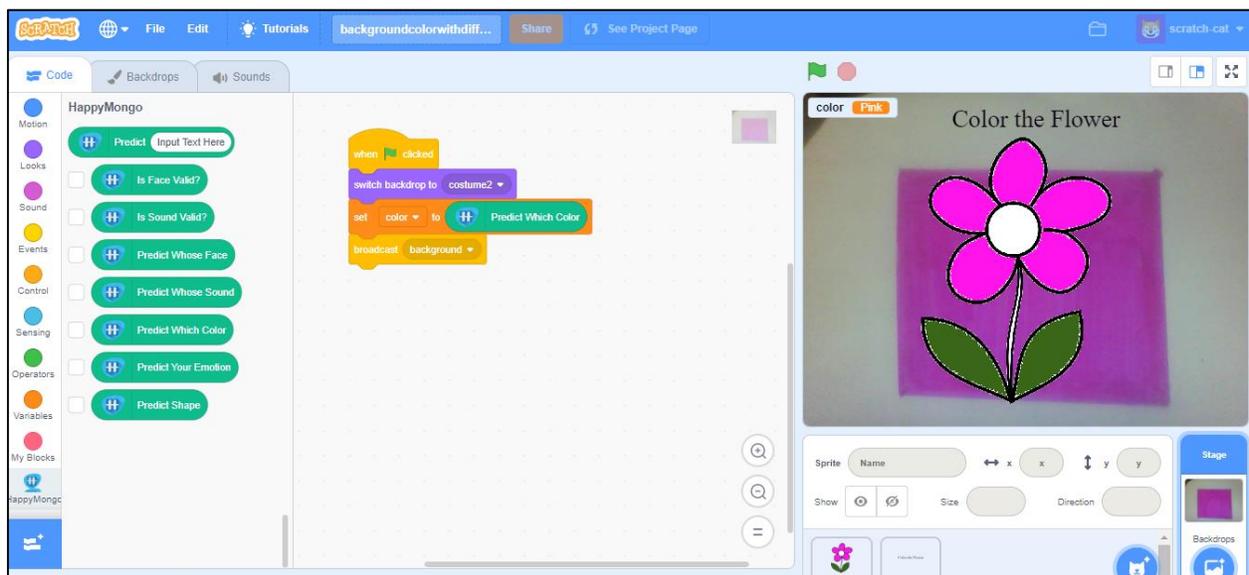


Background color

In this project you will make a flower that changes colour to match its background.

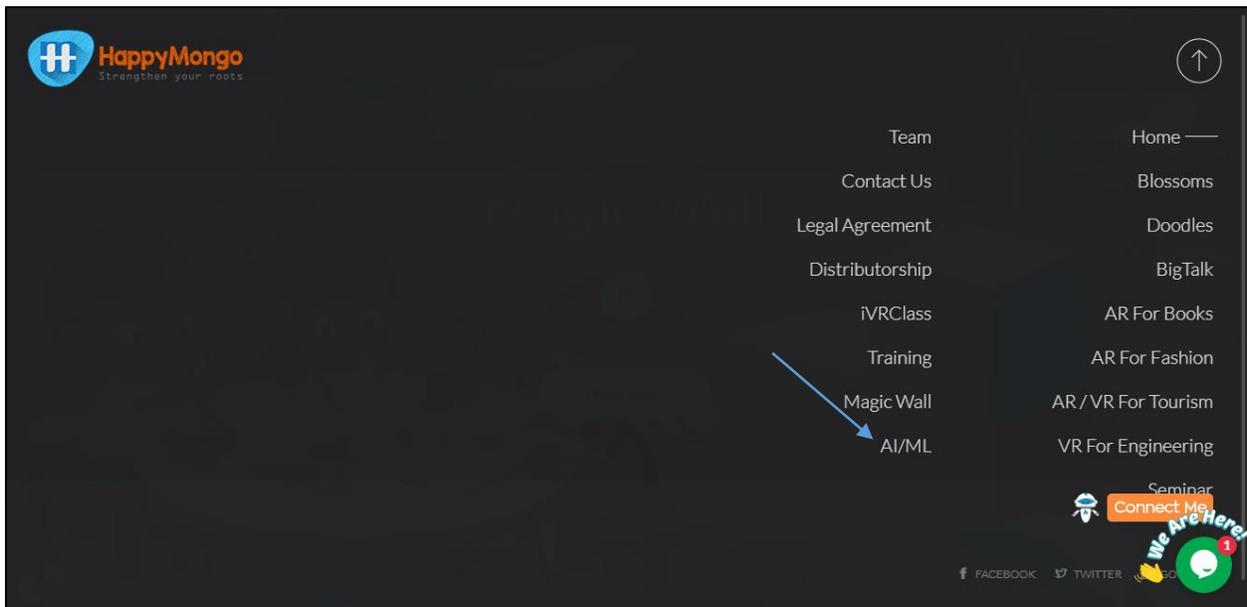
You will use a webcam to take photos of different coloured objects, then use machine learning with those examples to train the flower to recognise colours.



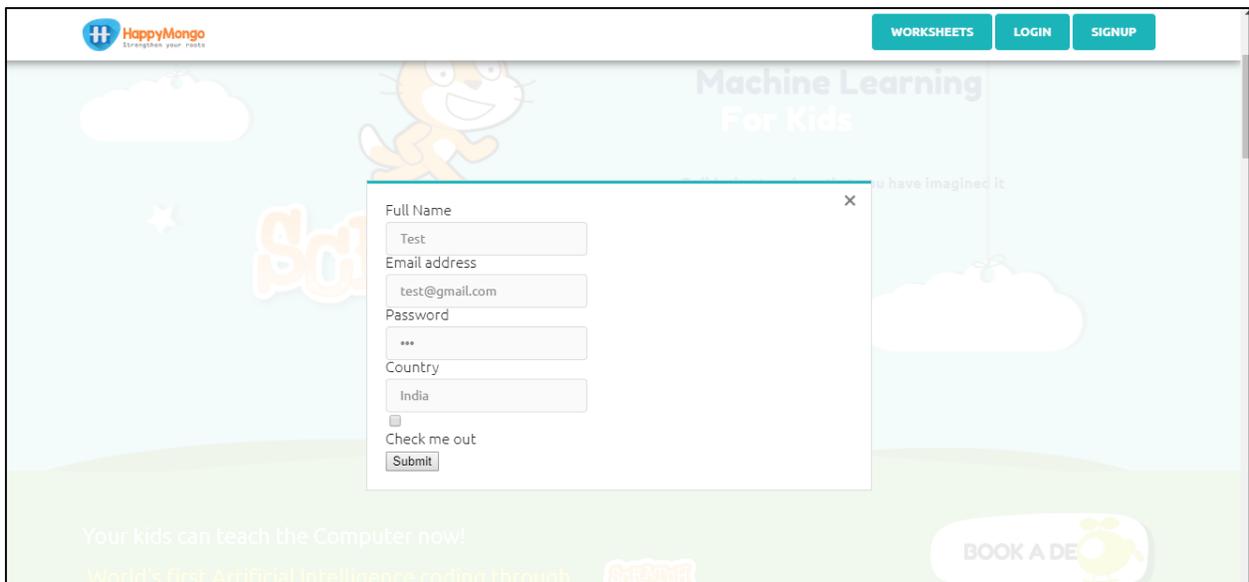
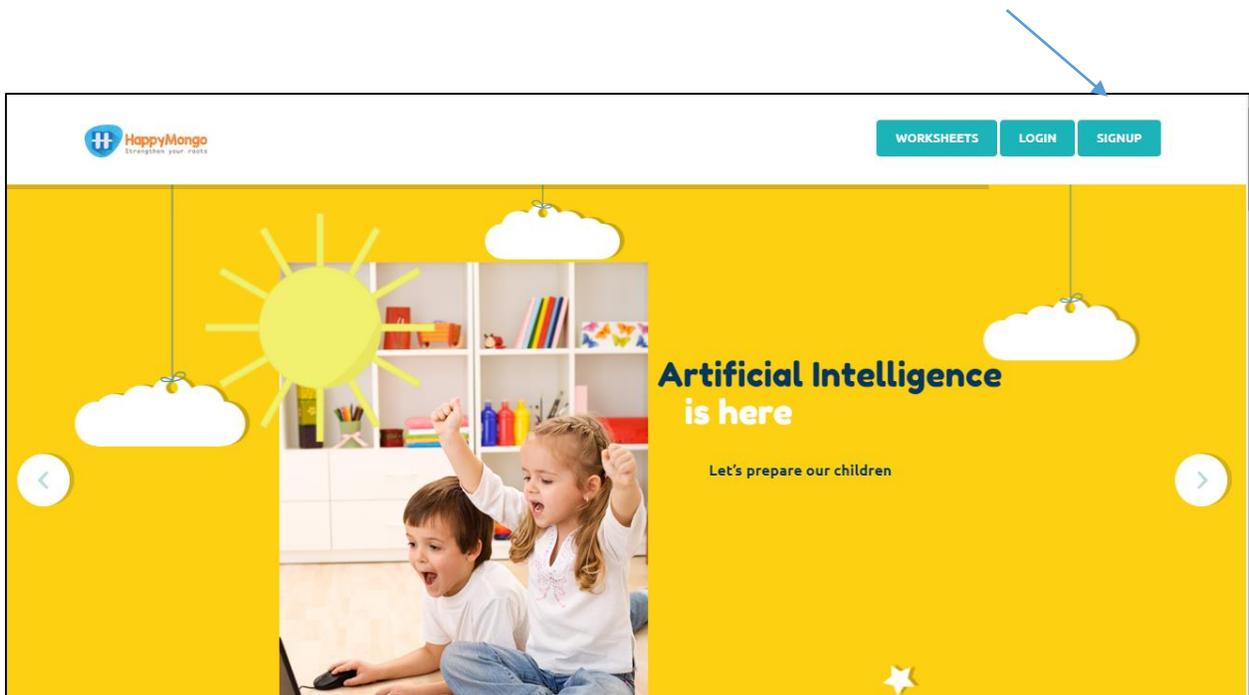
1. Go to <https://happymongo.com> in a web browser.
2. Click on the “menu” button.



