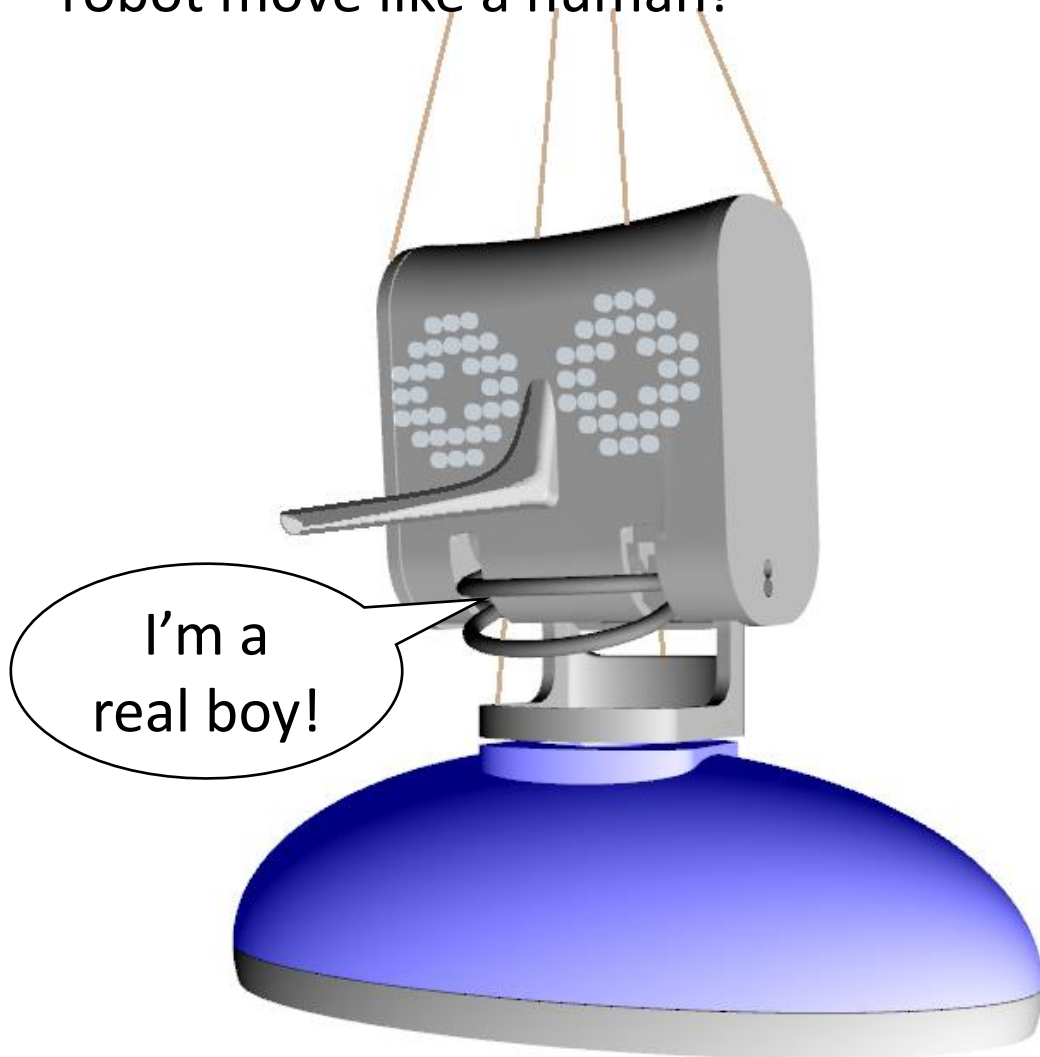# Move like a human 2

Program your robot
to make life like
movements

In robotics there is a theory called, "the uncanny valley". The hypothesis is that when we see a robot exhibit an almost perfect (but not quite) human trait or movement it makes us feel uncomfortable and causes a dip (or valley) in our affinity for the robot.

With that in mind, let's try and make our robot move like a human!

The first thing to remember when programming movement of your robot is how many options you have.

