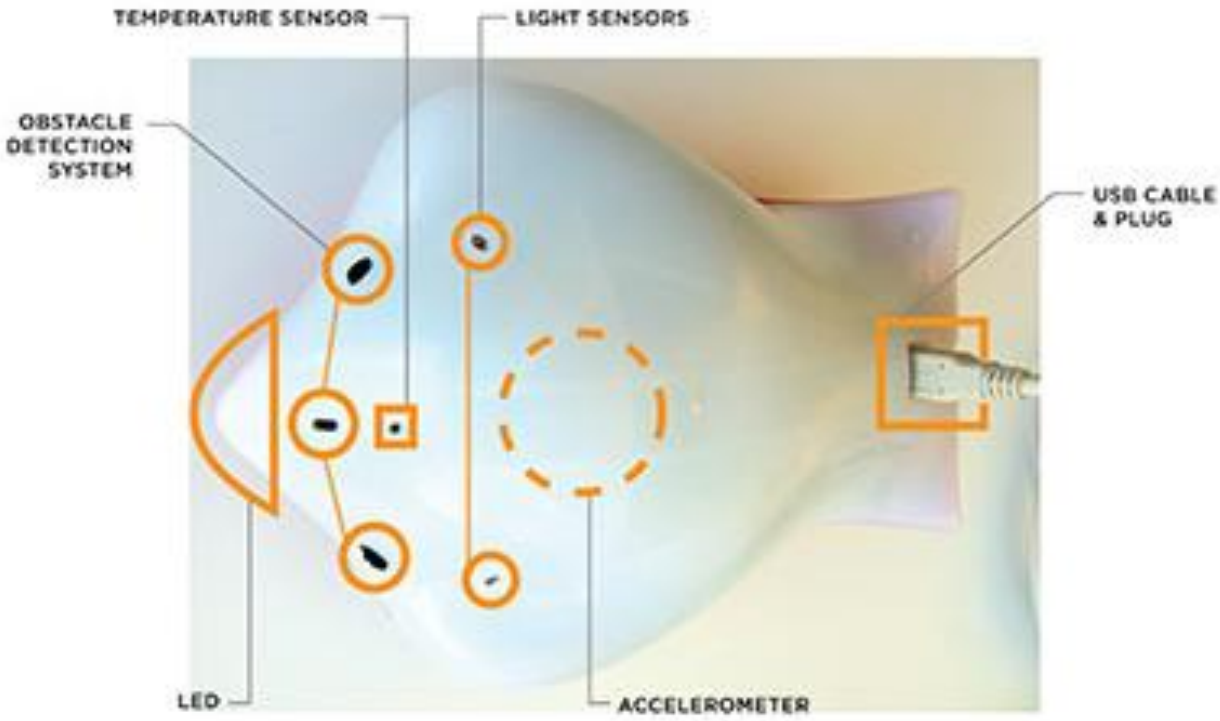
Maynooth University
National University of Ireland Maynooth

Computer Science Summer Camp 2017

Finch Robots

The Finch is a small robot designed to inspire and delight students learning computer science by providing them a tangible and physical representation of their code. The Finch has support for over a dozen programming languages including Scratch, Snap, Python, Greenfoot, Processing and Java.

The Finch Robot



On-board features include:

- Accelerometers
- Motors
- Buzzer
- Full-color beak LED
- Light, temperature, and obstacle sensors
- Pen mount for drawing capability
- Plugs into USB port - no batteries required!

The Finch's Sensors

The Finch has the following sensors:

- Light: The Finch has two sensors which can measure light levels. There is one on the right and one on the left.
- Temperature: The Finch has one temperature sensor. This can tell you the temperature of the room.
- Obstacle: The finch has two obstacle sensors in the front. There is one on the left, and one on the right. They do not tell you the distance to an obstacle, but they do tell you if there is an obstacle in front of them. They work best against light-coloured or reflective objects. These work by sending out infrared light (light we can't see with our eyes) and looking for it to bounce back and hit the sensors.
- Accelerometers: The Finch has an accelerometer that can tell you the orientation of the Finch. That means it can tell you whether the Finch is upside down, or tilted in any direction. This sensor can also tell you if the Finch is shaken or tapped.

The Finch's actuators (things that do actions):

The Finch has the following actuators:

- Motors: The Finch has two motors, one for each wheel. The Finch's movement direction can be controlled by giving the motors different speeds.

- Light: The Finch has a Light-Emitting Diode (LED) in its nose. It can light up in any colour by mixing the three colours, red, green, and blue (RGB).
- Buzzer: The finch has a buzzer which can play frequencies between 100 Hz and 10,000 Hz (10 kHz). 100Hz is a low sound, and 10,000 Hz is a high-pitched sound.

The Finch's Connection:

The Finch connects to your computer with a USB cable and it must remain connected in order for you to control it. You might find that it helps your Finch move more freely if you hold the cord above it while it moves.

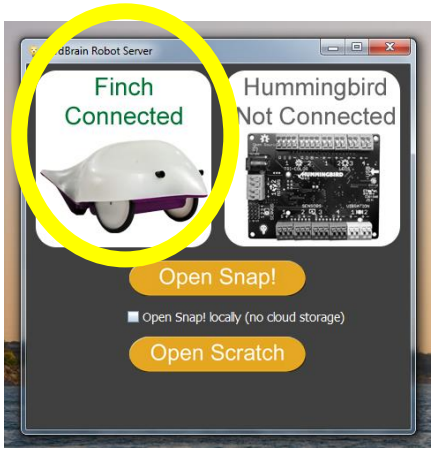
Getting started

1. Connect your finch robot to your computer using the usb lead provided.

2. Locate and click on the Bird Brain Robot Server on your desktop.

3. The BirdBrain robot server is only required for programming the Finch robot in Scratch or Snap. Its job is to receive requests from Scratch or Snap and send the correct commands to the Finch Robot over USB.

4. Ensure the server shows your finch is connected.



5. Click on the “Open Scratch” button. This will open the Scratch 2.0 Offline Editor. Ensure it is this one you are using and not the online version.

6. When Scratch opens, the Finch blocks should be available under the “More Blocks” section of your Scratch Editor. If the Finch blocks are not available under ‘More Blocks’, make sure that you launched the Scratch Offline Editor from the button in the BirdBrain

Robot Server and make sure that the Finch robot was connected when you launched Scratch.