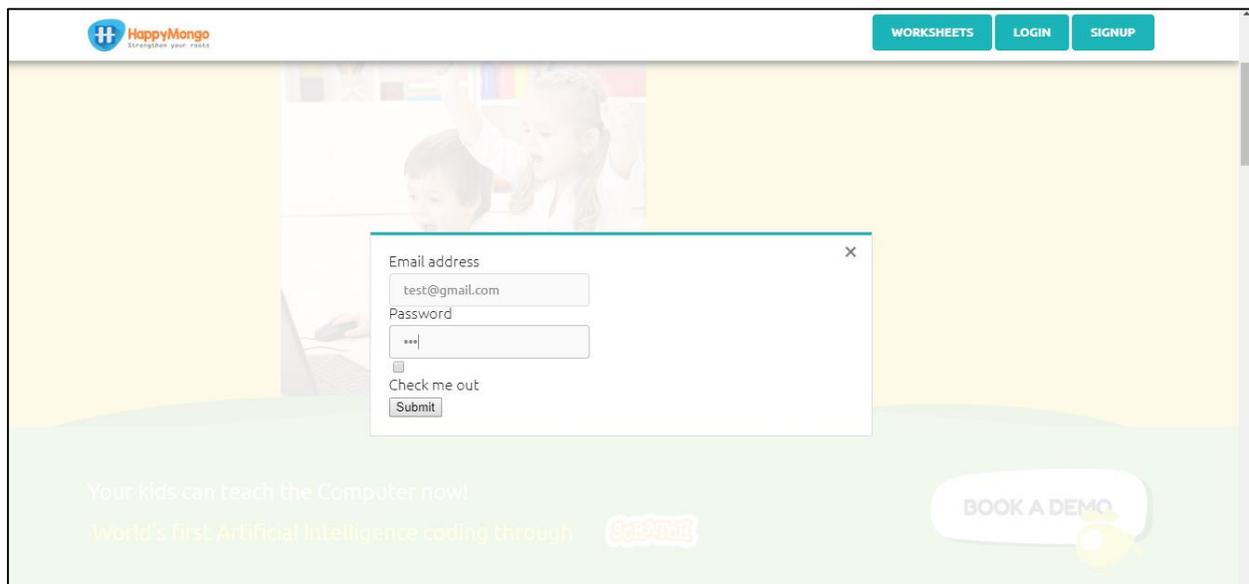
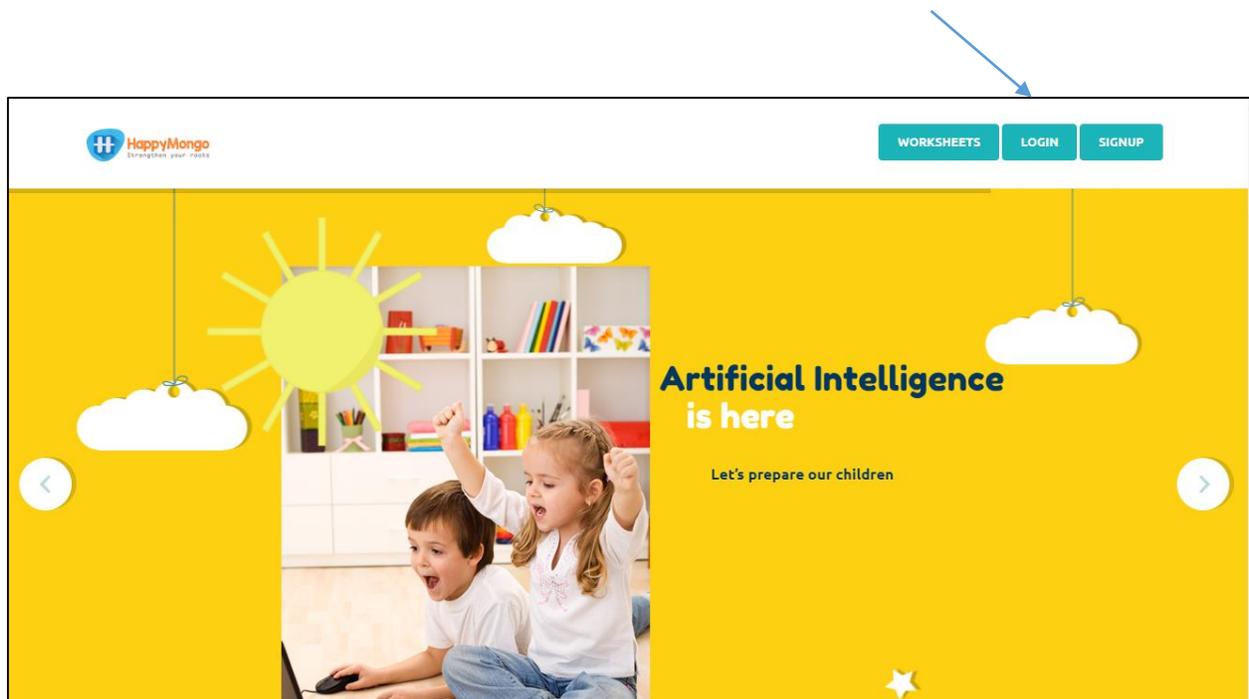
3. Click on “AI/ML” button.



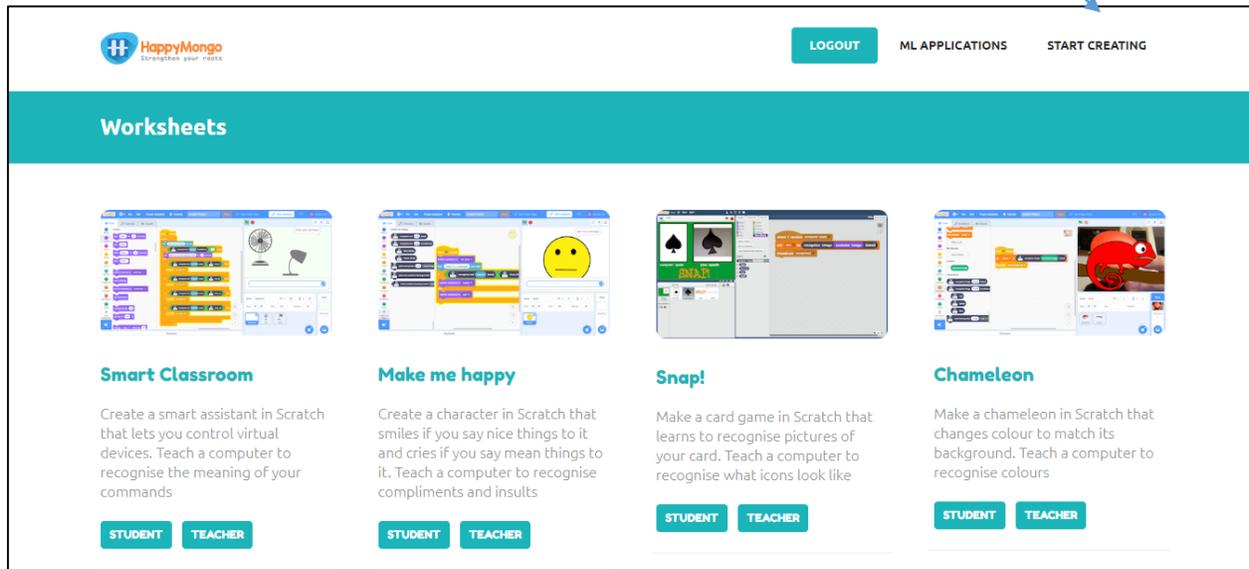
4. Click on **“Signup”** button. Enter all your details. Click on **“Submit”** button.



5. Click on “**Login**” button and type in your email address and password. Click on “**Submit**” button.

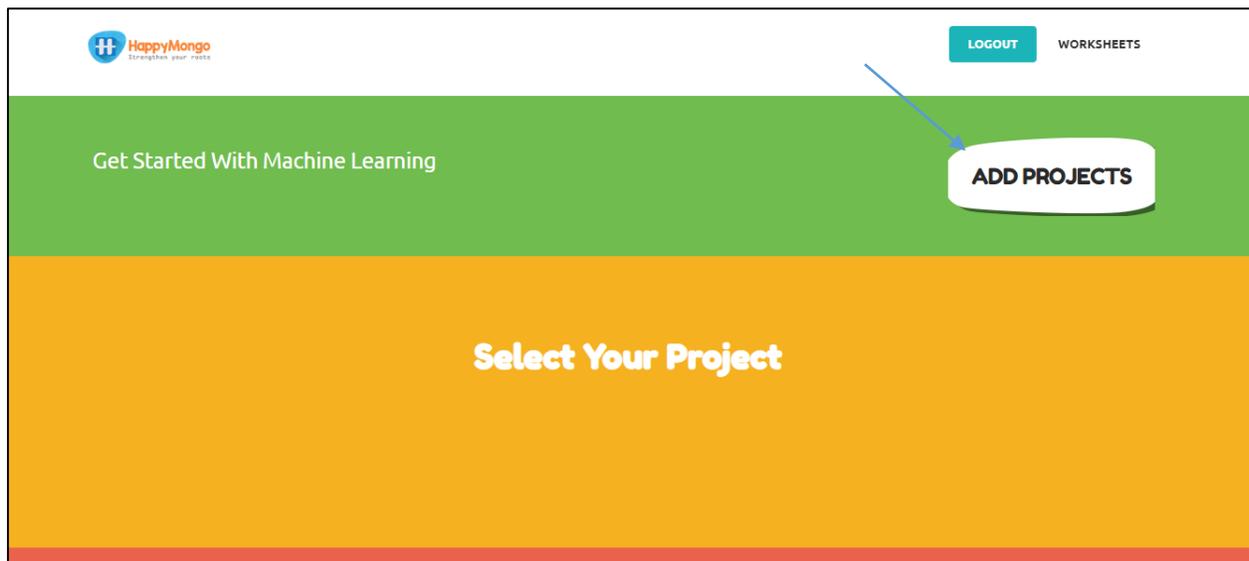


6. Click on “**Start creating**” button on the menu bar.



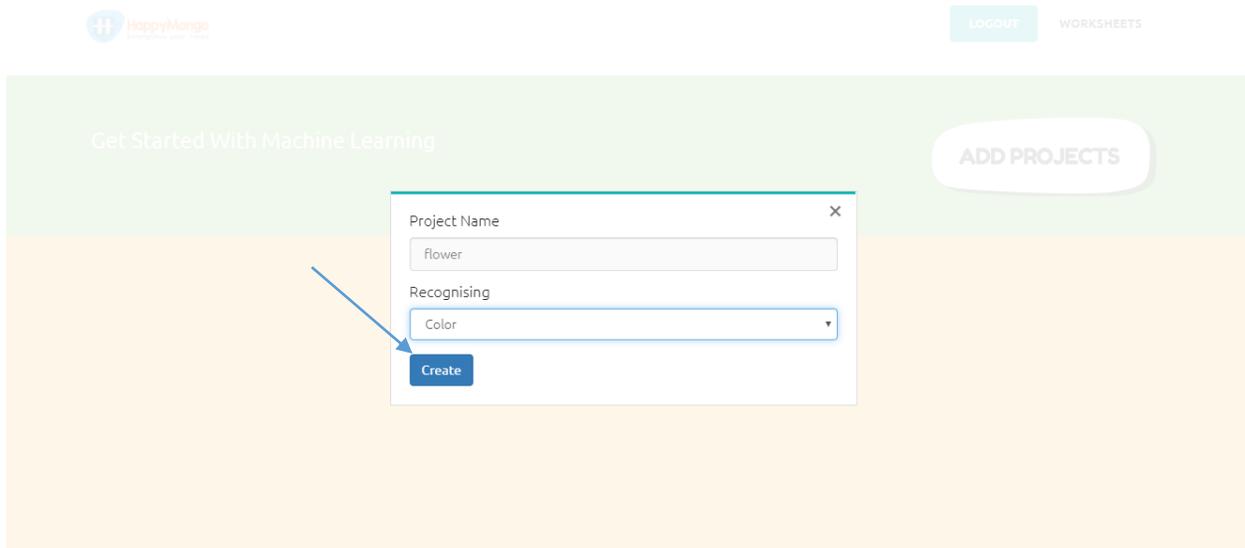
The screenshot shows the HappyMongo website's 'Worksheets' section. At the top, there is a navigation bar with the HappyMongo logo on the left and three buttons: 'LOGOUT', 'ML APPLICATIONS', and 'START CREATING'. A blue arrow points to the 'START CREATING' button. Below the navigation bar is a teal header with the word 'Worksheets'. The main content area features four project cards, each with a Scratch project preview, a title, a description, and 'STUDENT' and 'TEACHER' buttons. The projects are: 'Smart Classroom' (controlling virtual devices), 'Make me happy' (character with mood), 'Snap!' (card game), and 'Chameleon' (color recognition).