Just take a look at your Motion palette.
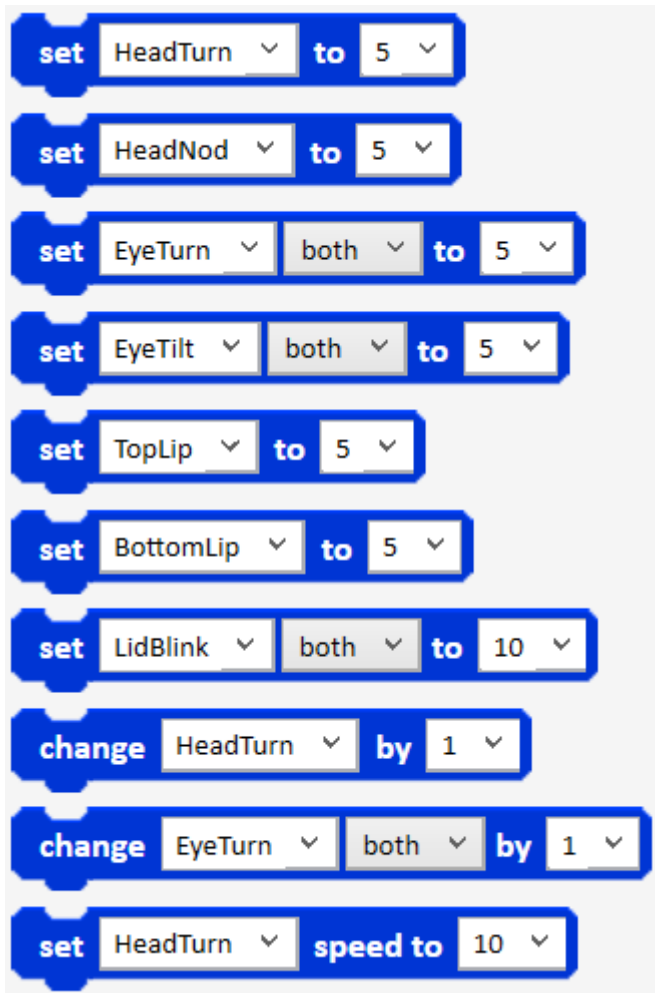
We have to use a combination of these motion blocks if we want to make our robot move like a human. Ohbot has 7 motors in total, the human face has 42 individual muscles!

when [green flag] clicked

say [Hello! I am a human. Honestly] until done

Give the robot something to say. Then add some motion blocks to the script that you think make the robot move like a human.

Think about what your robot is saying and how movement can accompany it.

I'm doing the human!

For example, people used to say that you could tell if somebody was lying if they looked up and to the right. This isn't necessarily true but it does inform us how humans move their eyes and head while talking.

These motion blocks make the robot look up and to the right

when 🚩 clicked
set HeadNod to 6
set HeadTurn to 4
set EyeTilt both to 8
set EyeTurn both to 3
wait 0.5 secs
say Hello! I am a human. until done 🎤
wait 0.5 secs
set HeadTurn to 5
set HeadNod to 5
set EyeTurn both to 5
set EyeTilt both to 5
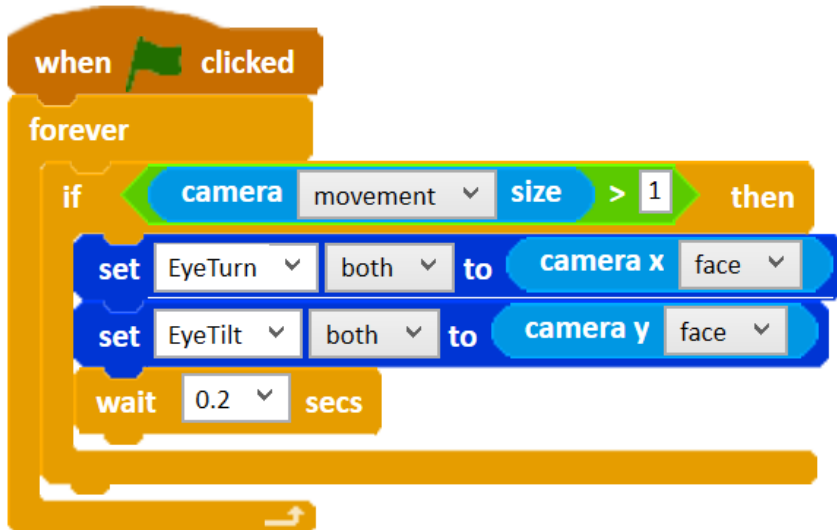wait 0.5 secs
say Honestly until done 🎤

Can you make your robot tell a convincing lie?

