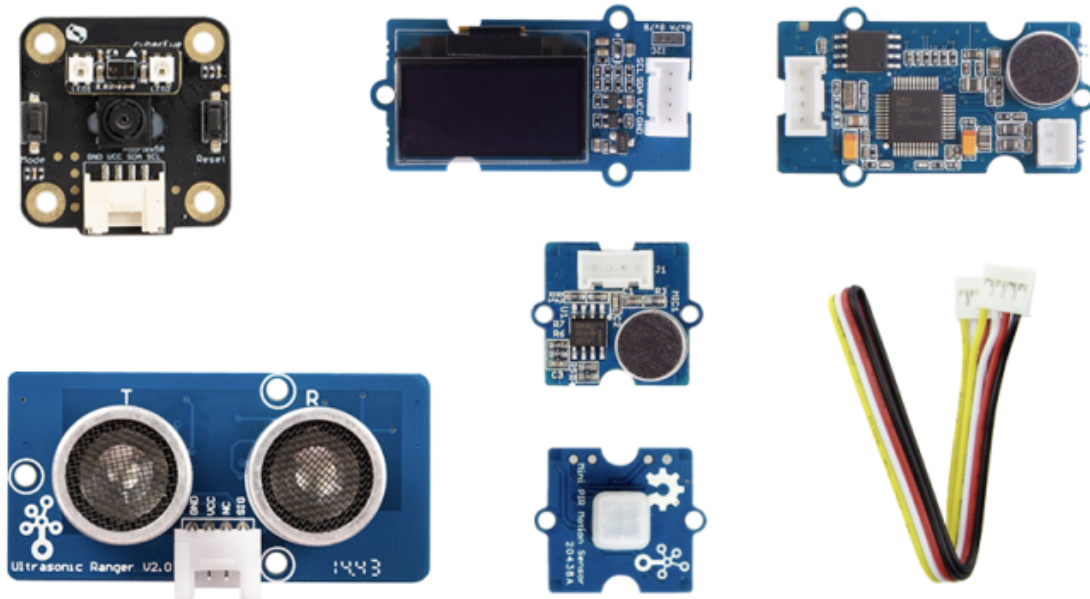


There are following modules in Bittle Sensor pack:

- Grove - Ultrasonic Distance Sensor
- Grove - mini PIR motion sensor
- CyberEye Intelligent Vision Sensor
- Grove - Speech Recognizer
- Grove - 0.96" OLED Display
- Grove - Sound Sensor



Let's discuss each on of these modules separately.

Grove - Ultrasonic Distance Sensor

The Grove - Ultrasonic Distance Sensor utilizes ultrasonic waves to measures distance. It can measure from 3cm to 350cm with the accuracy up to 2mm. It is a digital signal sensor, which means it needs to be connected to Grove ports starting with letter D.

Grove - mini-PIR Motion Sensor

Grove - mini PIR motion sensor can detect movement of objects, people, or animals by picking up one's infrared radiation. When an object, such as a person, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise from room temperature to body temperature, and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection. It is a digital signal sensor, which means it needs to be connected to Grove ports starting with letter D.

CyberEye Intelligent Vision Sensor

CyberEye Intelligent Vision Sensor is a camera sensor coupled with an ESP32 microchip, that can perform multiple computer vision functions, including color recognition, ball

recognition, human sensing, card pattern (shapes, traffic signs, and numbers) recognition. All the visual recognition algorithms on the CyberEye Vision Sensor are processed locally, with no need for the network.

Grove - Speech Recognizer

Grove - Speech Recognizer can recognize 22 pieces of commands including 'start', 'stop', 'Play music' and so on. The wake-up word for starting speech recognition is Hicell. When it recognizes the wake-up word, LED turn red, then you can say the command word, if it recognize the command word, LED will turn blue. It is a digital signal sensor, which means it needs to be connected to Grove ports starting with letter D.

Grove - 0.96" OLED Display

The Grove - 0.96" OLED Display is a monochrome(white) 128×64 pixels passive display matrix module with Grove I2C Interface. It can be used to display debugging information or just draw funny faces.

Grove - Sound Sensor

Grove - Sound Sensor can detect the sound intensity of the environment. The main component of the module is a simple microphone, which receive sound and convert it to electrical signal, which can be processed by Bittle mainboard. It is an analog signal sensor, which means it needs to be connected to Grove ports starting with letter A.

Rich extensions

Bittle's main board NyBoard V1 is a custom Arduino board with 4Pin connectors on the board. You can configure various Grove modules for Bittle to bring a totally new perception to Bittle.

Applications

Speech Recognizer - Sound activation

OLED screen - Displaying messages

Ultrasonic sensor - Maze challenge

Vision sensor - Gesture detection

Vision sensor - Object following

PIR motion sensor - Always on guard

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