7. Click on “**Add Projects**” button.

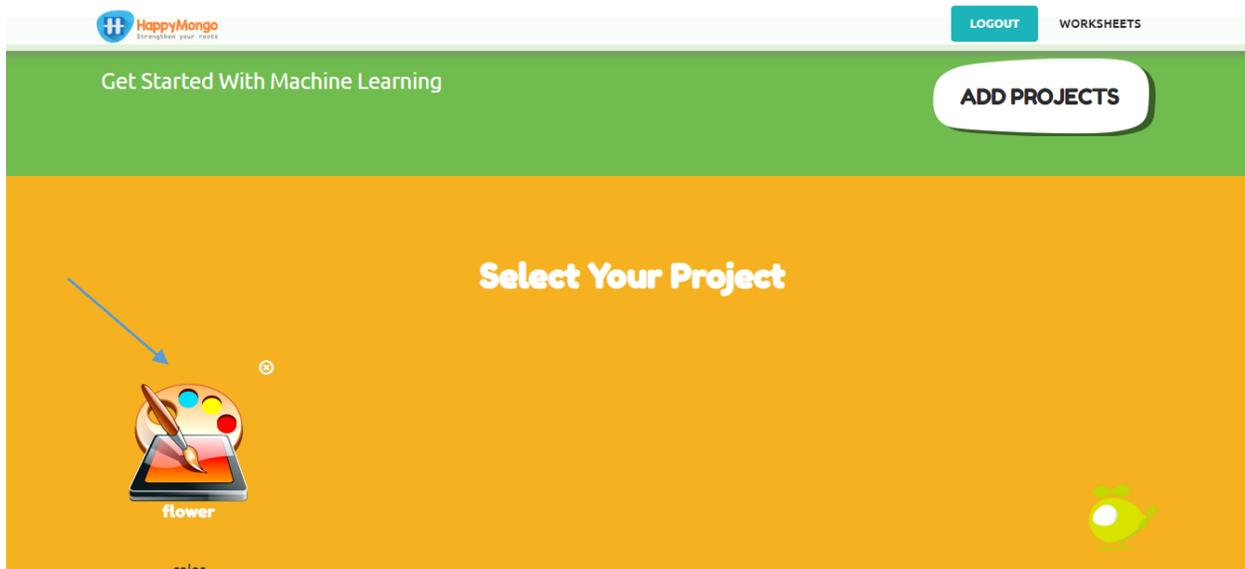


The screenshot shows the HappyMongo website's 'Get Started With Machine Learning' page. At the top, there is a navigation bar with the HappyMongo logo on the left and two buttons: 'LOGOUT' and 'WORKSHEETS'. A blue arrow points to a white button labeled 'ADD PROJECTS' located in the top right corner of the page. The page has a green header with the text 'Get Started With Machine Learning' and a large orange section below it with the text 'Select Your Project'.

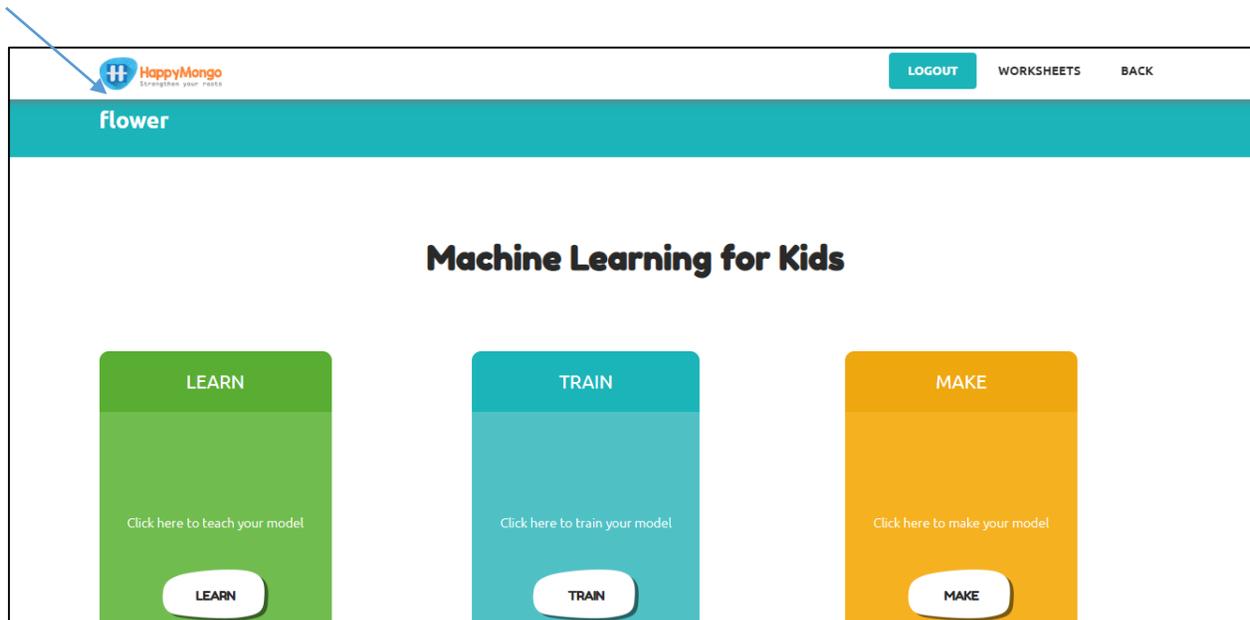
8. Name your project “flower” and set it to learn how to recognize “colour” format. Click the “Create” button.



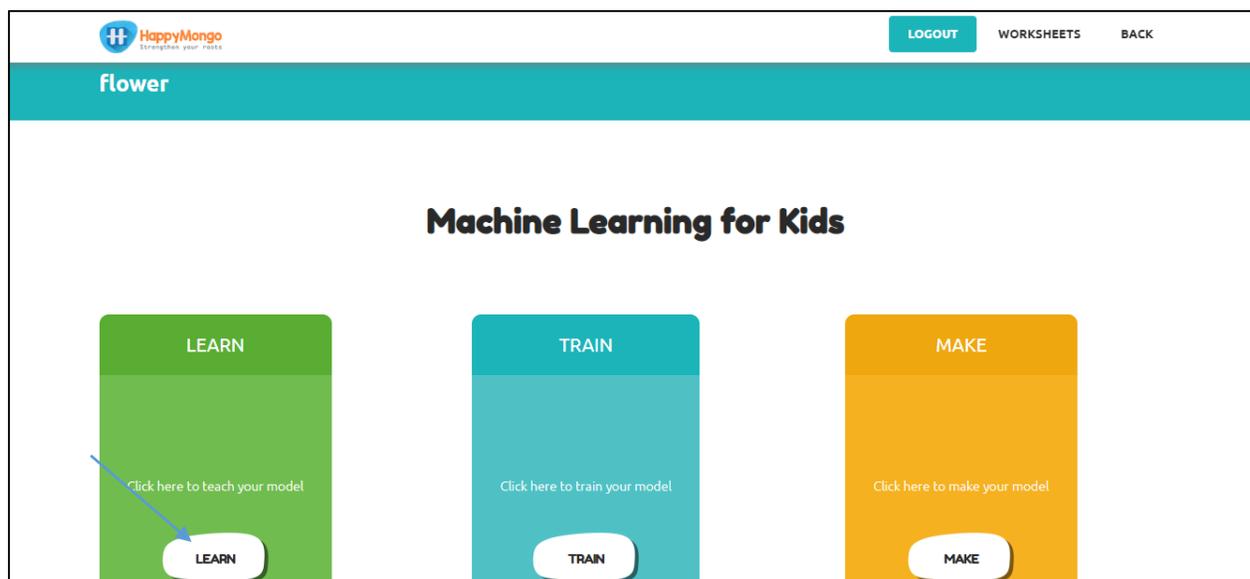
9. Now you can see “flower” listed in your projects. Click on it.



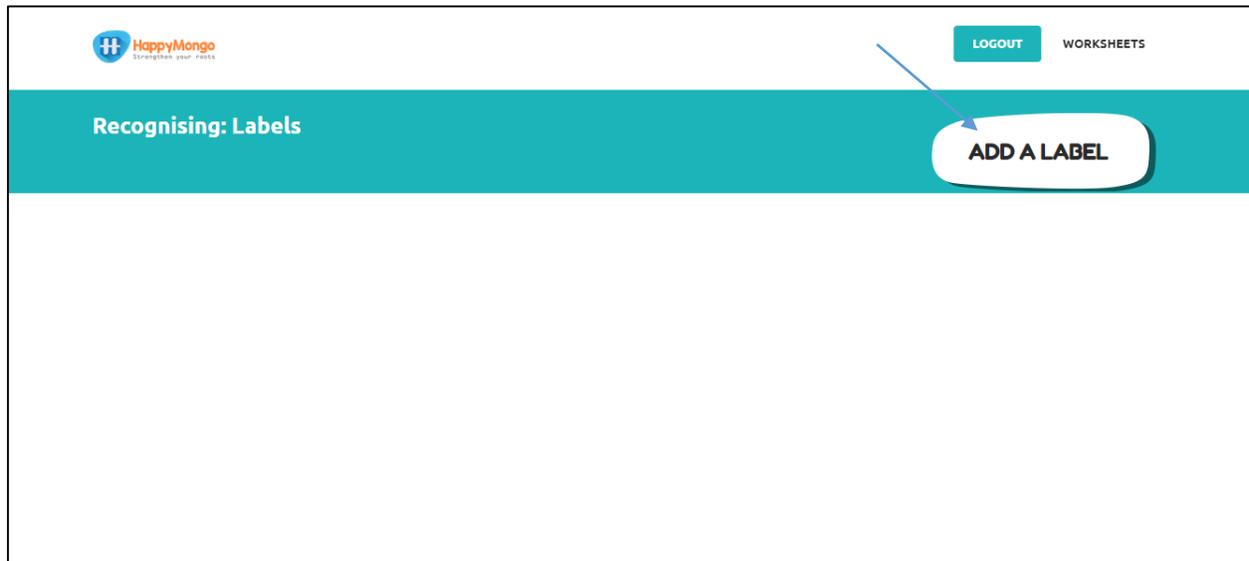
10. Now you can see the project name “flower” on the title bar.



