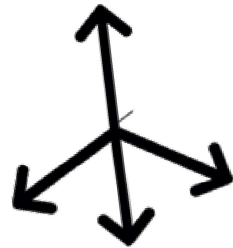


Smart Direction Controller



Introduction




Robots are playing an essential role in automation across all sectors like construction, military, medical, manufacturing, etc. A smart direction controller is a robot which can be controlled by different direction arrows. The integration of STEMBOT and google teachable platform is done to capture and detect any direction arrow. The STEMBOT is trained by some direction arrows to move in forward, backward, left, and right directions. After detecting the arrow, the STEMBOT then operates the motors.

Step 1: - Train the robot using image project

≡ Teachable Machine

New Project

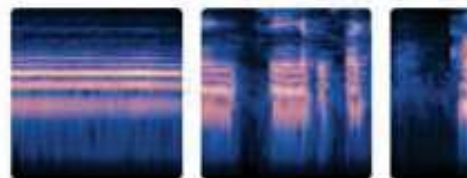
 Open an existing project from Drive.

 Open an existing project from a file.



Image Project

Teach based on images, from files or your webcam.



Audio Project

Teach based on one-second-long sounds, from files or your microphone.

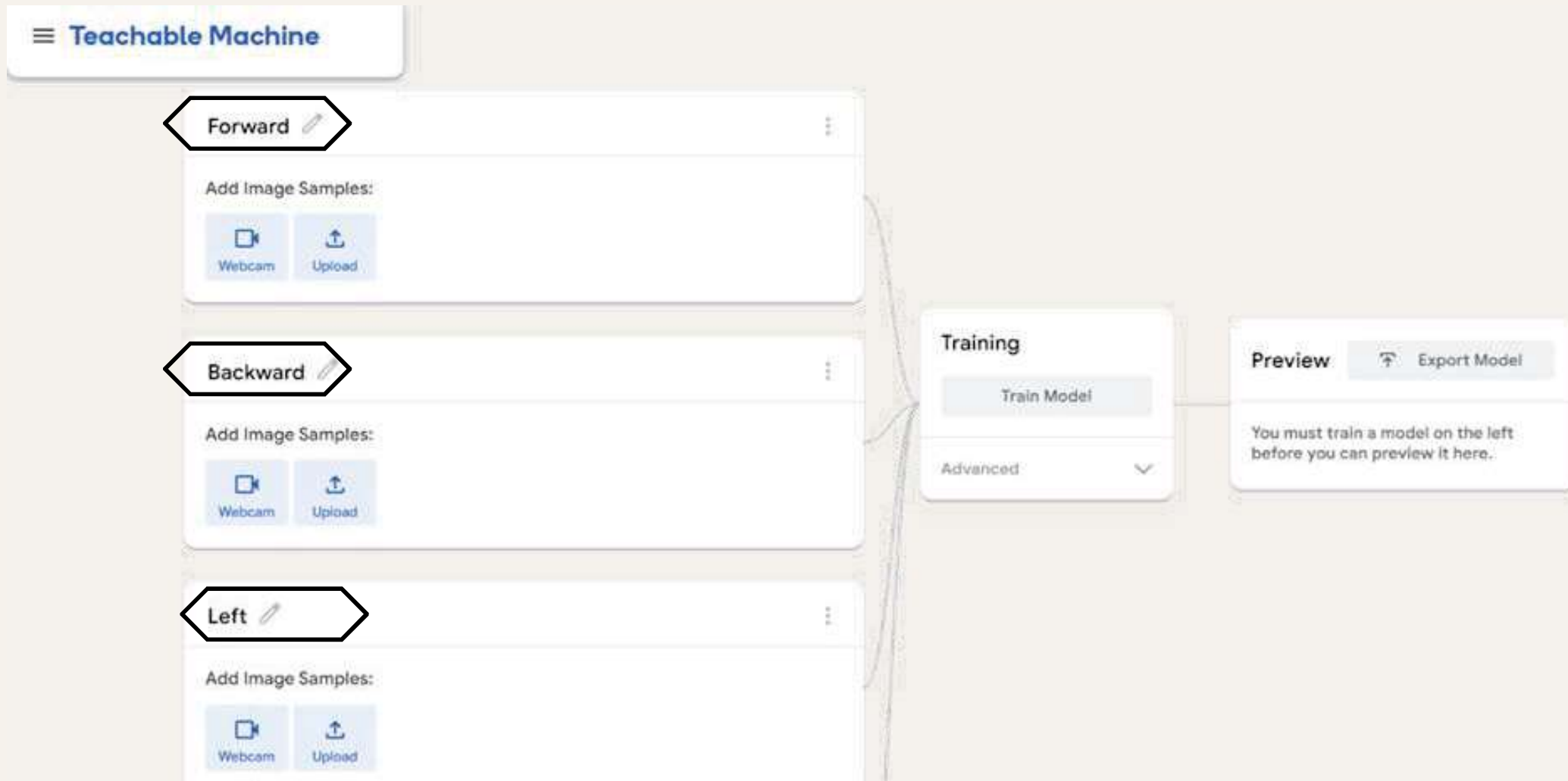


Pose Project

Teach based on images, from files or your webcam.

continue to next....

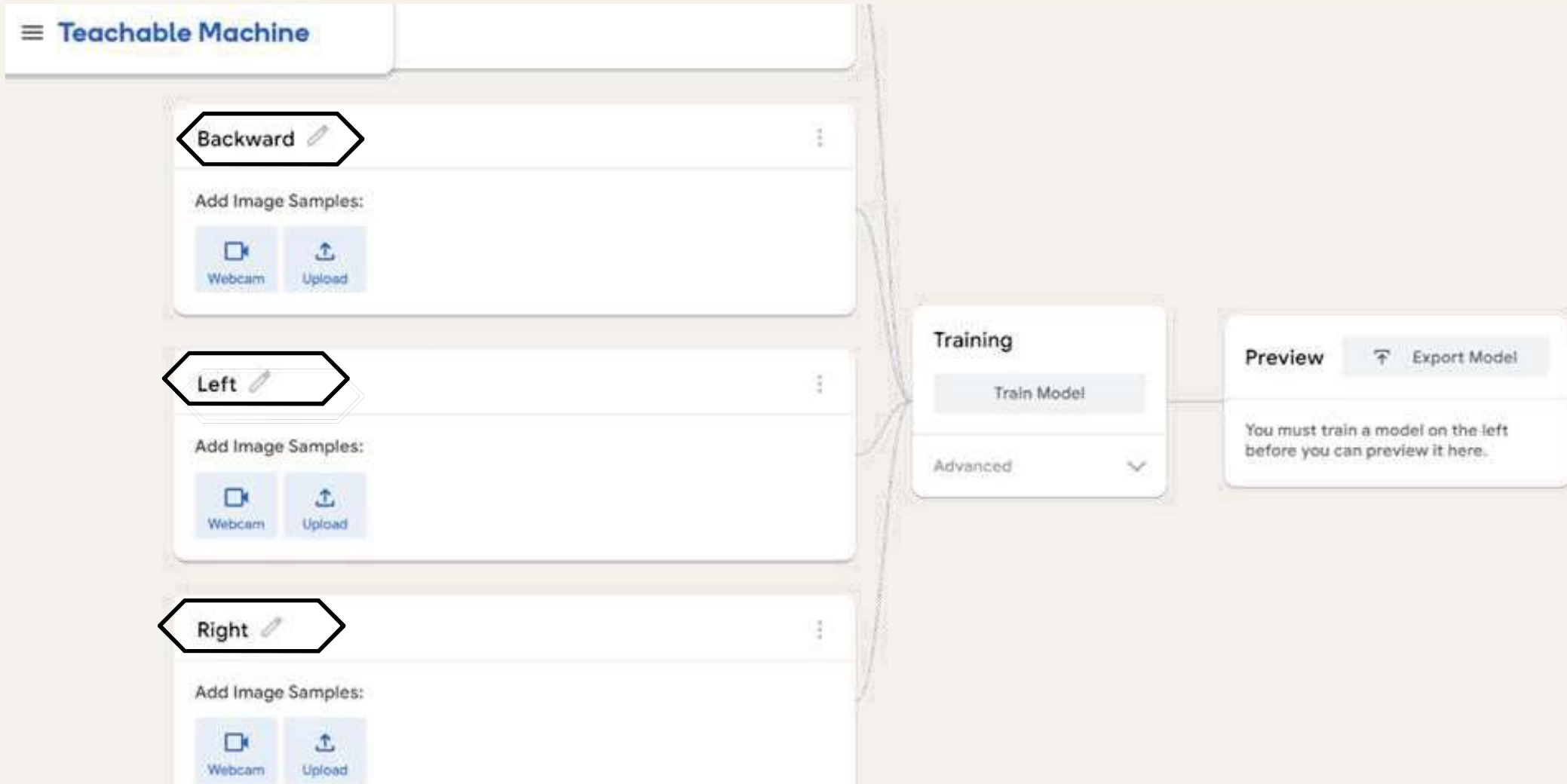
Step 2: - Create 4 classes named Forward, Left, Right, Stop.



The screenshot displays the Teachable Machine web interface. On the left, there are three class creation panels, each with a title in a hexagonal button, an 'Add Image Samples' section, and 'Webcam' and 'Upload' buttons. The first panel is titled 'Forward', the second 'Backward', and the third 'Left'. Each title is circled with a black hand-drawn line. To the right of these panels is a 'Training' section with a 'Train Model' button and an 'Advanced' dropdown menu. Further right is a 'Preview' section with an 'Export Model' button and a message: 'You must train a model on the left before you can preview it here.' A faint hand-drawn line connects the three class panels to the 'Training' section.

continue to next....

Step 2: - Create 4 classes named Forward, Left, Right, Stop.



The screenshot displays the Teachable Machine web interface. On the left, three class cards are visible, each with a title, an edit icon, and an 'Add Image Samples' section with 'Webcam' and 'Upload' buttons. The 'Backward' class is at the top, followed by 'Left', and then 'Right'. The 'Left' class is highlighted with a black hexagonal border. To the right of the class cards are two panels: 'Training' and 'Preview'. The 'Training' panel has a 'Train Model' button and a dropdown menu currently set to 'Advanced'. The 'Preview' panel has an 'Export Model' button and a message stating: 'You must train a model on the left before you can preview it here.'

continue to next....

Step 3: - - Add direction arrows samples.

