

ACTIVITY SHEET



SESSION 21

Expression Mimicking Robot

In this session, we will make a script that detects your face from the device camera (computer/mobile), and then mimics those emotions on the LED screen of Quarky.

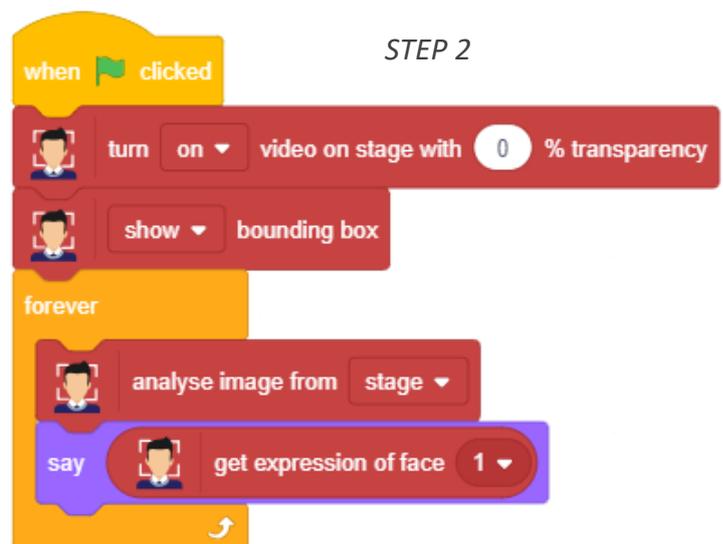
This activity sheet belongs to _____

MATERIALS REQUIRED

- Computer/Laptop/Tab with **PictoBlox** installed
- USB Cable
- Quarky Robot

STEP-BY-STEP

1. Let's begin by first connecting Quarky to PictoBlox.
 - 1.1. First, connect **Quarky** to your laptop using **USB cable**.
 - 1.2. Open **PictoBlox** and create a new file. Select the coding environment as **Block Coding**.
 - 1.3. Select the **Board** as **Quarky**. Next, select the **Serial port** to connect Quarky and press **Connect**.
2. **Detecting the face:**
 - 2.1. First, add a **when flag clicked** block from the **Events** palette into the scripting area. Now, in order to turn on the camera of our device (computer/smartphone) and detect our expressions, we need to add the **Face Detection** extension.
 - 2.2. To add the **Face Detection** extension, click the **Add Extension** button in the screen's bottom-left corner and select the **Face Detection** extension to add it to your palette.
 - 2.3. Add a **turn () video on the stage with () % transparency** block from the **Face Detection** palette, below the **when flag clicked** block. Keep the default option to *on* and transparency to *0%*.
 - 2.4. Add a **() bounding box** block from the **Face Detection** palette, below the **turn () video on the stage with () % transparency** block. Keep the default option to *show*. This block will show a bounding box on our face, wherever we move it.
 - 2.5. Add a **forever** block from the **Control** palette below the **() bounding box** block. All the blocks inside the **forever** block will run continuously.
 - 2.6. Add an **analyse image from ()** block inside the **forever** block. This block will analyse our faces to detect our expressions.



- 2.7. Now, we're going to make Tobi tell the expression that PictoBlox has detected. From the **Looks** palette, add a **say ()** block below the **analyse image from ()** block.
- 2.8. Inside the space of the **say ()** block, drop a **get expression of face ()** block. This block will figure out our expression and then the say block will display the expression, it detected.
3. **Quarky mimics your Expressions:** Now, let's modify our script to make Quarky mimic our expression.
- 3.1. In the same script, add an **if ()** block below the **say ()** block. Using this block we're going to check which expression has been detected. Let us first check for the *happy* expression.
- 3.2. As an if-condition, add an **is expression of face ()** block. Keep the default option *happy*. If the detected facial expression is *happy*, then the expression on Quarky must also be *happy*.
- 3.3. For this, go to the **Display** palette and add a **display () expression** block inside the **if ()** block. Keep the default option *happy*.
- 3.4. Repeat steps 2 and 3 for crying, surprise, and super angry expressions.
4. Click the **green flag** to run the script and have fun!

SAVING THE PROGRAM

Save the project file: **Expression Mimicking Robot**, by clicking on **File -> Save**.

