

## Lesson 3 AI

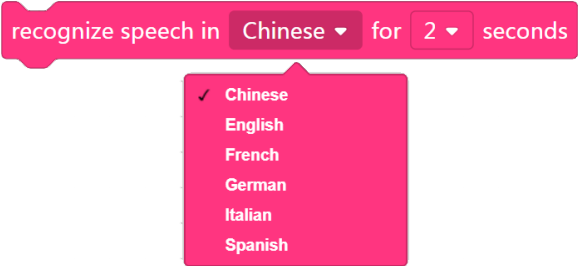

### Learning Objectives:




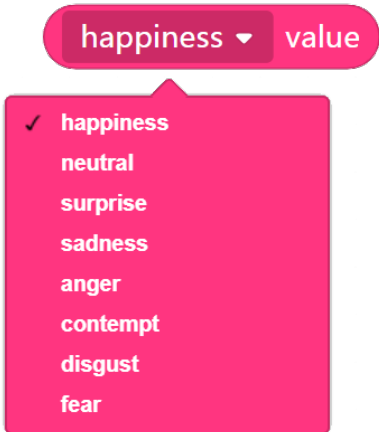
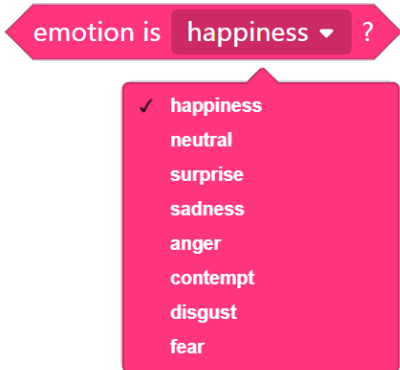
1. Learn about AI.
2. Be able to use mBlock 5 to recognize age, speech, text and emotions.

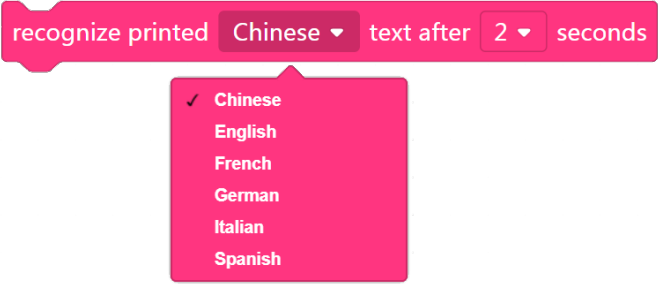
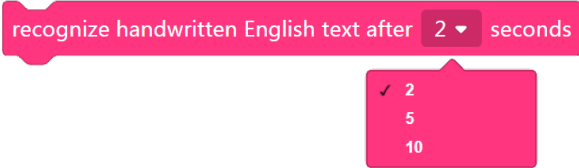

### 1. What is AI?

Artificial Intelligence, or AI, is a comprehensive technology involving computer science, neuroscience and biotechnology, mathematics, informatics, control techniques and so on. It enables machines to demonstrate certain kind of capacities similar to human intelligence. We can write programs with the AI blocks in mBlock 5 to make speech and emotion recognition and other AI features possible.

A new block category, **AI**, has been added to mBlock 5. The blocks under this category are listed below:

AI	Blocks	Function
Speech		This block recognizes speech in Chinese, English, French, German, Italian or Spanish for 2, 5 or 10 seconds.
		This block reports the speech recognition result.

Age		This block detects age after 1-3 seconds.
		This block reports the age recognition result.
Emotion		This block detects human emotions after 1-3 seconds.
		This block reports the level of your emotion.
		<p>This is a Boolean block that checks whether you are in a certain emotion (happiness, neutral, surprise, sadness, anger, contempt, disgust, fear).</p> <p>Example:</p> <p>Choose "happiness" in the drop-down menu, (1) true: the emotion is happiness</p> <p>(2) false: the emotion is not happiness.</p>


Text		This block recognizes printed text in Chinese, English, French, German, Italian and Spanish. You can set the waiting time to 2, 5 or 10 seconds.
		This block recognizes handwritten English text. You can set the waiting time to 2, 5, or 10 seconds.
		This block reports the text recognition result.