Forward

Teachable Machine

Click on the webcam option and add arrows samples

Forward

Webcam

132 Image Samples

Record 6 Seconds

Training

Train Model

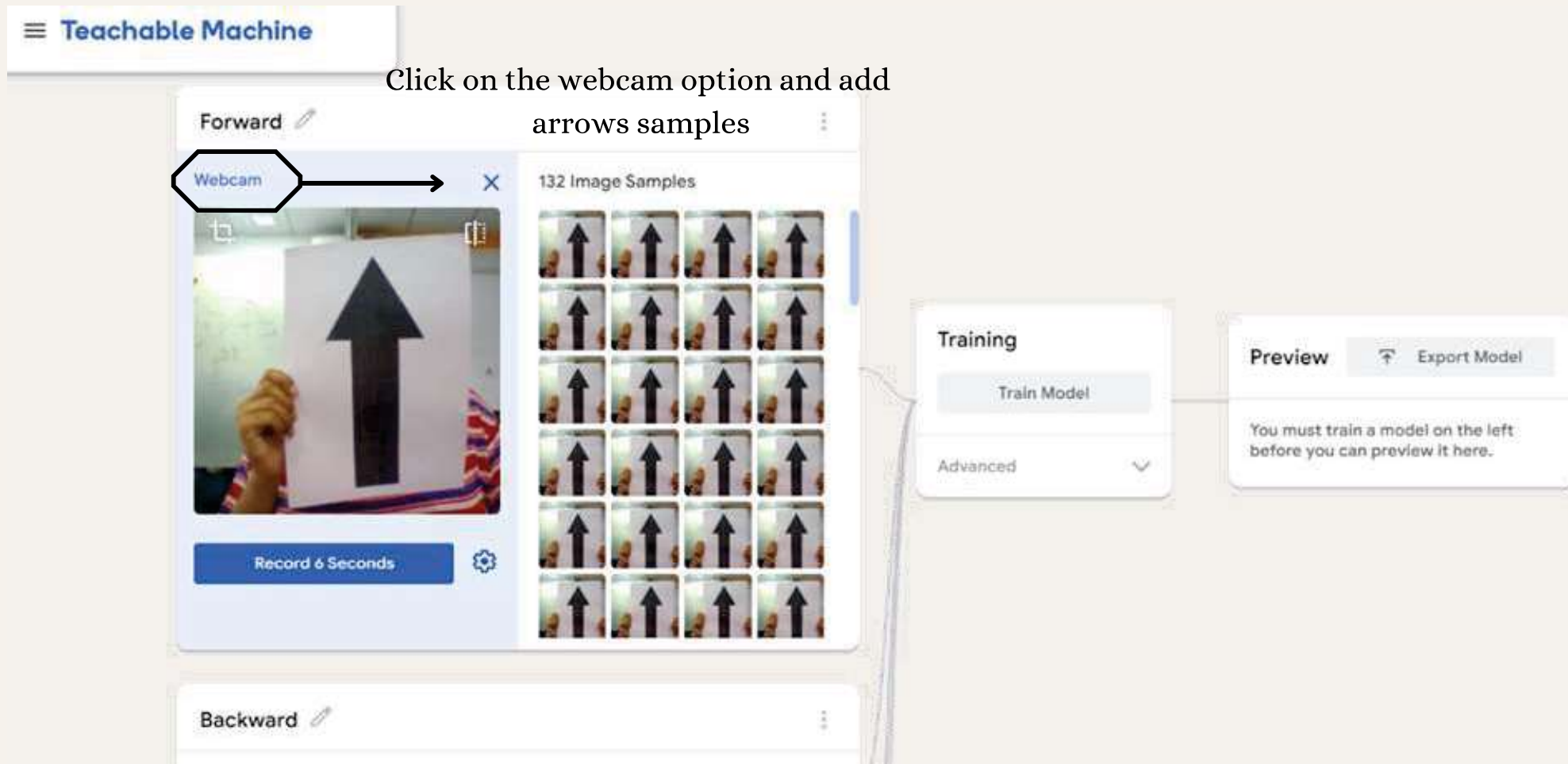
Advanced

Preview

Export Model

You must train a model on the left before you can preview it here.

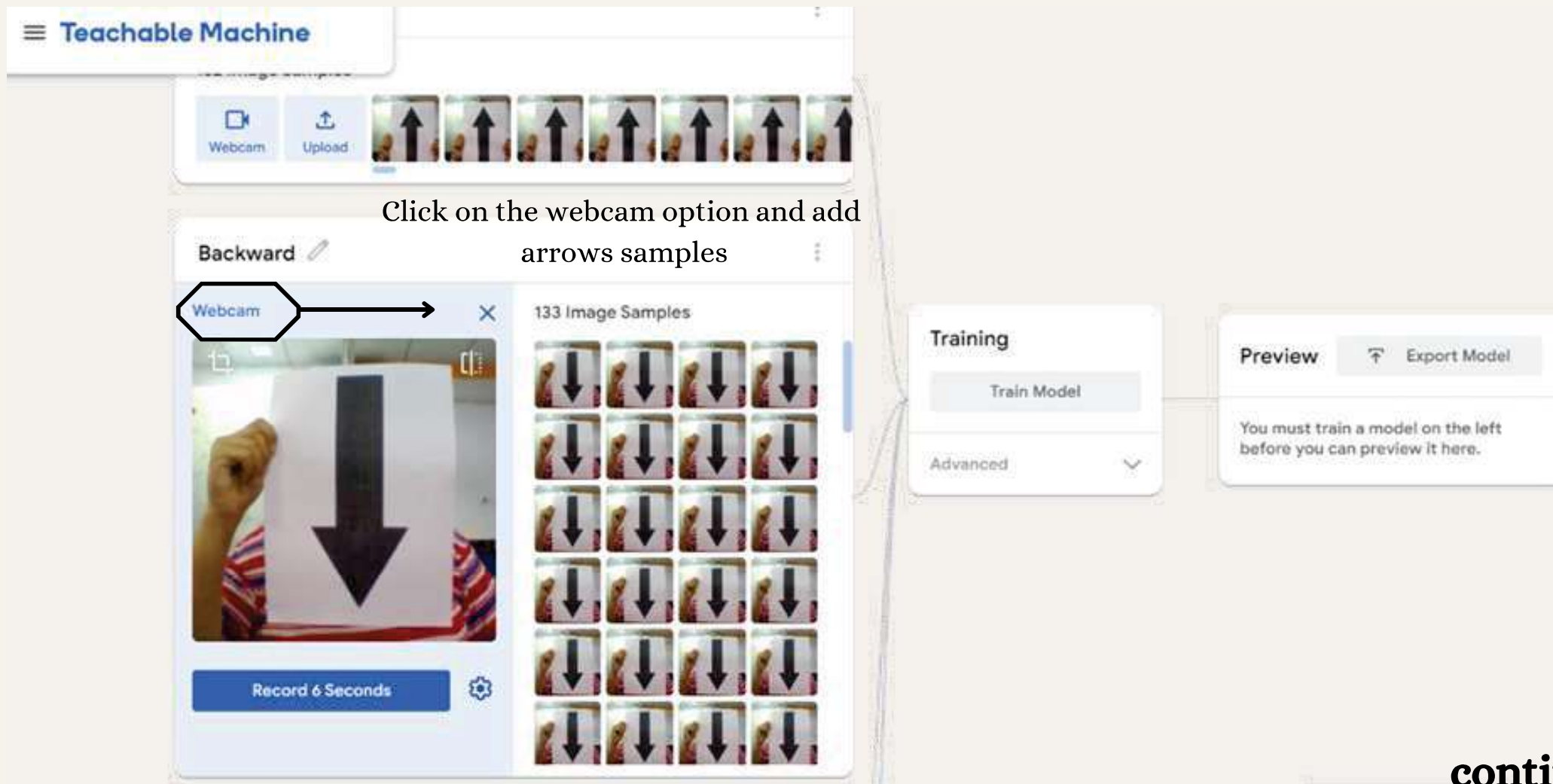
Backward



continue to next....

Step 3: - Add gesture samples.

Backward



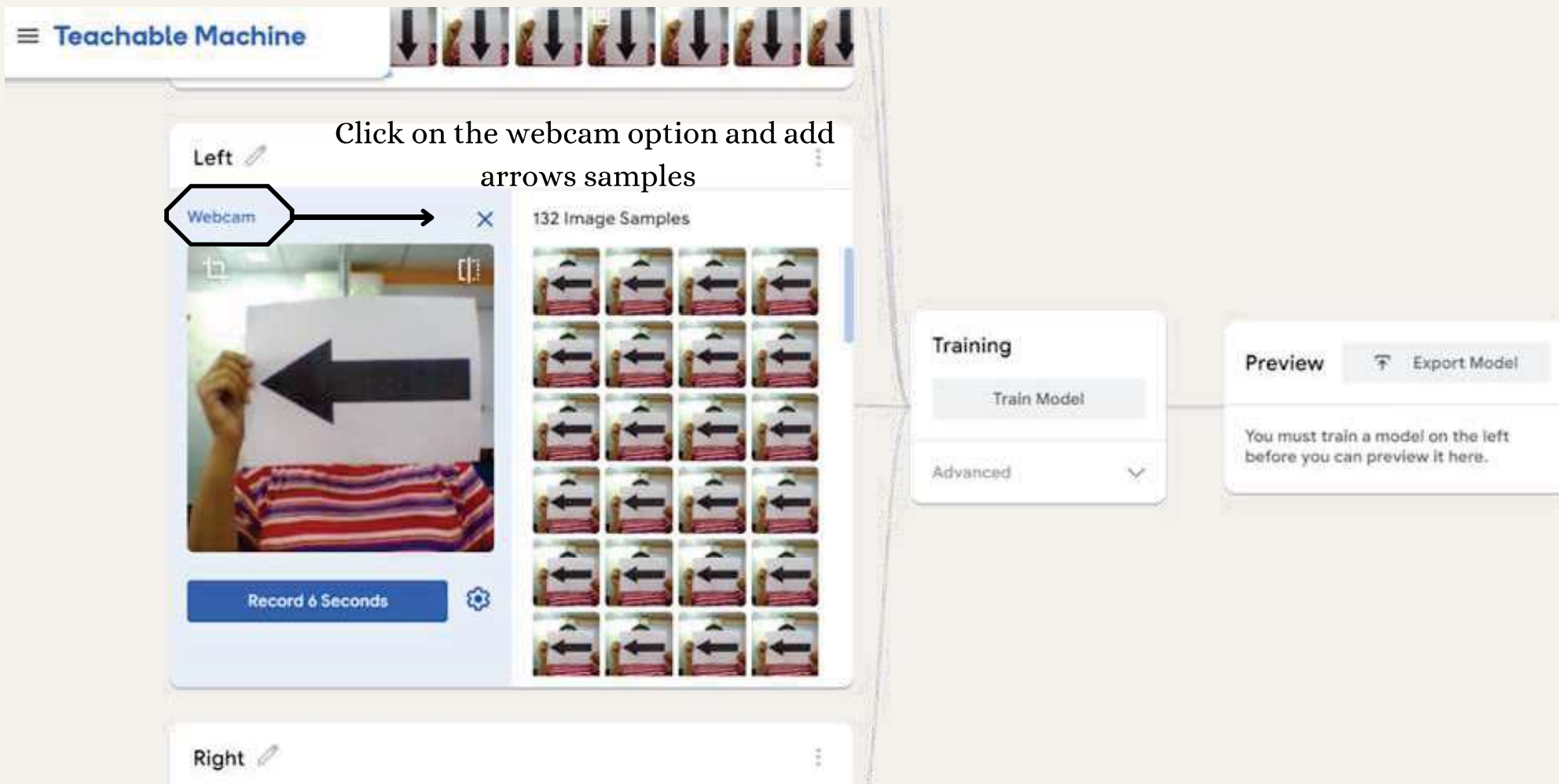
The screenshot shows the Teachable Machine interface. At the top, there's a 'Teachable Machine' header. Below it, there are 'Webcam' and 'Upload' buttons, followed by a row of seven small image thumbnails showing a hand with an upward arrow. The main area is titled 'Backward' with a pencil icon. On the left, there's a 'Webcam' button with a magnifying glass icon, and a video feed showing a hand holding a large white card with a black downward arrow. Below the video feed is a 'Record 6 Seconds' button and a settings gear icon. On the right, there's a grid of '133 Image Samples' showing the hand with the downward arrow. To the right of the main interface, there's a 'Training' panel with a 'Train Model' button and an 'Advanced' dropdown. Further right is a 'Preview' panel with an 'Export Model' button and a message: 'You must train a model on the left before you can preview it here.'