There is more we can do to humanise our robot. We find that turning down the speed of headnod and headturn makes the robot move in a more natural way.


```
when [flag] clicked
set EyeTilt ▾ both ▾ to 8 ▾
set EyeTurn ▾ both ▾ to 3 ▾
wait 0.5 ▾ secs
set HeadTurn ▾ speed to 2 ▾
set HeadNod ▾ speed to 2 ▾
set HeadNod ▾ to 6 ▾
set HeadTurn ▾ to 4 ▾
say Hello! I am a human. until done
wait 0.5 ▾ secs
set HeadTurn ▾ to 5 ▾
set HeadNod ▾ to 5 ▾
wait 0.5 ▾ secs
set EyeTurn ▾ both ▾ to 5 ▾
set EyeTilt ▾ both ▾ to 5 ▾
say Honestly until done
```
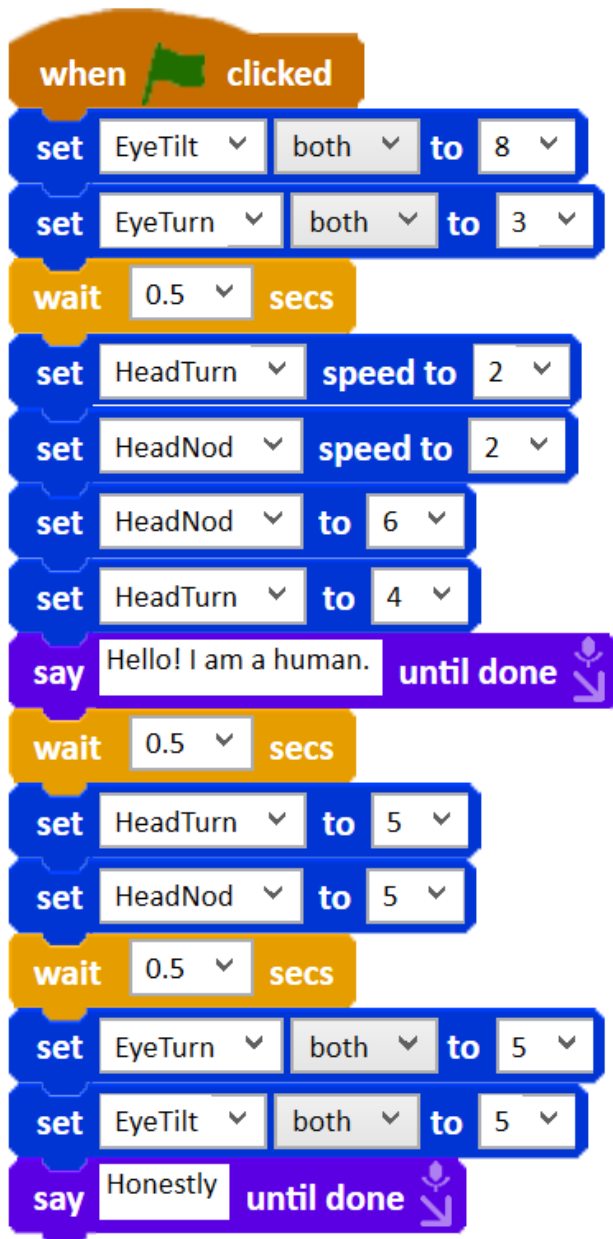
Another technique we use is separating the head movement from the eye movement with **wait_secs** blocks.