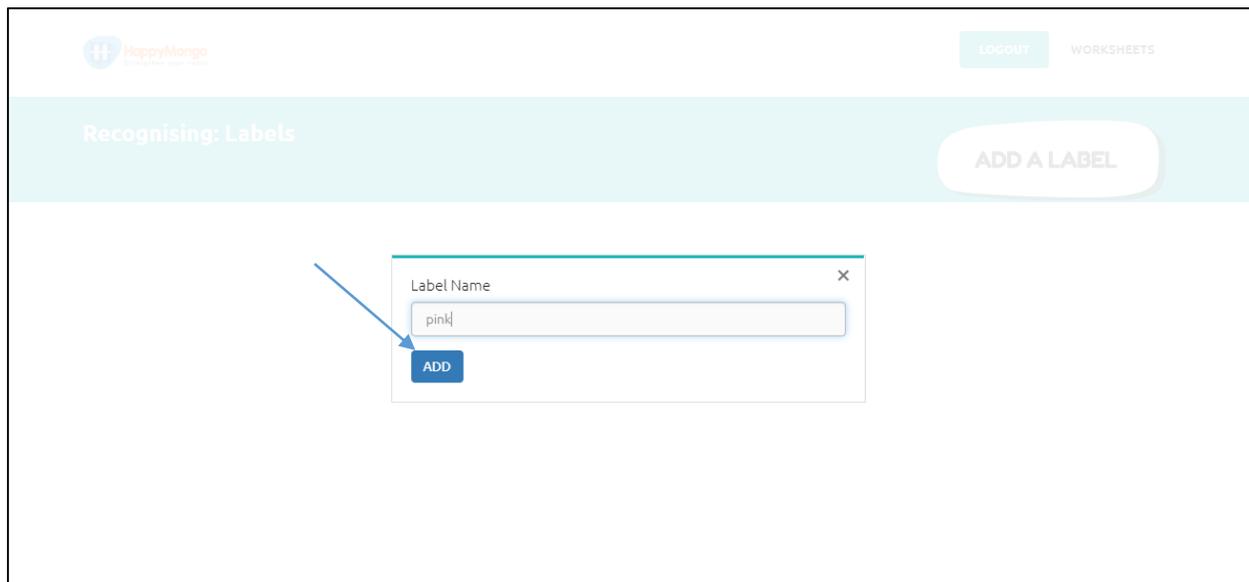
11. Click on “Learn” button.



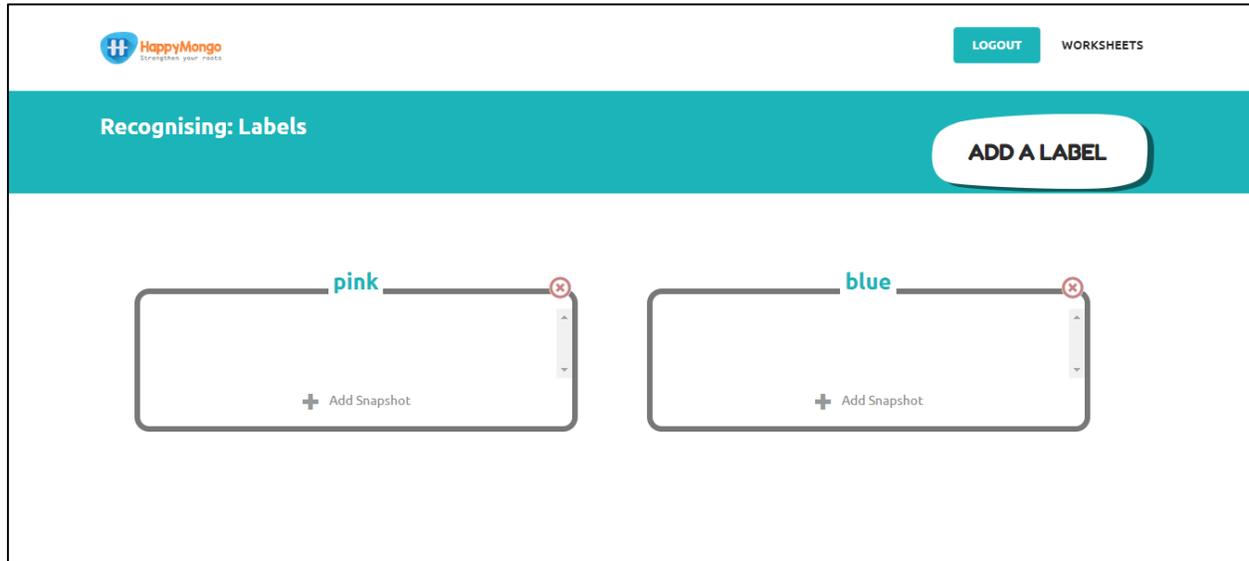
12. Click on **“Add a Label”** button on the top menu bar.



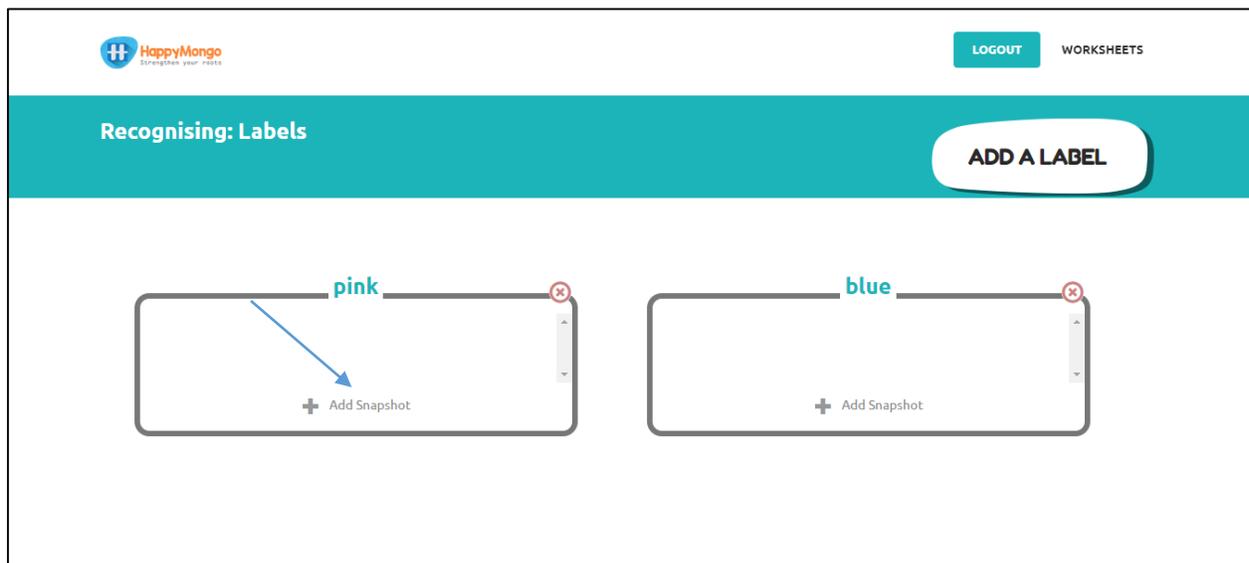
13. Type in the name of your first colour, and press **Add**.



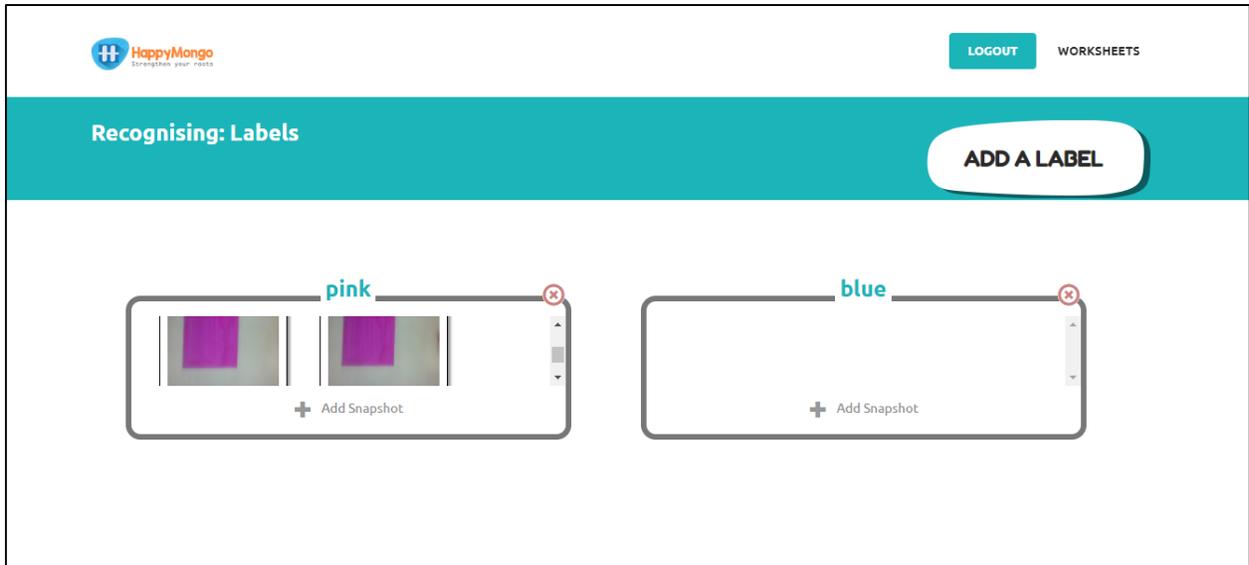
14. Do that again for your other colours.