Click on the webcam option and add arrows samples


continue to next....


Step 3: - Add gesture samples.

Left




Teachable Machine


Left 

Webcam 

Click on the webcam option and add arrows samples


132 Image Samples


Record 6 Seconds 

Right 

Training

Train Model

Advanced 

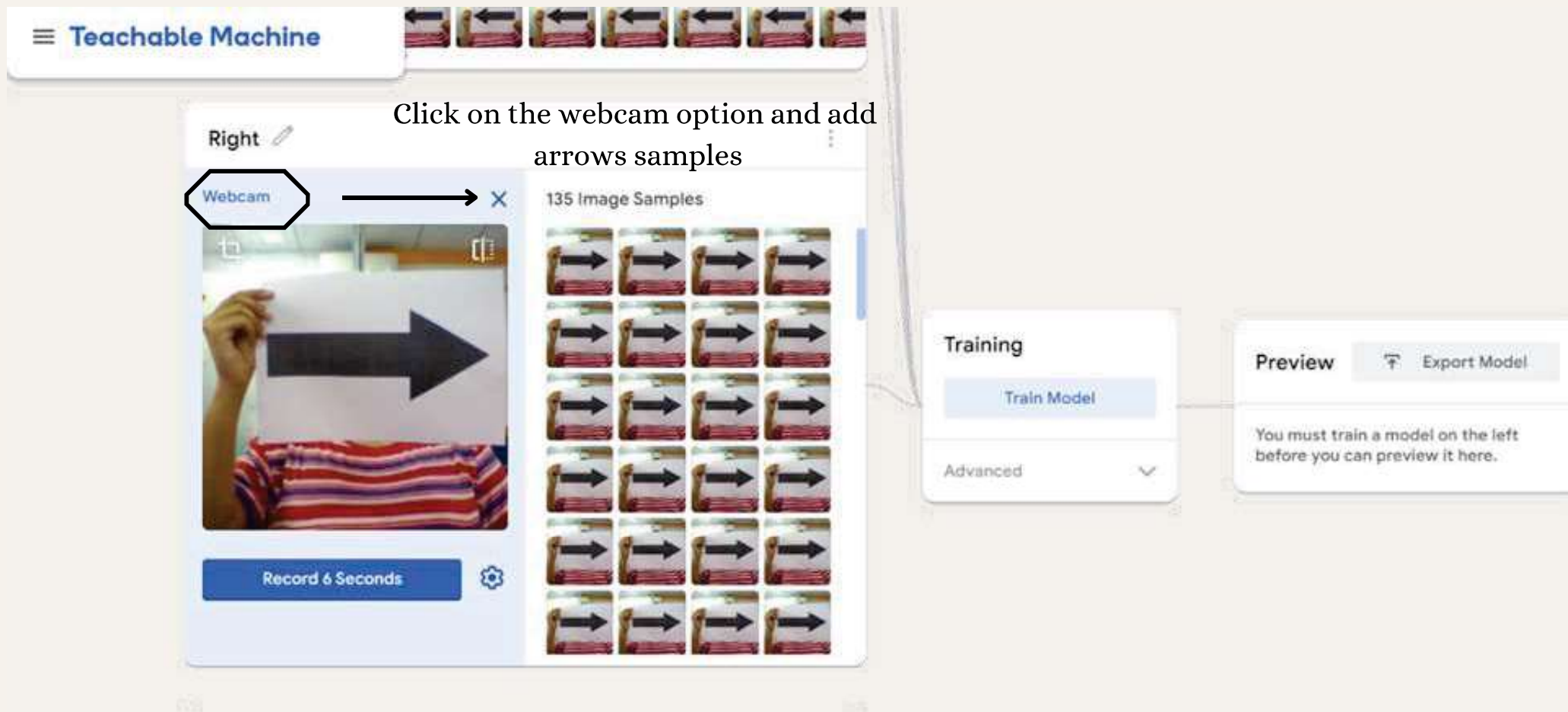
Preview  Export Model

You must train a model on the left before you can preview it here.

continue to next....

Step 3: - Add gesture samples.

Right

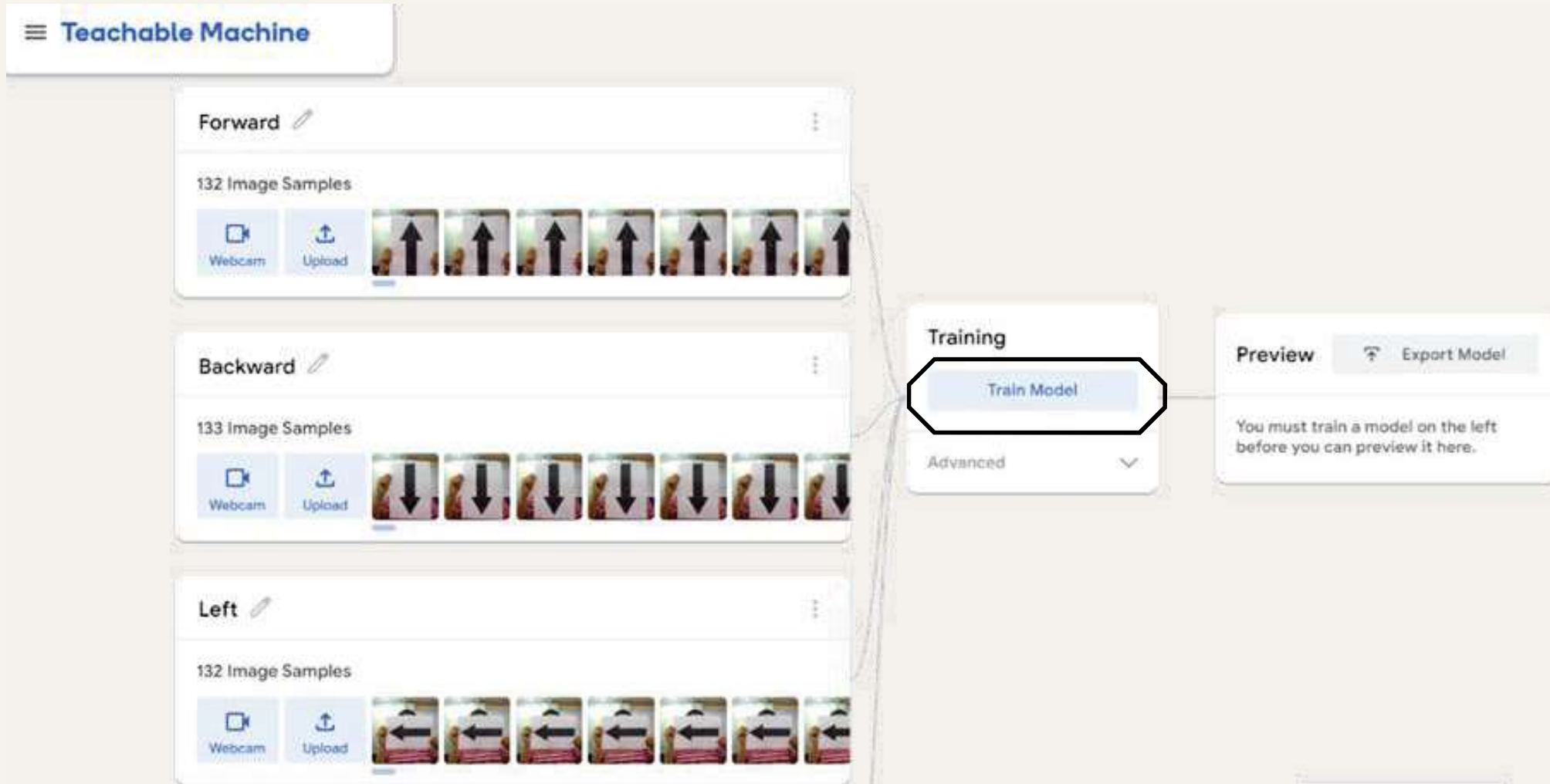


The screenshot shows the Teachable Machine interface for training a 'Right' gesture. At the top, a row of gesture samples is visible. The main interface is divided into three sections:

- Left Panel:** Labeled 'Right' with an edit icon. It features a 'Webcam' button (highlighted with a black hexagon and an arrow pointing to the '135 Image Samples' grid), a live video feed of a hand holding a large black arrow, and a 'Record 6 Seconds' button with a settings icon.
- Middle Panel:** Titled '135 Image Samples', it displays a 6x6 grid of 36 small image thumbnails, each showing the hand holding the arrow.
- Right Panel:** Contains a 'Training' section with a 'Train Model' button and an 'Advanced' dropdown menu. Below this is a 'Preview' section with an 'Export Model' button and a message: 'You must train a model on the left before you can preview it here.'

continue to next....