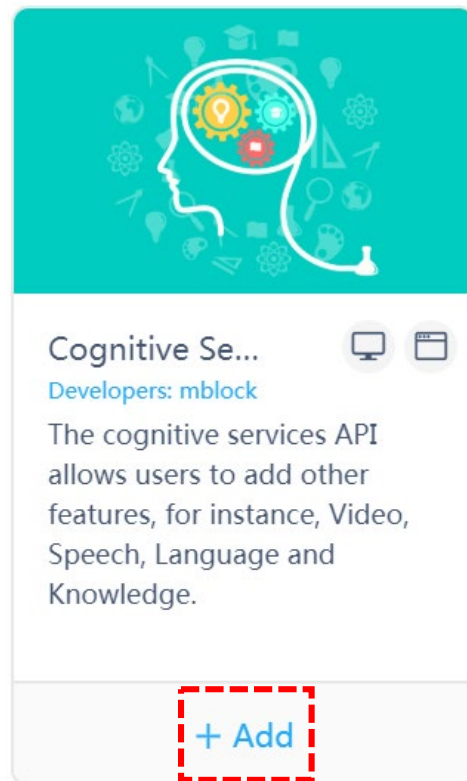
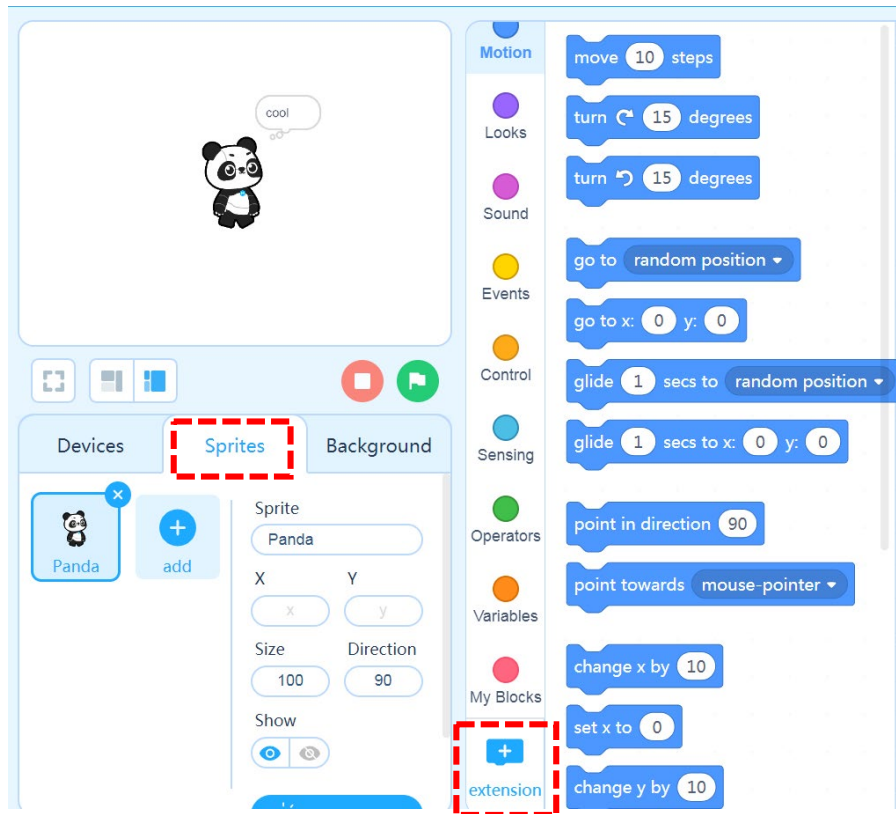
## Challenge 1 Speech Recognition

Turn on the camera and microphone on your computer. Click the panda sprite, talk into the microphone, and the panda will show what you have said.

