection is required for these services to work properly.