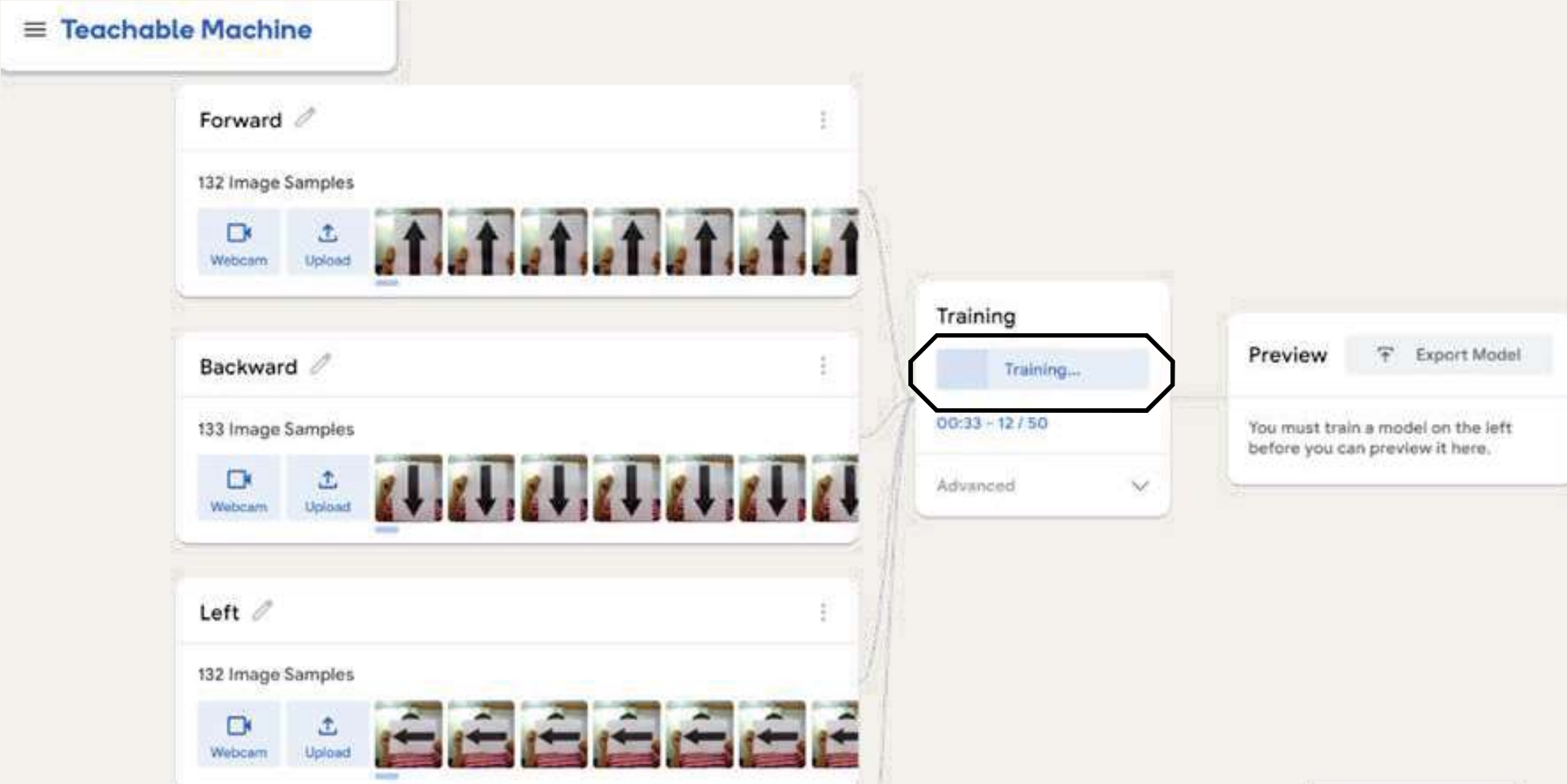
Step 4: - Click on the Train Model option.



The screenshot displays the Teachable Machine web interface. On the left, there are three panels for training: 'Forward', 'Backward', and 'Left'. Each panel shows '132 Image Samples' and includes 'Webcam' and 'Upload' buttons. The 'Forward' panel shows images with upward arrows, 'Backward' shows images with downward arrows, and 'Left' shows images with leftward arrows. A central 'Training' panel is highlighted with a black border, featuring a 'Train Model' button. To the right of the 'Training' panel is a 'Preview' panel with an 'Export Model' button and a message: 'You must train a model on the left before you can preview it here.'

continue to next....

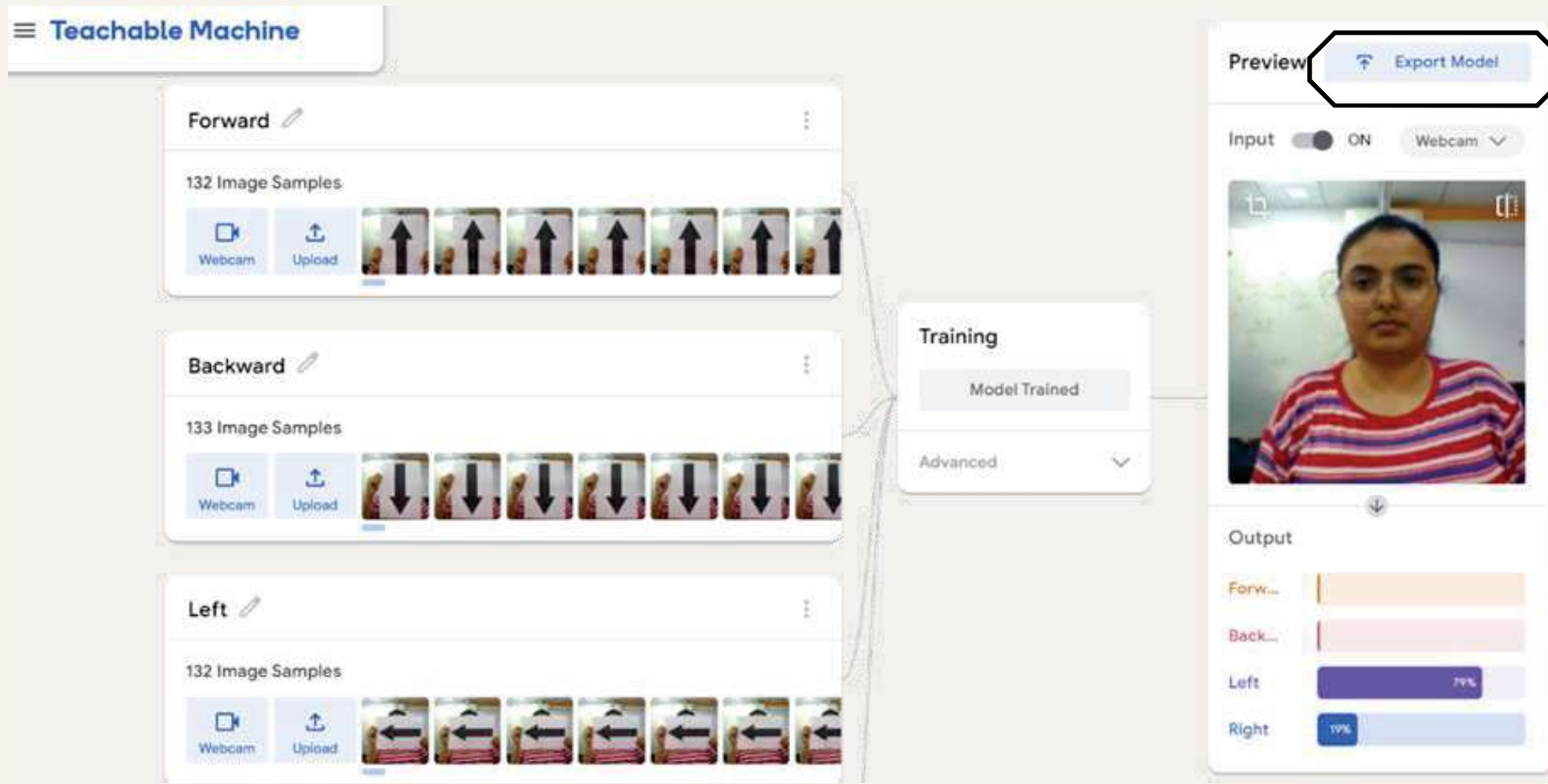
Step 5: - Model is start training



The screenshot displays the Teachable Machine web interface. On the left, there are three panels for training: 'Forward' (132 Image Samples), 'Backward' (133 Image Samples), and 'Left' (132 Image Samples). Each panel includes 'Webcam' and 'Upload' buttons, followed by a sequence of image thumbnails with directional arrows. A line connects the 'Forward' panel to the 'Training' panel in the center. The 'Training' panel shows a 'Training...' button, a progress indicator '00:33 - 12 / 50', and an 'Advanced' dropdown menu. To the right, the 'Preview' panel is visible, containing an 'Export Model' button and a message: 'You must train a model on the left before you can preview it here.'

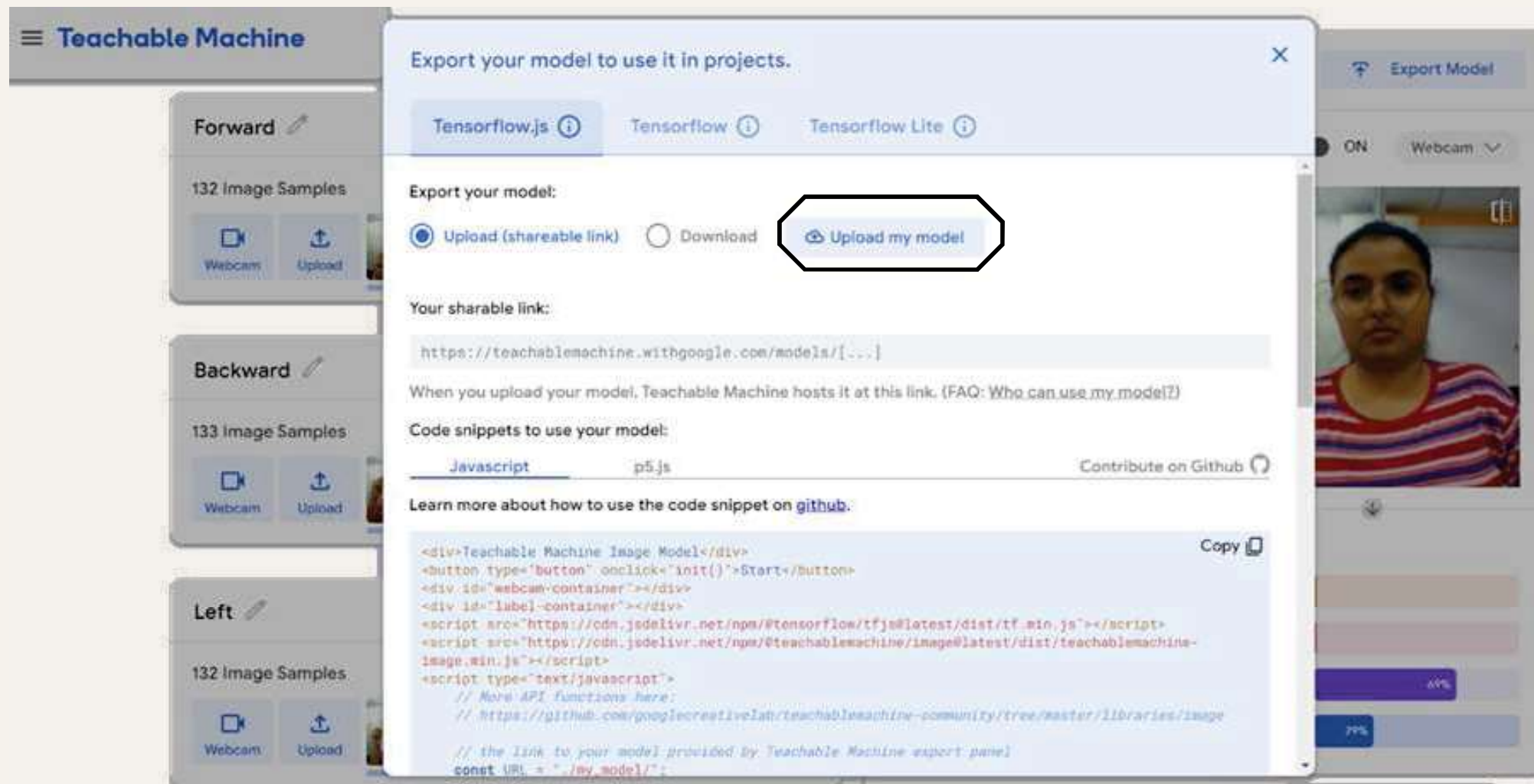
continue to next....