**Step 1** Sign up for and log in to mBlock 5.

**Step 2** Click **Sprites**, then click the  icon in the blocks palette to open the **Extension Center**.

**Step 3** In the **Extension Center**, click the  icon under **Cognitive Services** to add the **AI** blocks.



**Step 4** Turn on the camera and microphone on your computer.

**Step 5** Drag the following blocks to the scripts area, and click the panda sprite to see what happens.

The image shows the Scratch AI block palette on the left and the script area on the right. The palette has categories: Motion, Looks, Sound, Events, Control, Sensing, Operators, Variables, and My Blocks. The AI category is highlighted at the bottom. The script area contains the following blocks:

- Open recognition window
- recognize speech in Chinese for 2 seconds
- speech recognition result
- recognize people's age after 1 seconds
- age recognition result
- recognize emotion after 1 seconds
- happiness value
- emotion is happiness ?
- recognize printed Chinese text after 2 seconds
- recognize handwritten English text after 2 seconds
- text recognition result

Annotations with dashed red boxes explain the blocks:

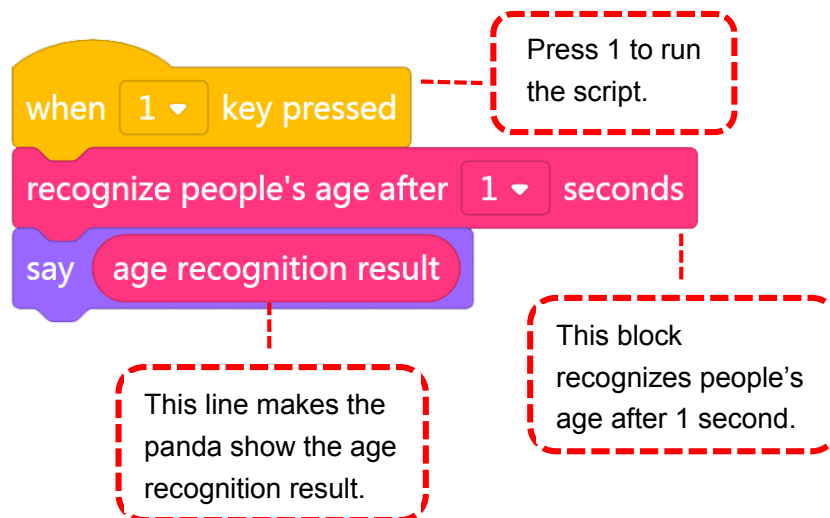
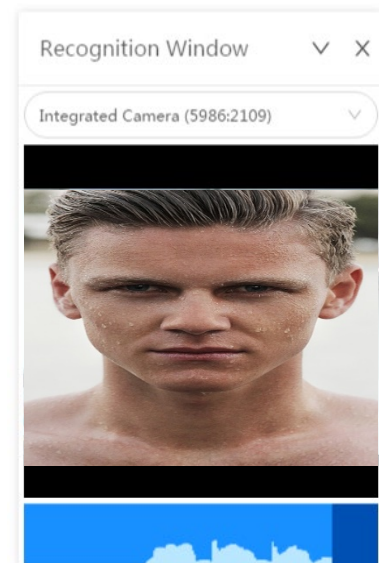
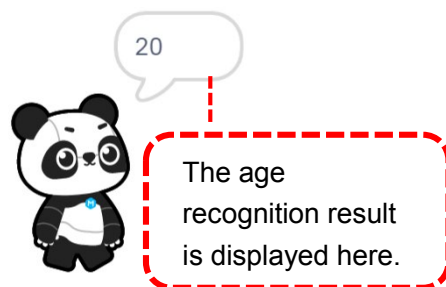
- when this sprite clicked**: This block runs the script when you click the panda.
- recognize speech in Chinese for 2 seconds**: The recognition time is set to 2 seconds.
- say speech recognition result**: This line makes the panda show the speech recognition result.
- speech recognition result**: The speech recognition result is displayed here.
- Click the sprite.**: Click the sprite.
- Recognition Window**: Look at the recognition window and talk.

The Recognition Window shows a panda sprite with a speech bubble saying "今天天气很好" (It's a nice day today).

Note: What's shown by the panda means " It's a nice day.".

## Challenge 2 Age Recognition

Turn on the camera and microphone on your computer. When the key "1" is pressed, age recognition will be carried out after 1 second, and the panda will display the age recognition result.<sup>1</sup>



<sup>1</sup>The image in the recognition window is sourced from:

<https://pixabay.com/zh/photos/%E7%94%B7%E5%AD%90-%E8%84%B8-%E6%B9%BF-%E7%94%B7-%E5%A4%B4-%E4%BA%BA-945482/>