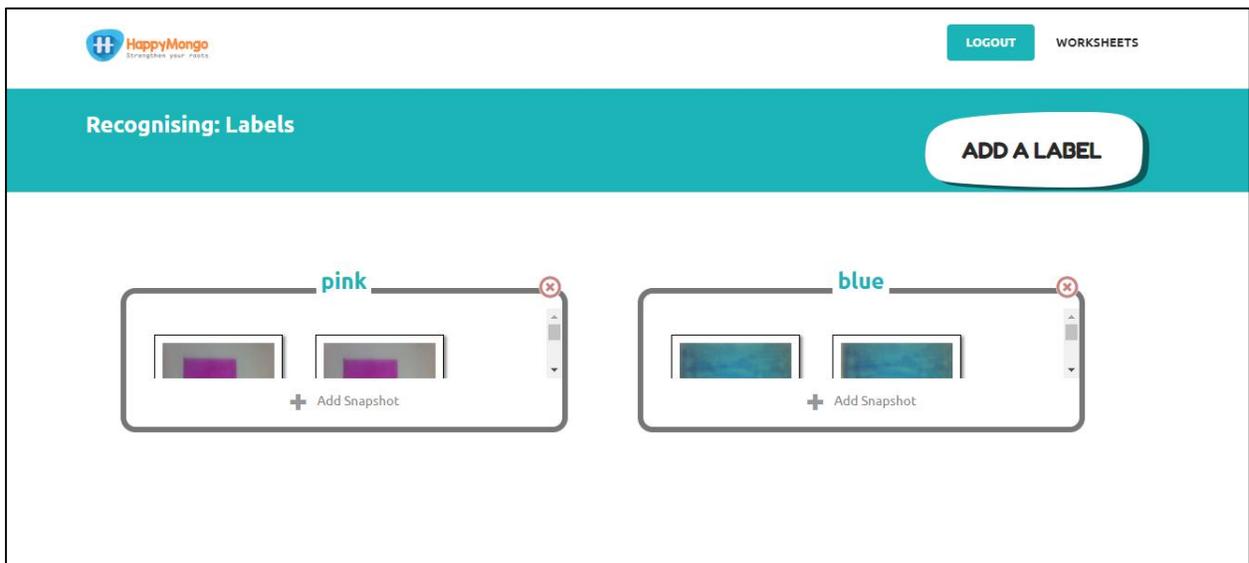
15. Click on the “Add Snapshot” button in your first colour bucket.



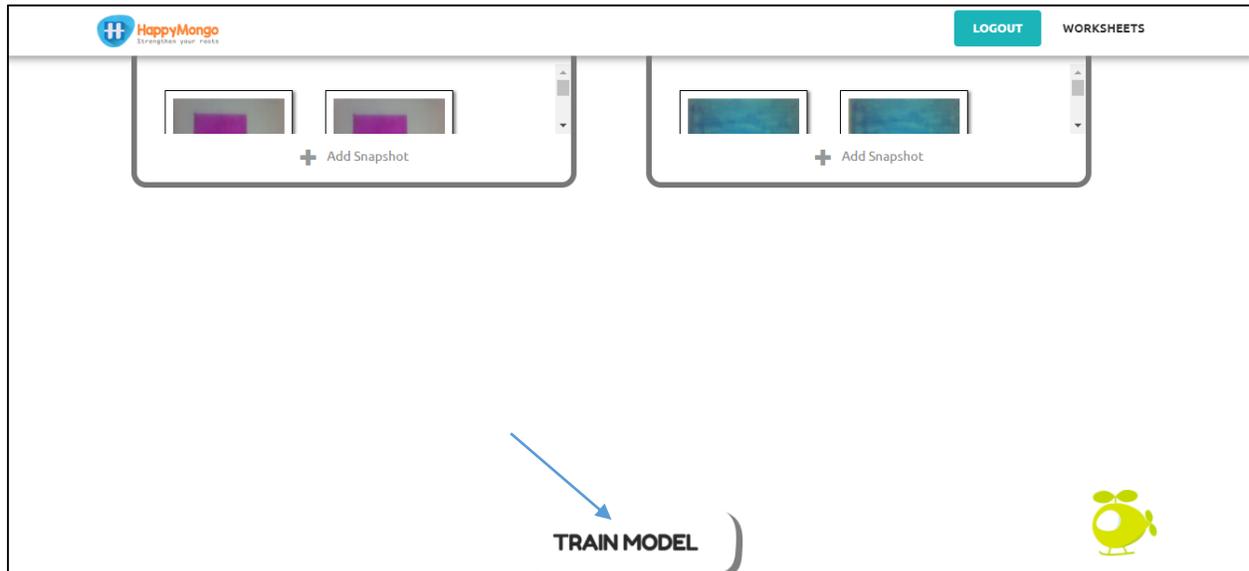
16. Take a photo of something that is of that colour.
Try to fill a lot of the picture.



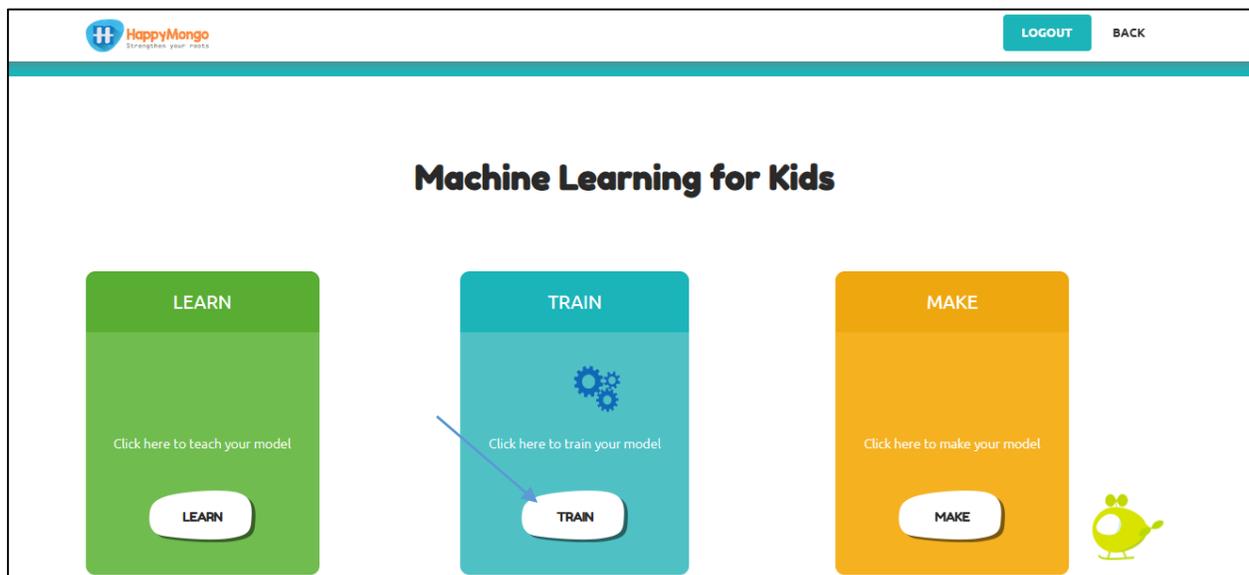
17. Repeat until you have got five examples in each colour. Try to find different objects for each colour.



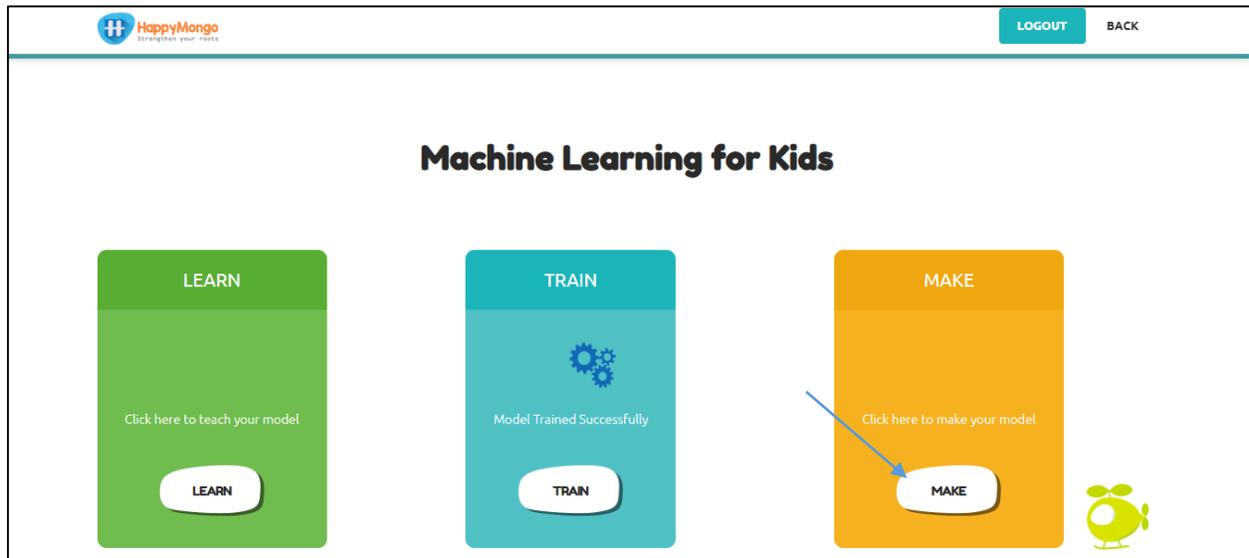
18. Click on “Train Model” button.



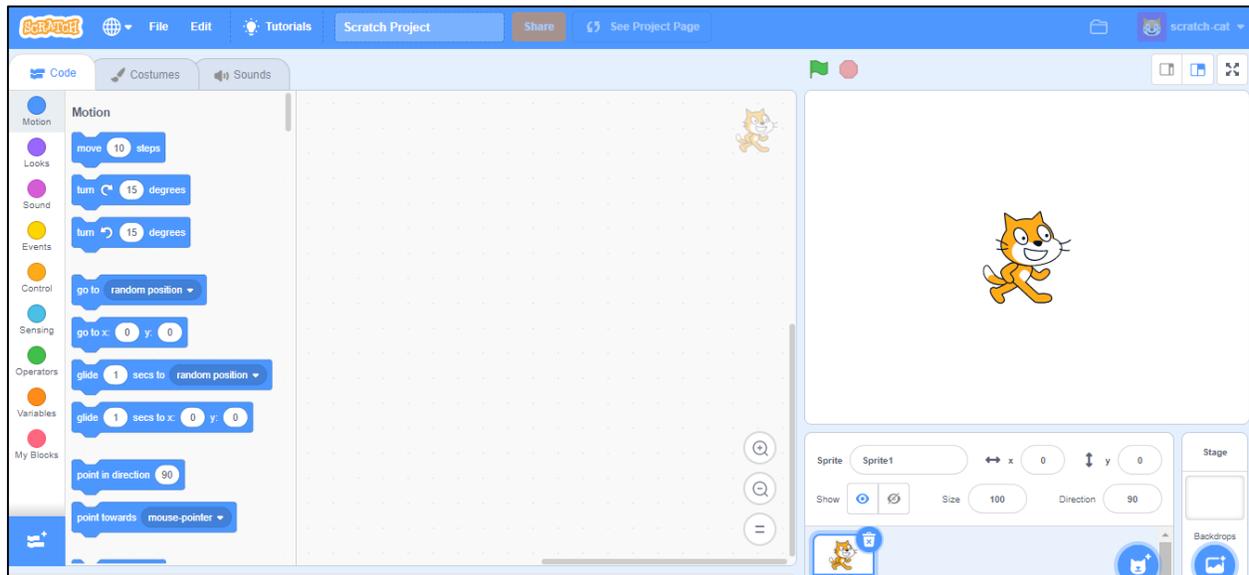
19. Click on the “Train” button, it will train your model.