Step 6: - Click on Export model



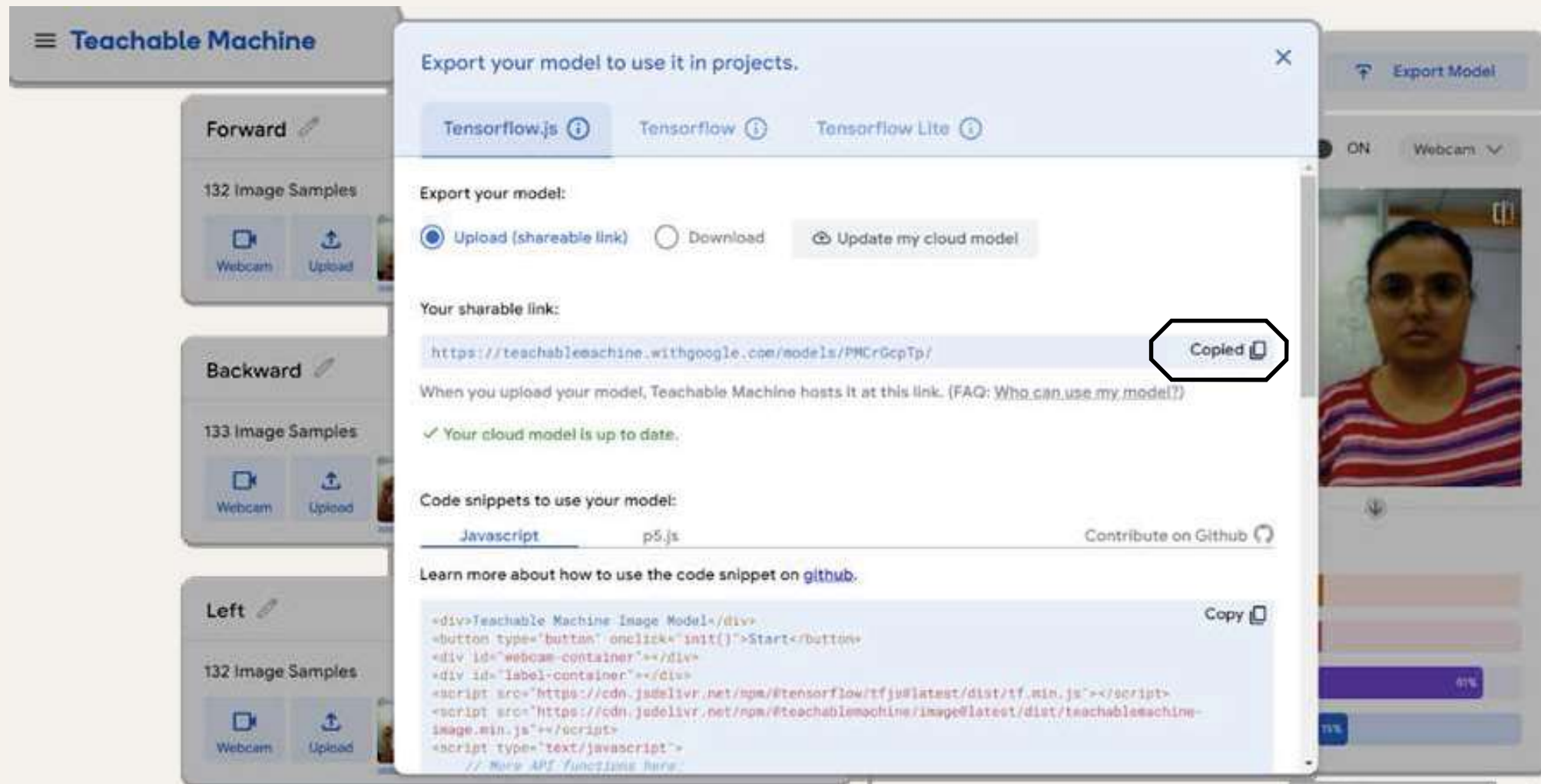
continue to next....

Step 7: - click on upload my channel




continue to next....



Step 8: - copy the link.




Teachable Machine

Forward 



132 Image Samples


Webcam Upload

Backward 



133 Image Samples


Webcam Upload




Left 

132 Image Samples

Webcam Upload


Export your model to use it in projects. 

Tensorflow.js  Tensorflow  Tensorflow Lite 

Export your model:

☒ Upload (shareable link) ☐ Download


Your sharable link:

<https://teachablemachine.withgoogle.com/models/PMCrcGcpTp/> 

When you upload your model, Teachable Machine hosts it at this link. (FAQ: Who can use my model?)


✓ Your cloud model is up to date.

Code snippets to use your model:

Javascript ☒ p5.js ☐ [Contribute on Github](#) 

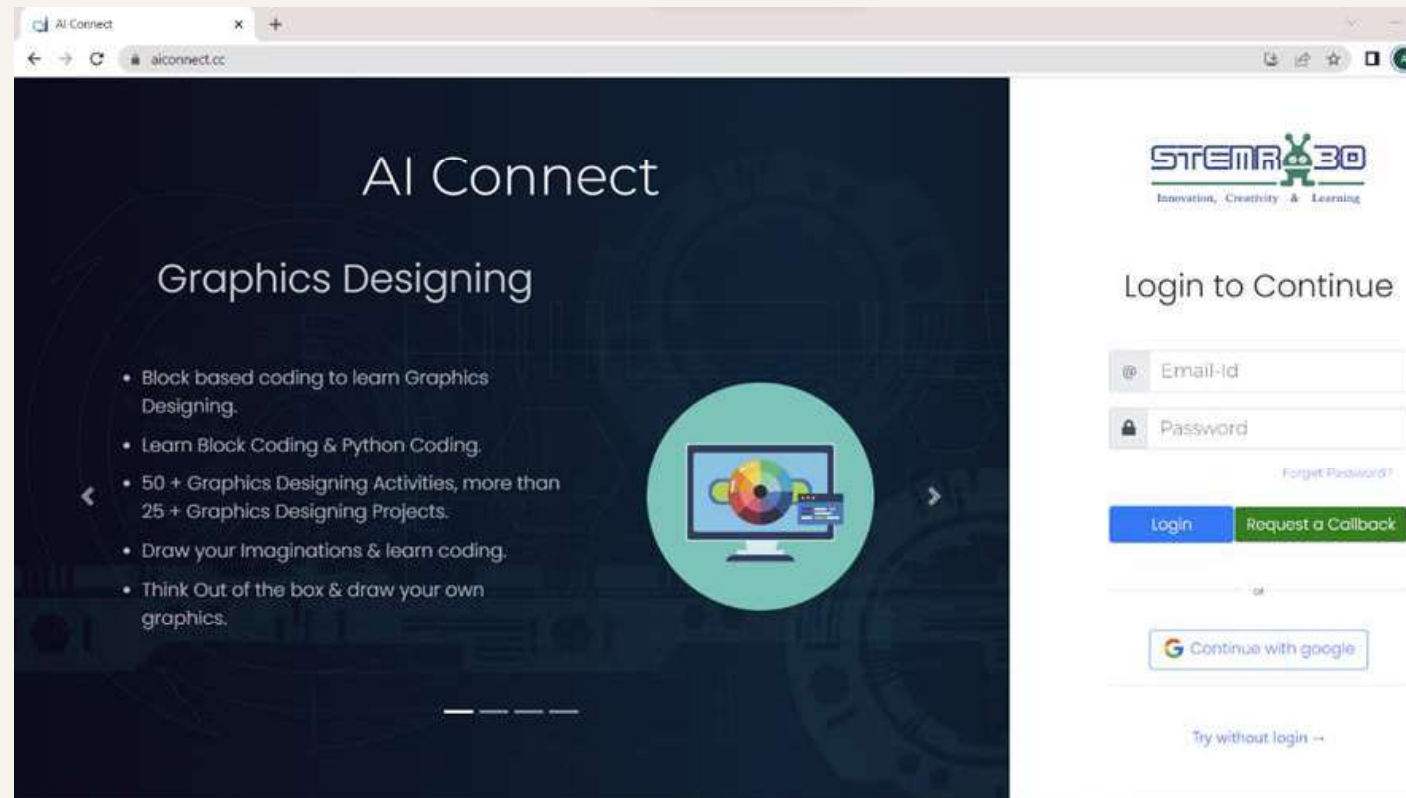
Learn more about how to use the code snippet on [github](#).

```
<div>Teachable Machine Image Model</div>
<button type='button' onclick='init()'>Start</button>
<div id='webcam-container'></div>
<div id='label-container'></div>
<script src='https://cdn.jsdelivr.net/npm/@tensorflow/tfjs@latest/dist/tf.min.js'></script>
<script src='https://cdn.jsdelivr.net/npm/@teachablemachine/image@latest/dist/teachablemachine-image.min.js'></script>
<script type='text/javascript'>
  // More API functions here
</script>
```



Source Code

Step – 1 Go to <https://aiconnect.cc/login>.



continue to next....

Step-2 Log-in through your aiconnect mail id & password/ continue with google.



AI Connect

Graphics Designing

- Block based coding to learn Graphics Designing.
- Learn Block Coding & Python Coding.
- 50 + Graphics Designing Activities, more than 25 + Graphics Designing Projects.
- Draw your Imaginations & learn coding.
- Think Out of the box & draw your own graphics.

Enter your aiconnect - id & password

Mail-Id

Password

[Forgot Password?](#)

[Login](#) [Request a Callback](#)