Here is a simple set of blocks that tell the robot to track the movement of your face with their eyes.


```
when 🏳 clicked
forever
    if < camera [movement ▾] size > 1 > then
        set [EyeTurn ▾] [both ▾] to ( camera x [face ▾] )
        set [EyeTilt ▾] [both ▾] to ( camera y [face ▾] )
        wait [0.2 ▾] secs
```

Following somebody's face with our eyes is something we do all the time. But there are occasions when we are desperate to avoid eye contact at all costs.

Can you alter the program so that the robot avoids eye contact with you instead?
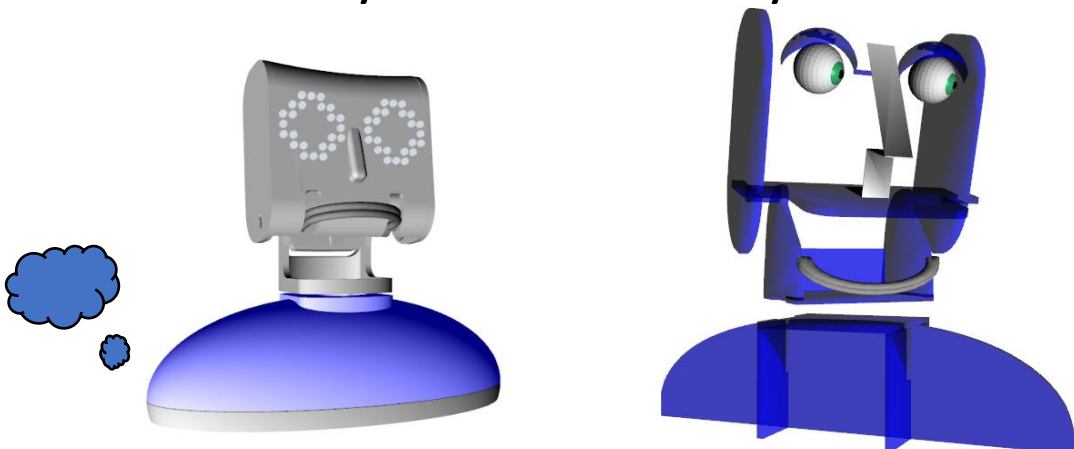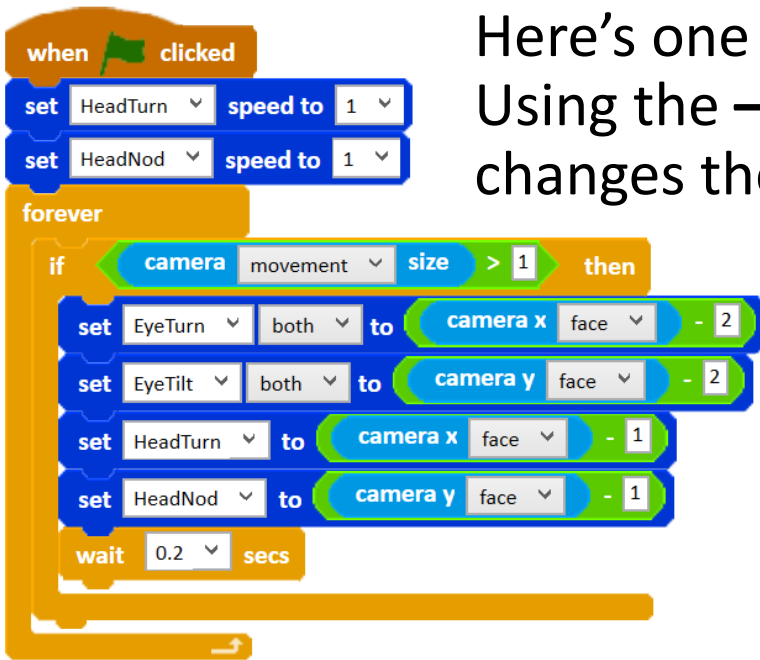
Here's one way to do it. Using the – operator block changes the value so that the robot won't look directly at your face.

If you have a Picoh AI then you have the ability to control the robot's head roll. Think how humanising it is when a dog tilts their head whilst listening to you.

You can also control the shape of the eye. Our eyes change shape depending on where we are looking.