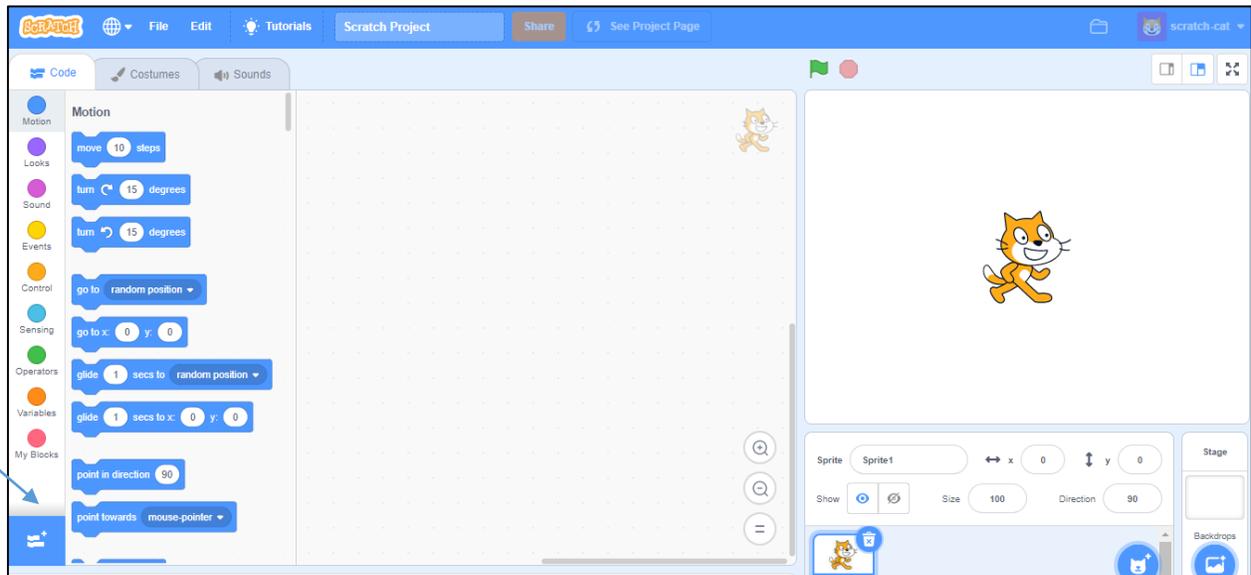
20. Start by getting a project ready in Scratch. Click **“Make”**



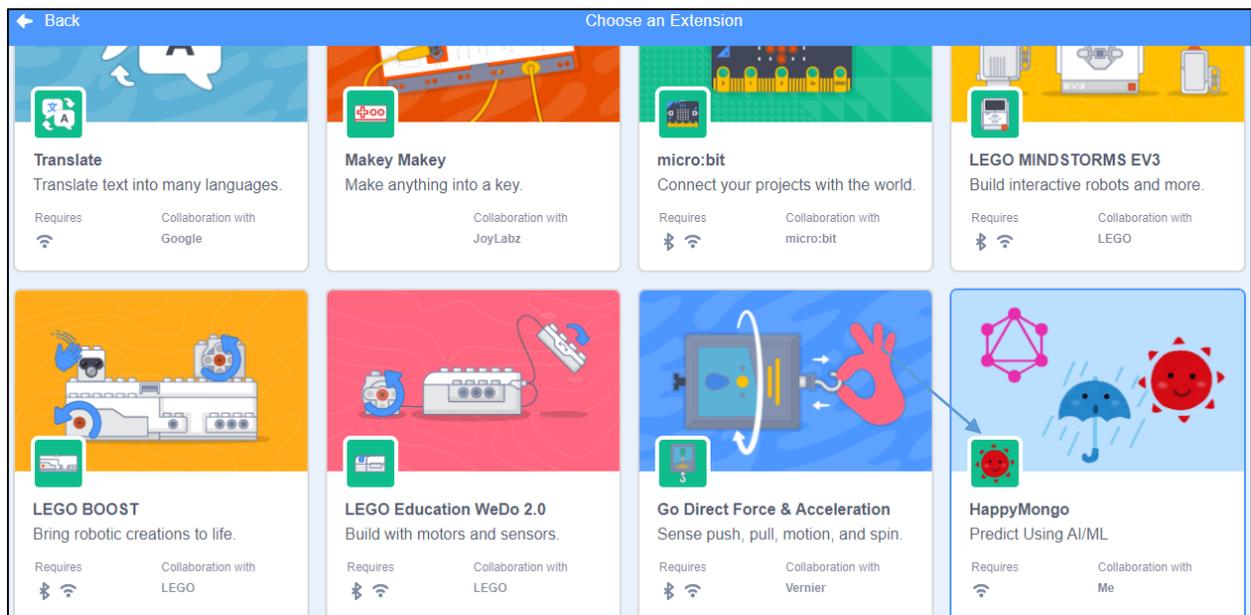
21. The Scratch editor will open.



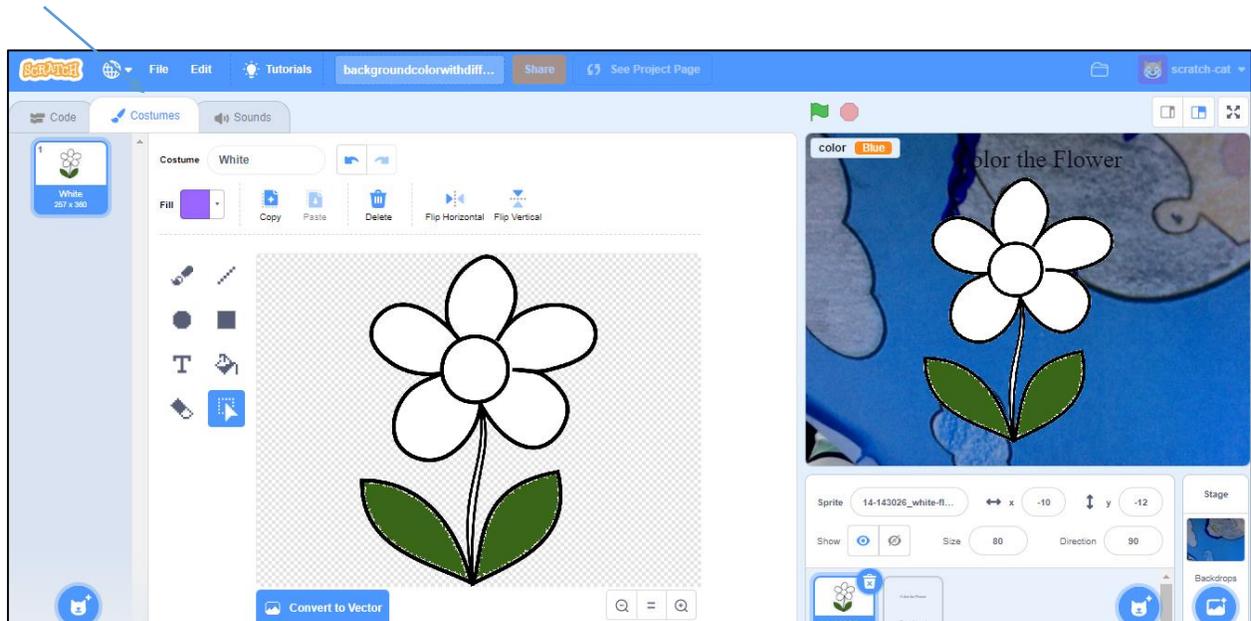
22. Click on the “Extensions” below.



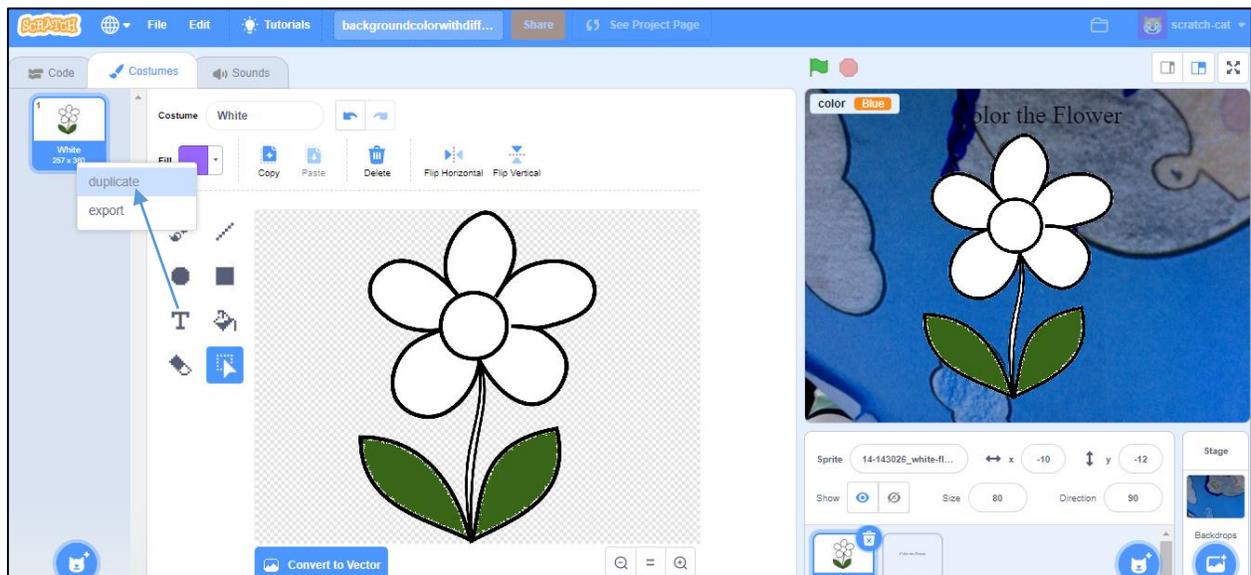
23. Click on “HappyMongo” extensions.