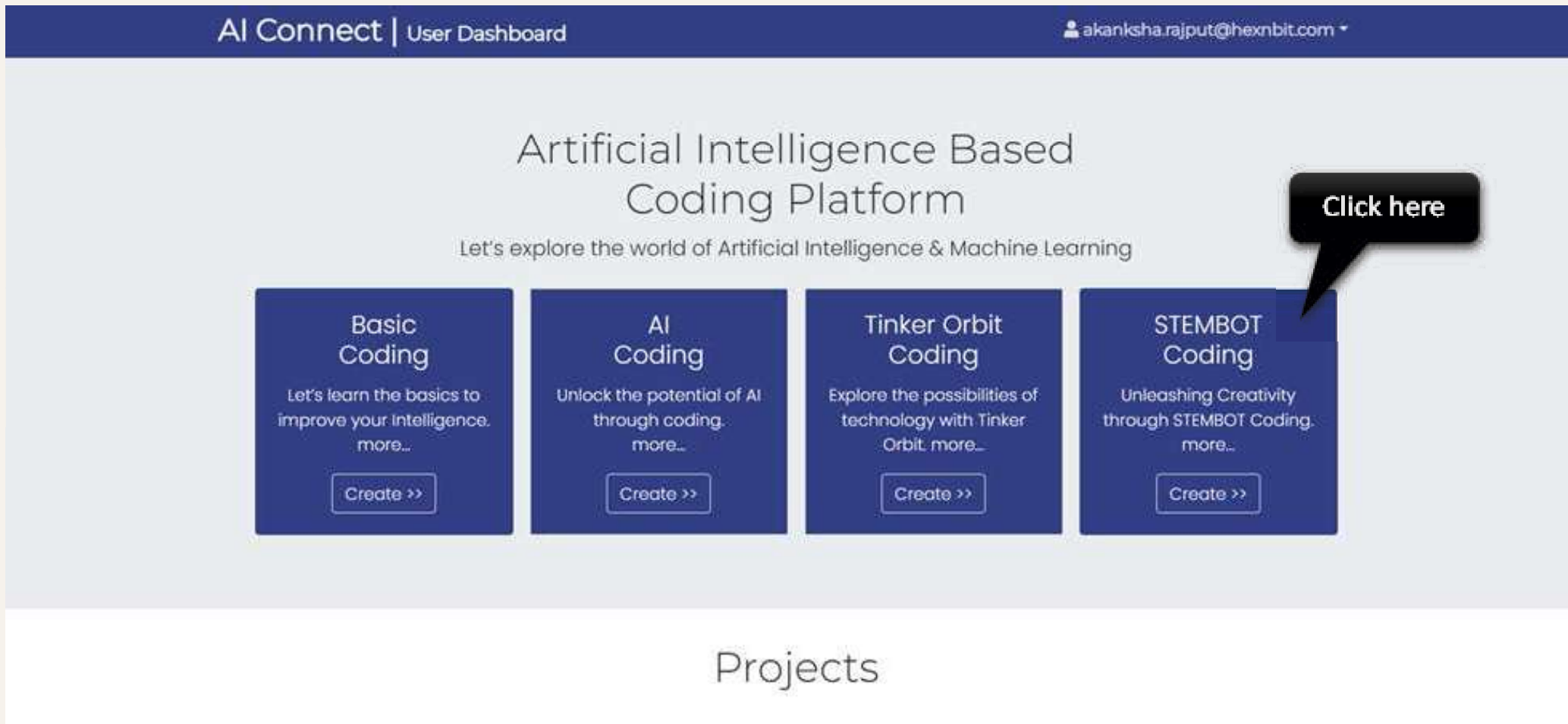
or

[Continue with google](#)

[Try without login](#)

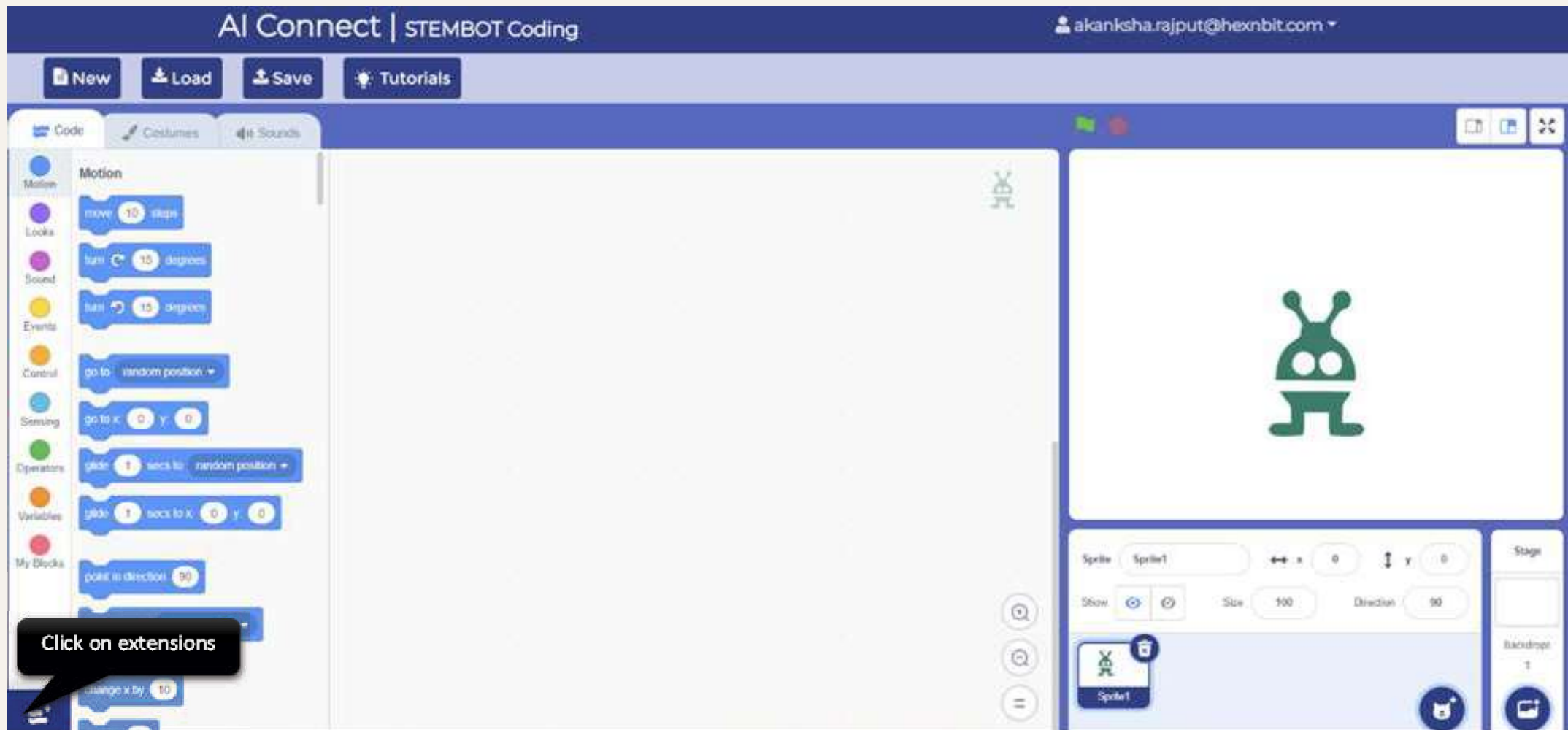
continue to next....

Step – 3 Click on STEMBOT Coding to create a project/ click on create.



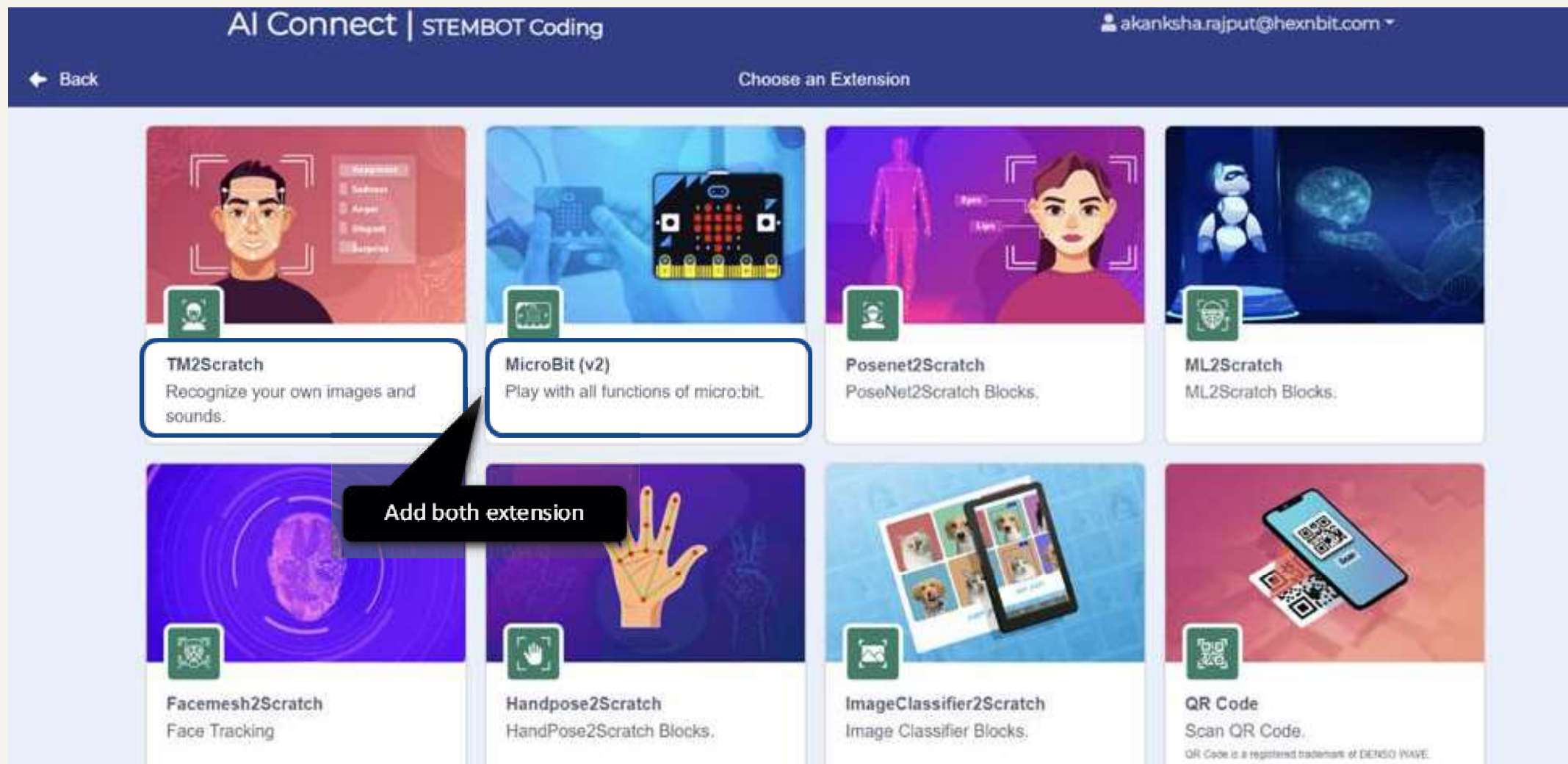
continue to next....

Step-4 Click on extensions.



continue to next....

