

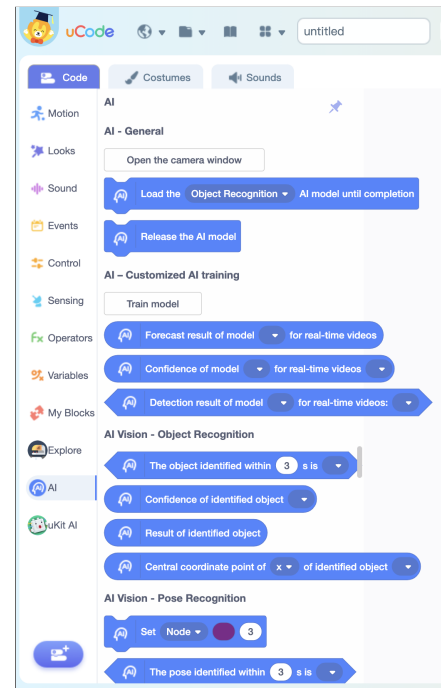
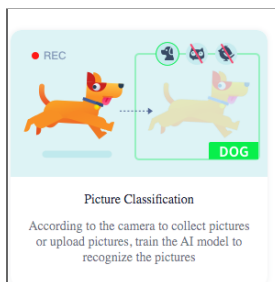
Topic: Machine Learning

Short Description: In this lesson, you will train a machine learning model to distinguish between two images and build a program to steer a virtual robotic car with your model.

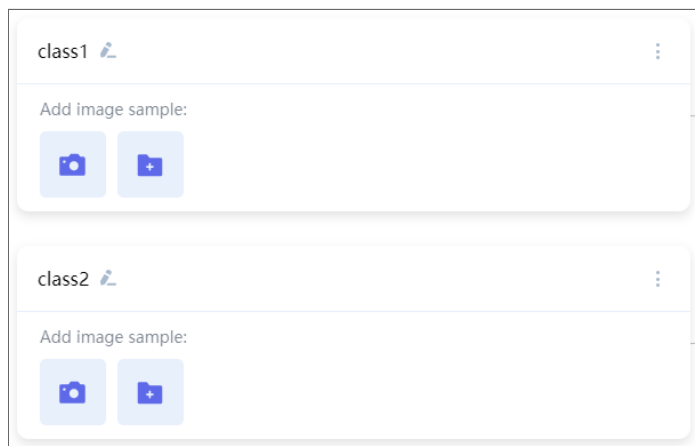
Steps:

1. Go to [uCode](#) and select the **Train model** in the **AI** drawer under AI - Customized AI training.
*Note: If you do not have access to these blocks, you can add them by clicking the **Add Extension** button in the lower-left corner of your screen.*

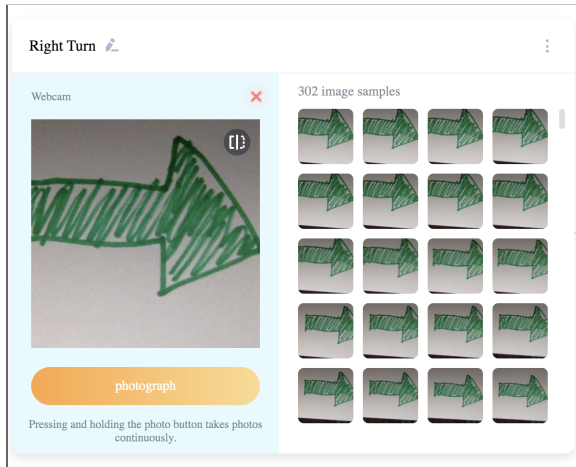
2. Select **Picture Classification**.



3. Start by labeling the objects you are going to classify. To do this, click the **pencil** that is located to the right of the current labels: class1 and class2. Replace the current label with the name of the object you plan to use.



4. Next, click the **camera** button located below the label you just updated. Place your first object close to the camera and click and hold the **photograph** button. This will allow the webcam to start taking pictures quickly.

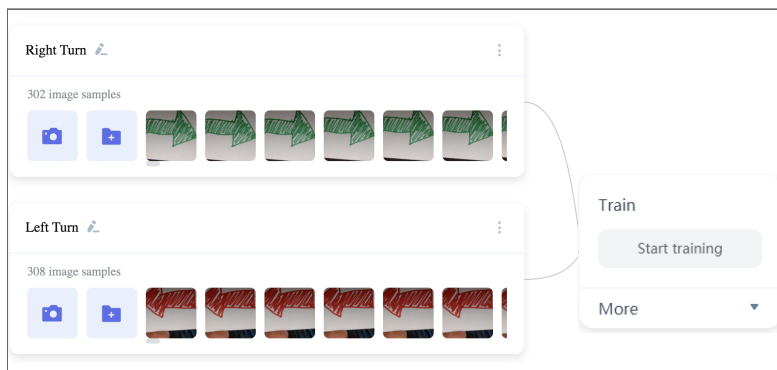


Here are a few tips:

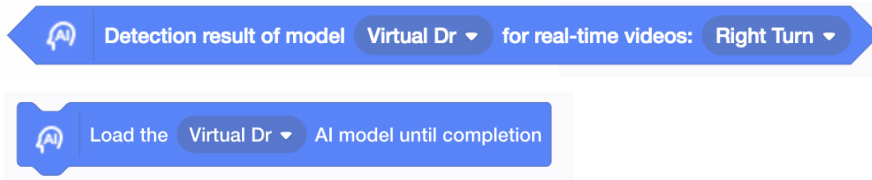
- a. Take as many pictures as possible – a minimum of 200 is desirable.
- b. Try to limit the number of distractions in the background. If possible, put a white sheet of paper behind your object.
- c. Turn your object to get images of all sides.

When you have a fair number of images, repeat the process for the other object.

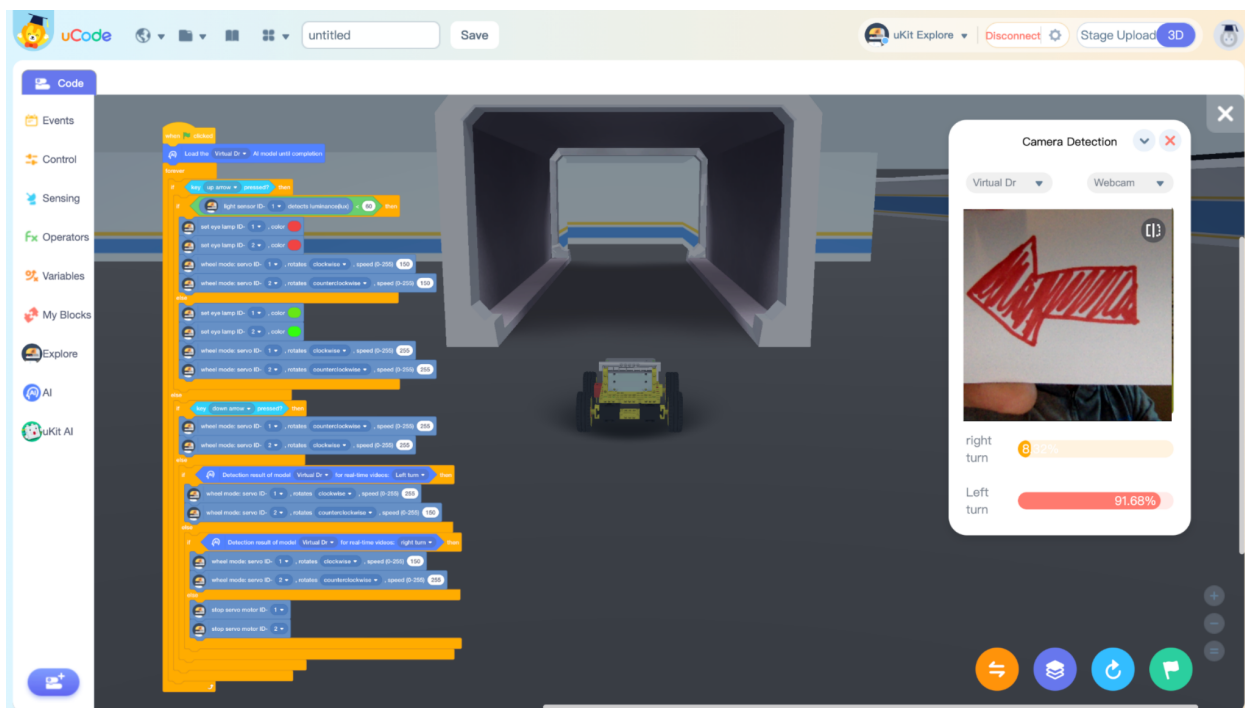
5. Click **Start training**. Training may take up to a minute, depending on the number of images. It is recommended that you do not open other windows during training.



- To use your machine learning model, replace the if statement (**key pressed**) blocks with the machine learning model detection block shown below. You'll also need to add a **Load model** block as well. Now, instead of controlling the vehicle with your keyboard, you can control it with the model you created.



Here is what your final project could look like:



See if you can modify the code further by adding more classes and control your virtual robot to navigate through the maze entirely with machine learning.



© 2021 UBTECH Education, 767 S. Alameda St., Suite 250, Los Angeles, CA 90021

All rights reserved. This guide and related documentation are protected by copyright and are distributed under licenses restricting their use, copying, and distribution. No part of this guide or related documentation may be reproduced in any form by any means without the prior written authorization of UBTECH Education.

By honoring our copyright, you enable us to continue investing in the creation of resources for education.