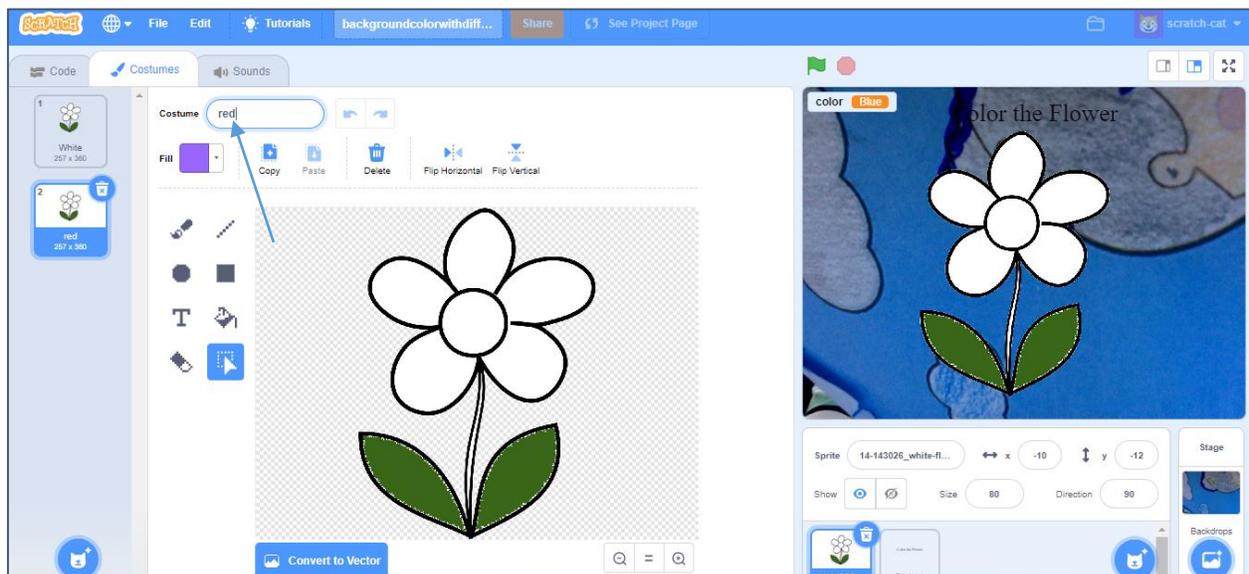
24. Click on “Costume” tab.



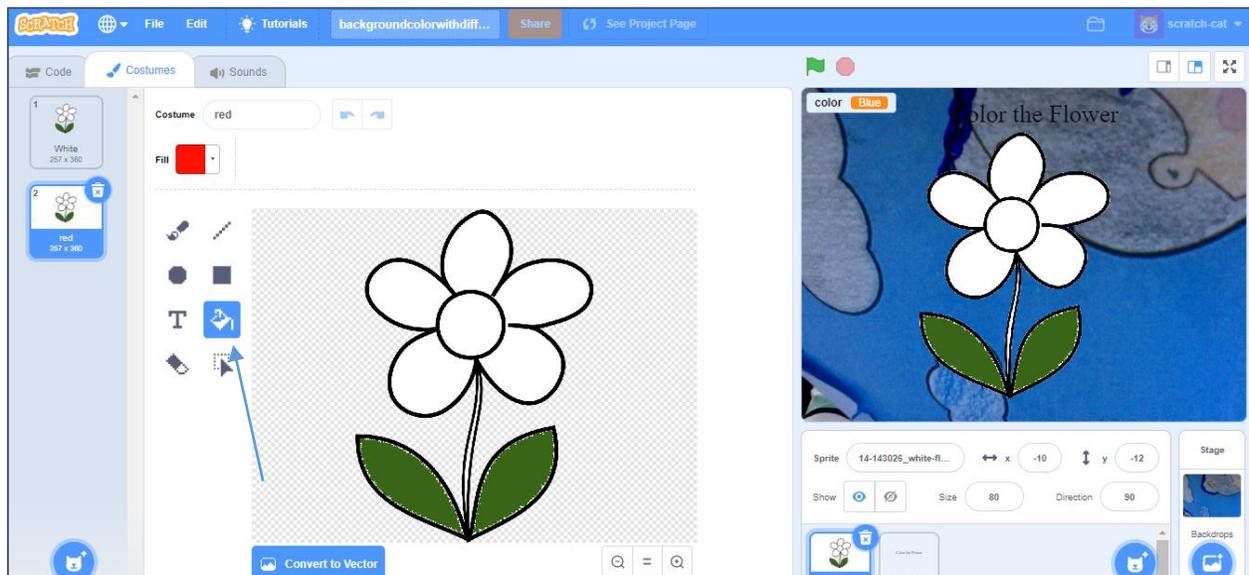
25. Right-click on the “outline” costume, and click “duplicate”.



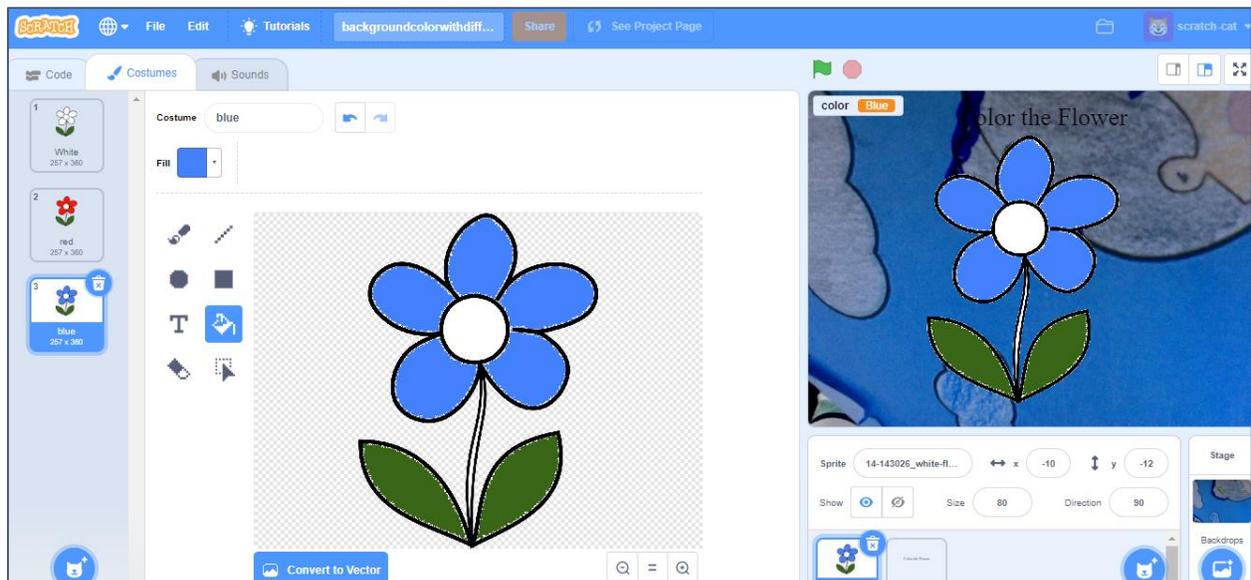
26. Name the duplicate costume the name of the first of your colours
It's important that the name matches exactly, or your script won't work.



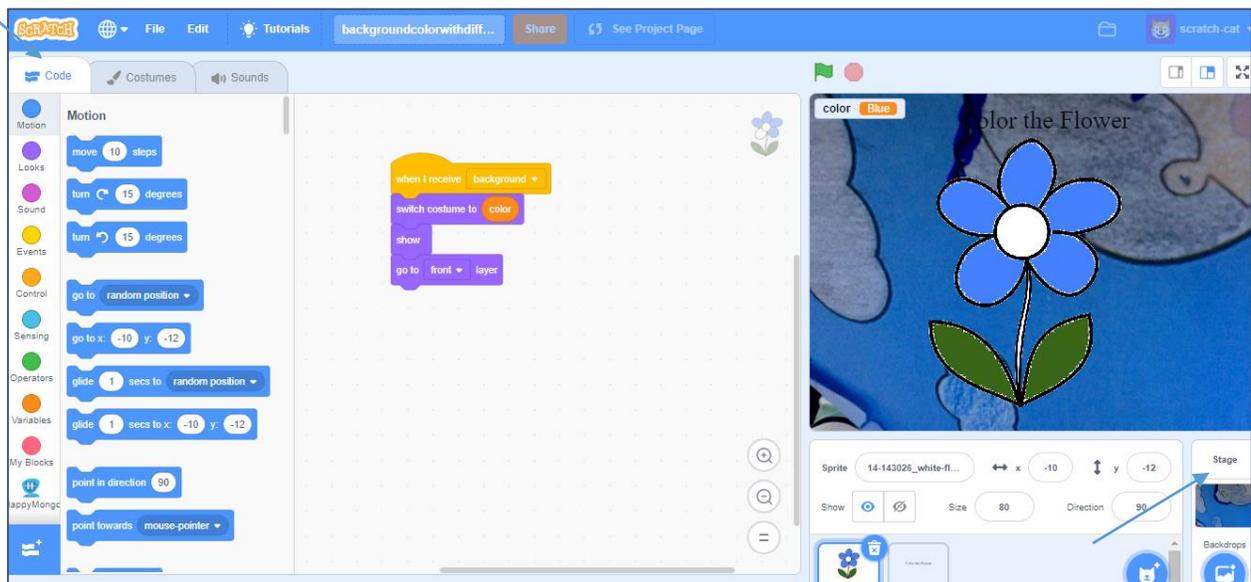
27. Use the paint bucket “Fill” tool to colour in the flower costume.



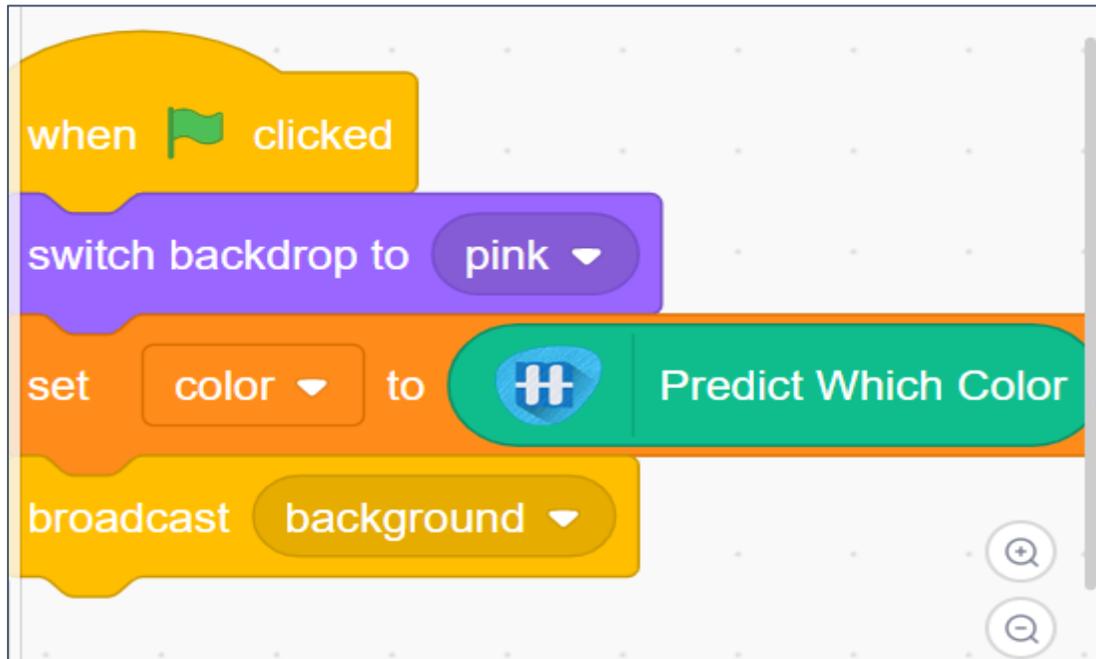
28. Repeat. Duplicate the outline costume again, name it after the second of your colours, and colour it in.