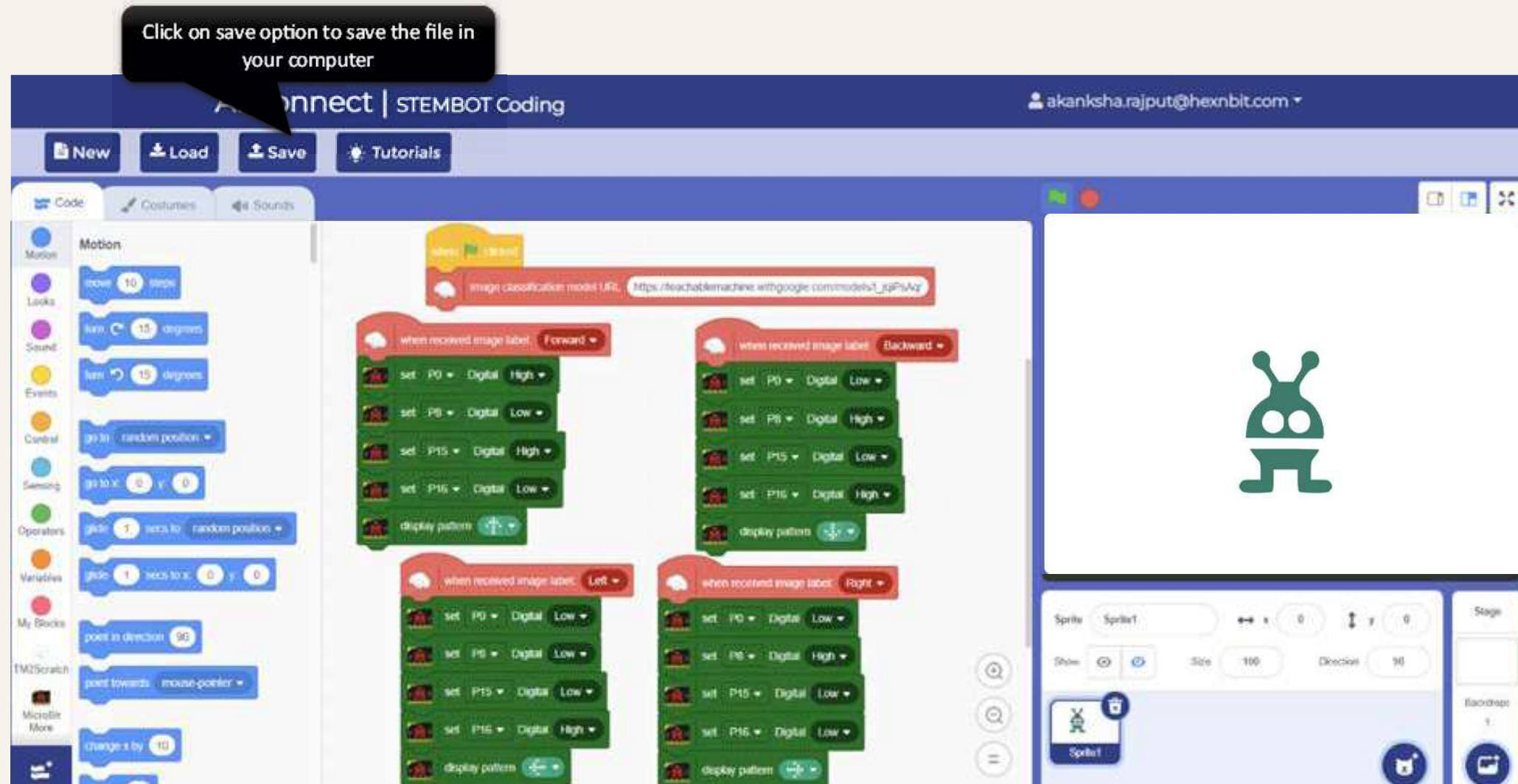
Step-5 Add Micro: bit V2 and Google teachable (Pose) extensions.



continue to next....

Step- 6 Write the following code on the workspace by dragging the blocks.

Click on save option to save the file in your computer



The screenshot shows the STEMROBO Coding interface. The top bar includes a 'Connect' button and the text 'STEMBOT Coding'. The user's email 'akanksha.rajput@hexnbit.com' is displayed. Below the top bar are buttons for 'New', 'Load', 'Save', and 'Tutorials'. The left sidebar contains a 'Code' tab and a 'Costumes' tab. The main workspace displays a code script with the following blocks:

- when clicked** (yellow block)
- image classification model URL** (red block) with the URL: https://teachablemachine.withgoogle.com/models/1_gjPwVz
- when received image label: Forward** (red block)
- when received image label: Backward** (red block)
- when received image label: Left** (red block)
- when received image label: Right** (red block)

Each of the four 'when received image label' blocks contains the following sequence of blocks:

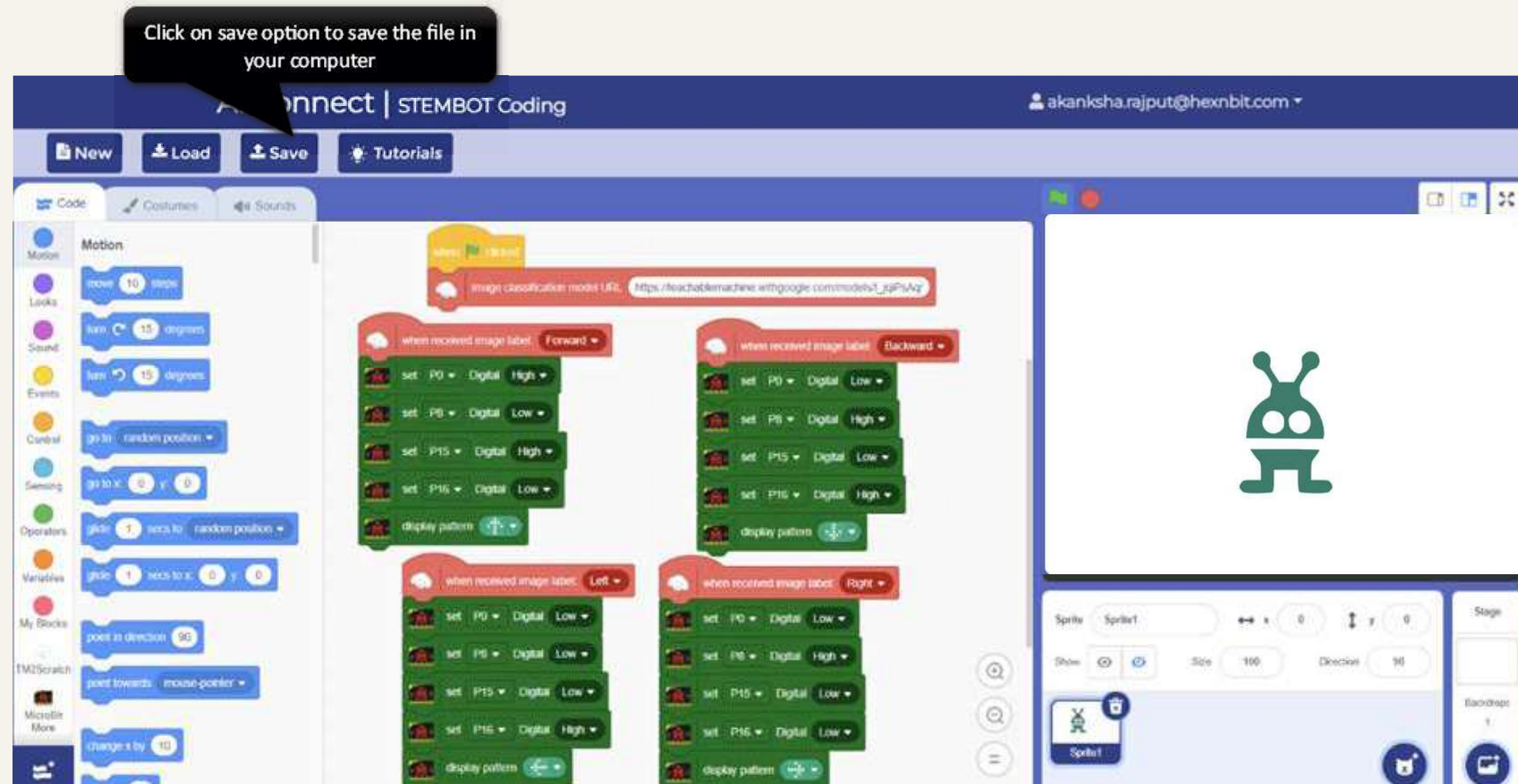
- set P0** (Digital High/Low)
- set P8** (Digital Low/High)
- set P15** (Digital High/Low)
- set P16** (Digital Low/High)
- display pattern** (green block)

The right sidebar shows a 'Sprite' panel with a green alien sprite and a 'Stage' panel with a 'Backdrop' dropdown.

continue to next....

Step- 6 Write the following code on the workspace by dragging the blocks.

Click on save option to save the file in your computer



The screenshot shows the STEMBOT Coding interface. The workspace contains the following code blocks:

- when clicked** (yellow block)
- image classification model URL** (red block) with the URL: https://teachablemachine.withgoogle.com/models/_gPmWz
- when received image label: Forward** (red block)
 - set P0 to Digital High
 - set P8 to Digital Low
 - set P15 to Digital High
 - set P16 to Digital Low
 - display pattern
- when received image label: Backward** (red block)
 - set P0 to Digital Low
 - set P8 to Digital High
 - set P15 to Digital Low
 - set P16 to Digital High
 - display pattern
- when received image label: Left** (red block)
 - set P0 to Digital Low
 - set P8 to Digital Low
 - set P15 to Digital Low
 - set P16 to Digital High
 - display pattern
- when received image label: Right** (red block)
 - set P0 to Digital Low
 - set P8 to Digital High
 - set P15 to Digital Low
 - set P16 to Digital Low
 - display pattern

The right side of the interface shows a stage with a green robot sprite and a sprite list at the bottom.

continue to next....

Step- 6 Write the following code on the workspace by dragging the blocks.



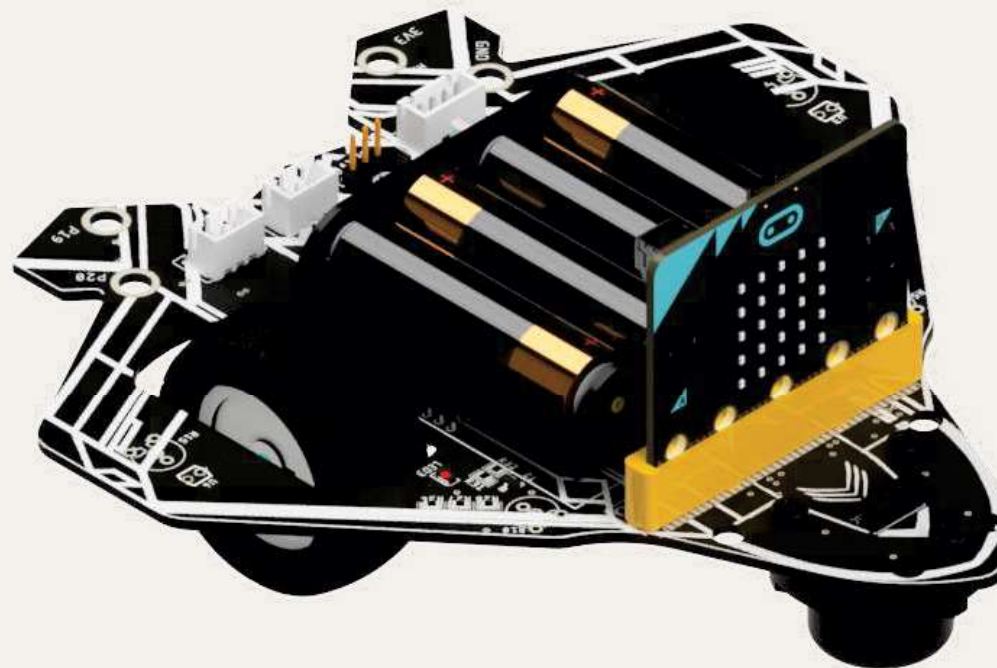
continue to next....

Step- 6 Write the following code on the workspace by dragging the blocks.



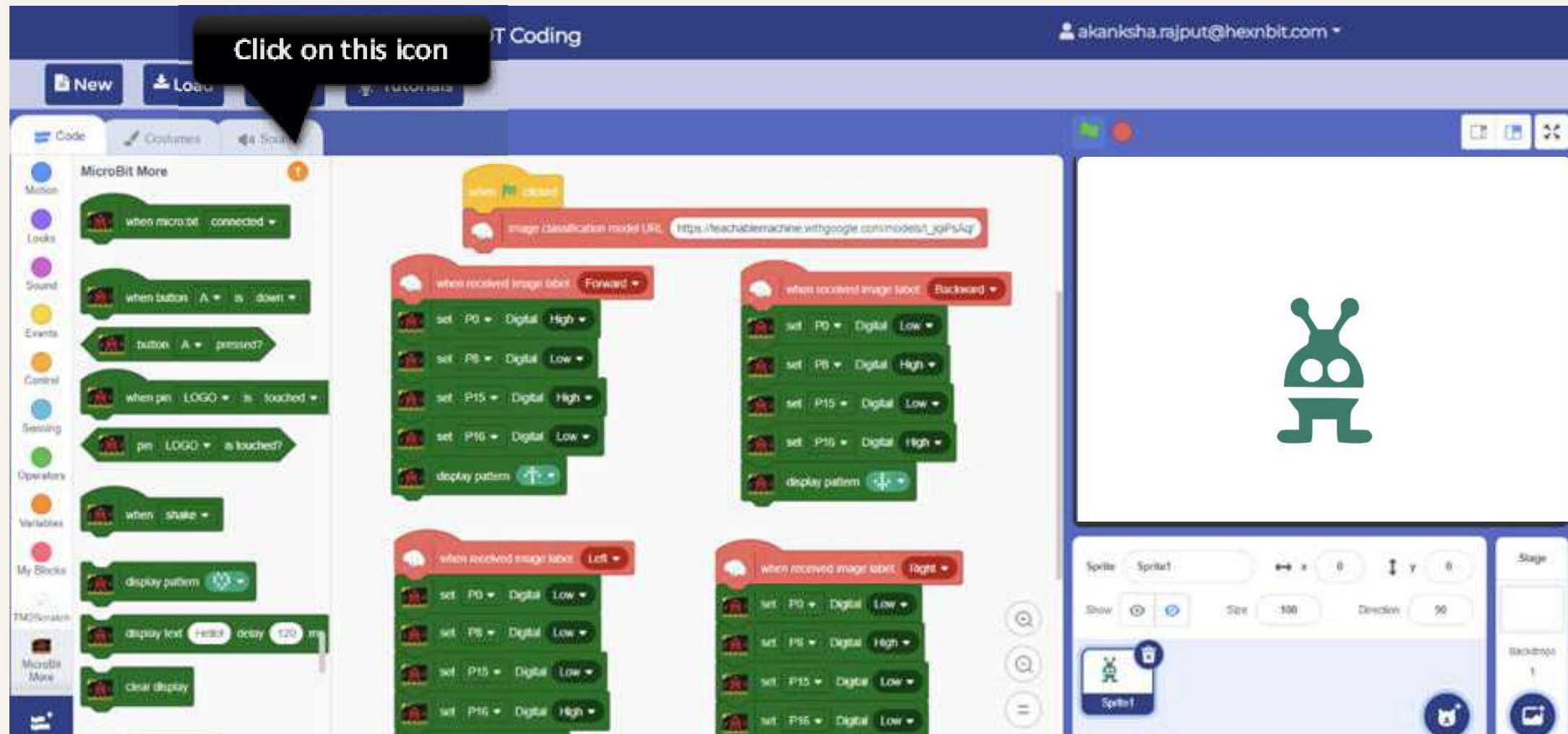
continue to next....

Step- 7 Connect the micro: bit with STEMBOT. And power up the robot by pressing the power button.



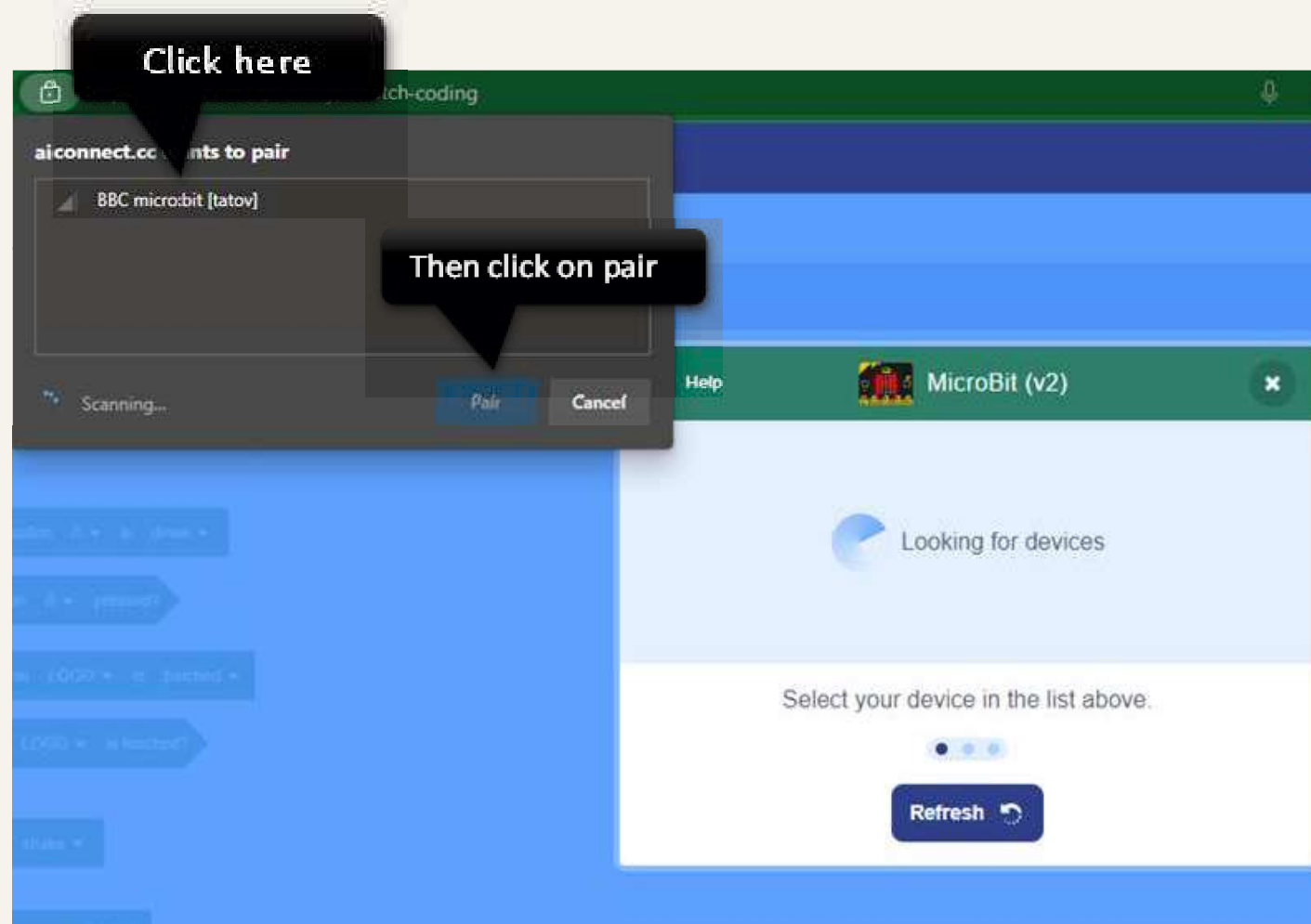
continue to next....

Step- 8 Now connect your micro: bit with aiconnect platform.



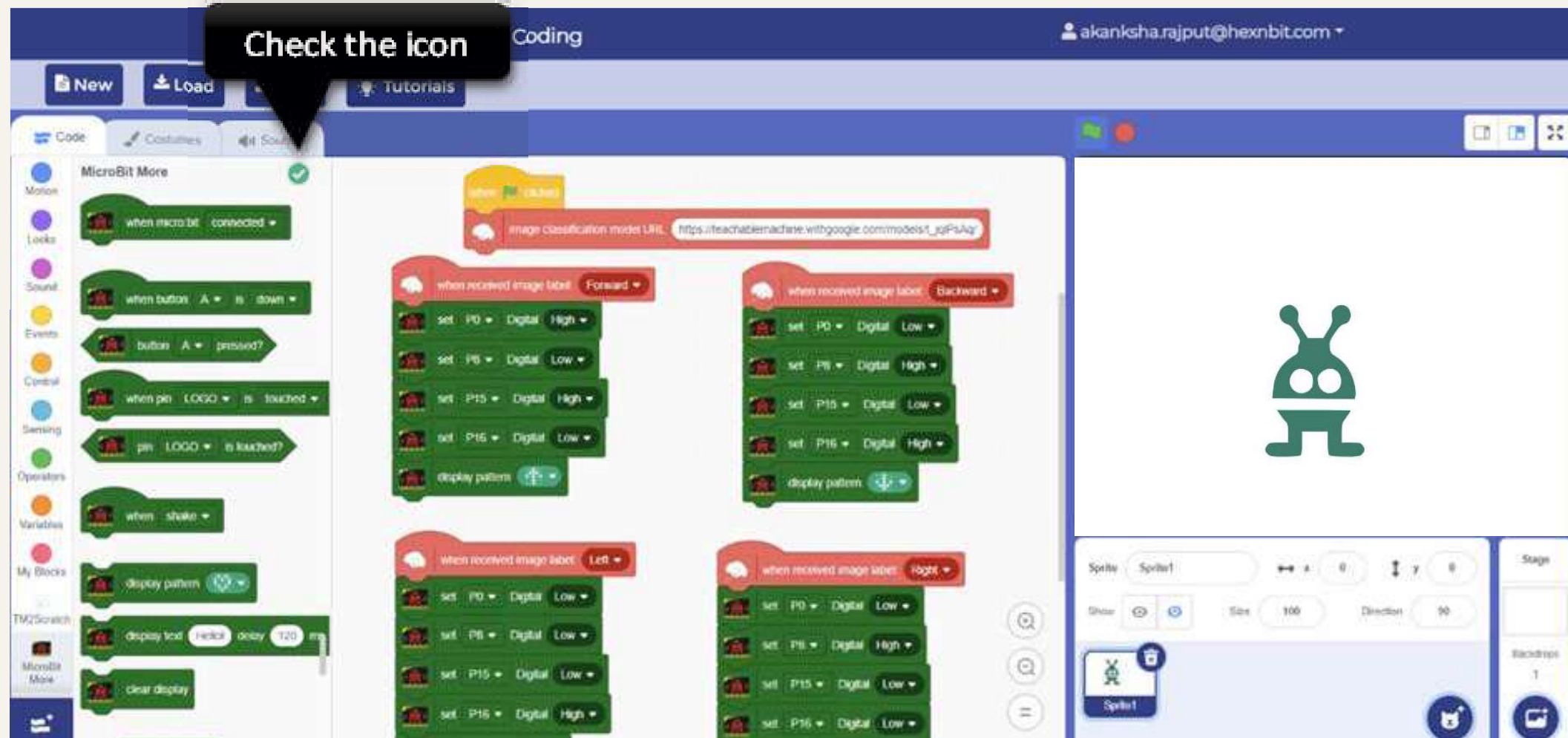
continue to next....

Step- 9 A pop-up window will come where you can see your micro: bit name. Click on the name then click on the pair option.



continue to next. . . .

Step- 10 Now you can see a green tick icon that means micro: bit is connected with the aiconnect platform via Bluetooth.



Thank you 