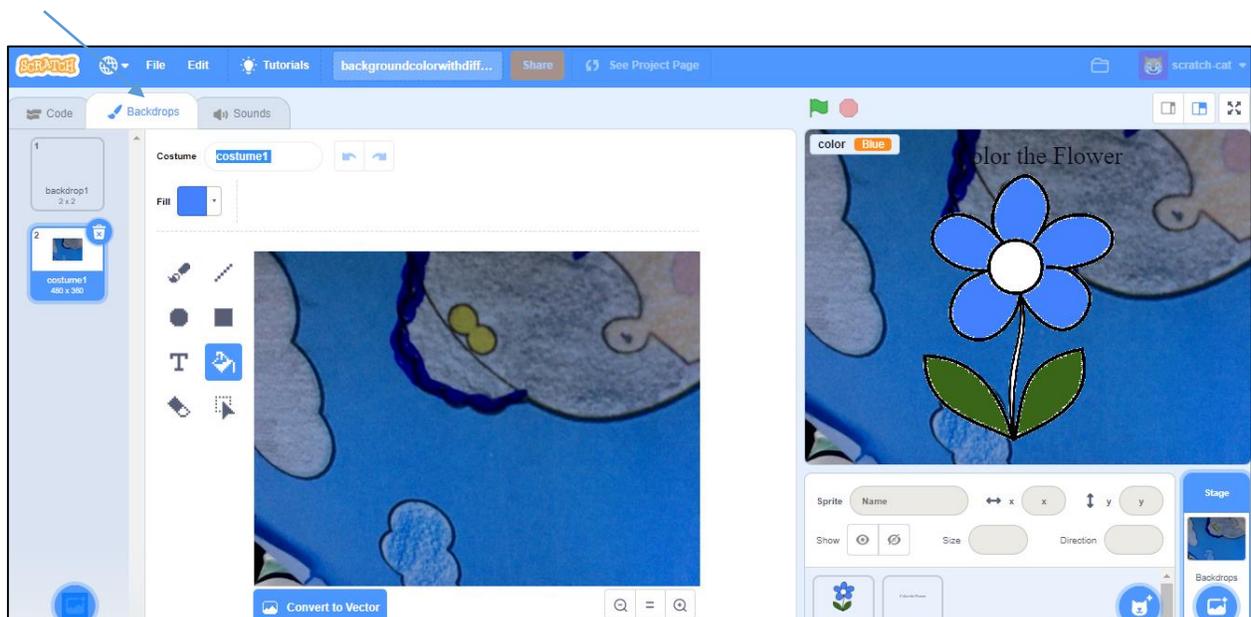
29. Click on the “Code” tab and the “Stage” Backdrop.



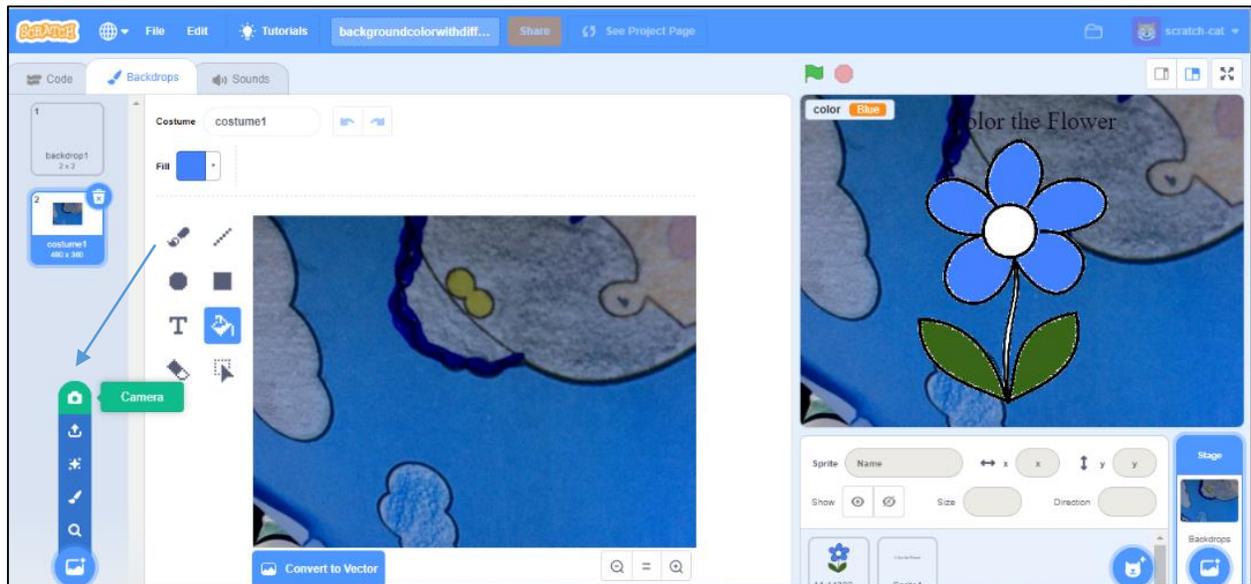
30. Add the **recognize colour block** and **backdrop image** to the pink. Flag script (that is there already) so that it looks like this
This will recognise the colour of the background, then send an event to let the flower know what colour it should change to.



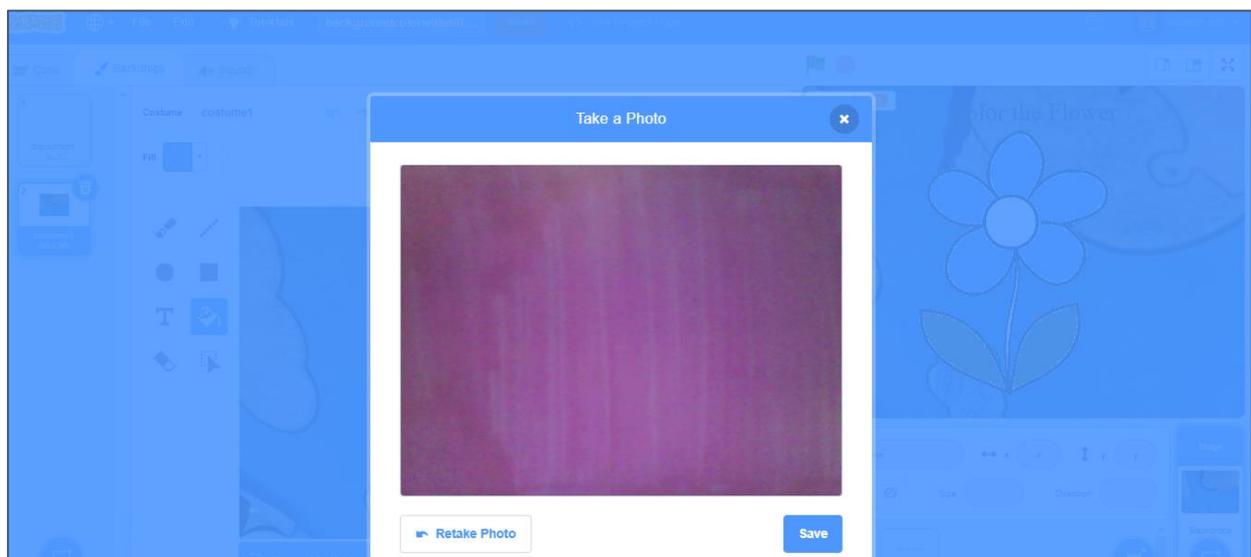
31. Click on the “**Backdrops**” tab



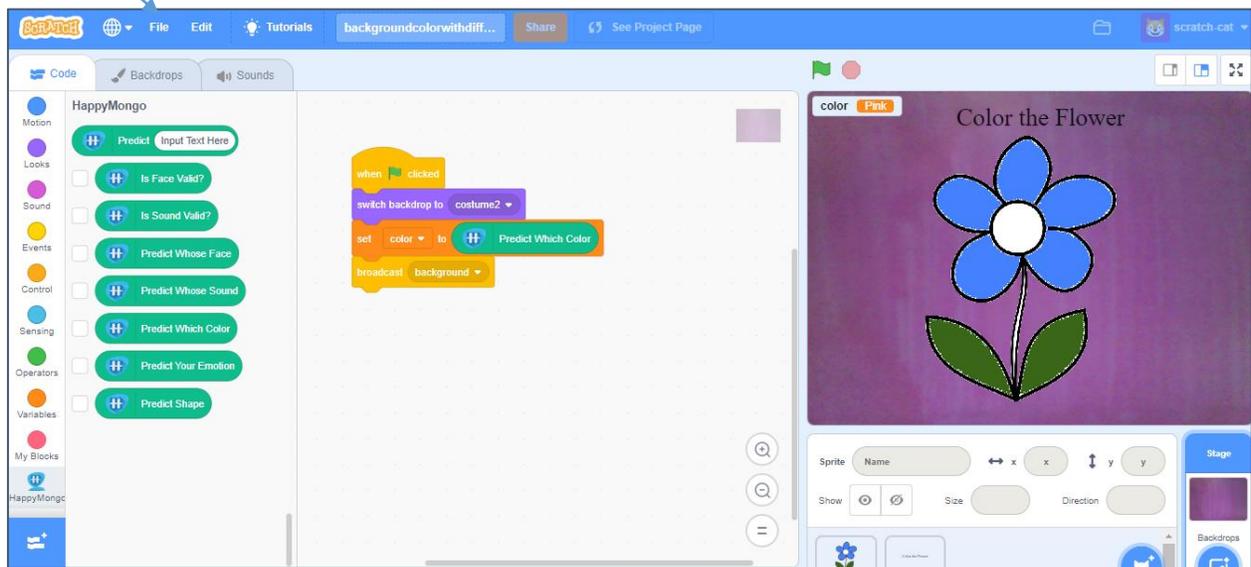
32. Hover over the backdrop menu and click on “Camera”.



33. Take a photo to give the chameleon a new background
Try to take a photo of something different that you didn't use to train your machine learning model.



34. Save your project. Click on **“File -> Save to your computer”** to save the project to a file.



35. Click the **“green flag”** to test.

