

Machine Learning Models

Surawut Sukkum

Teachable Machine

Train a computer to recognize your own images, sounds, & poses.

A fast, easy way to create machine learning models for your sites, apps, and more – no expertise or coding required.

Get Started



- <https://teachablemachine.withgoogle.com/>

How do I use it?

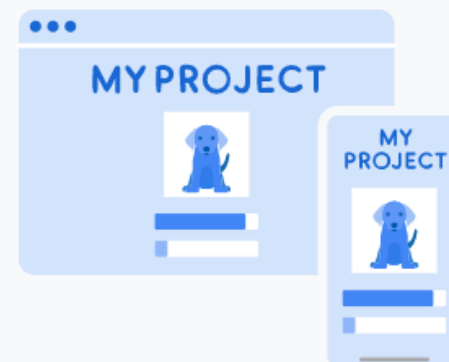
Class 1



Class 2



TRAIN MODEL



1 Gather

Gather and group your examples into classes, or categories, that you want the computer to learn.

[Video: Gather samples](#) ▶

2 Train

Train your model, then instantly test it out to see whether it can correctly classify new examples.

[Video: Train your model](#) ▶

3 Export

Export your model for your projects: sites, apps, and more. You can download your model or host it online for free.

[Video: Export your model](#) ▶

Create Label

Test

- Upload Dataset

8 Image Samples

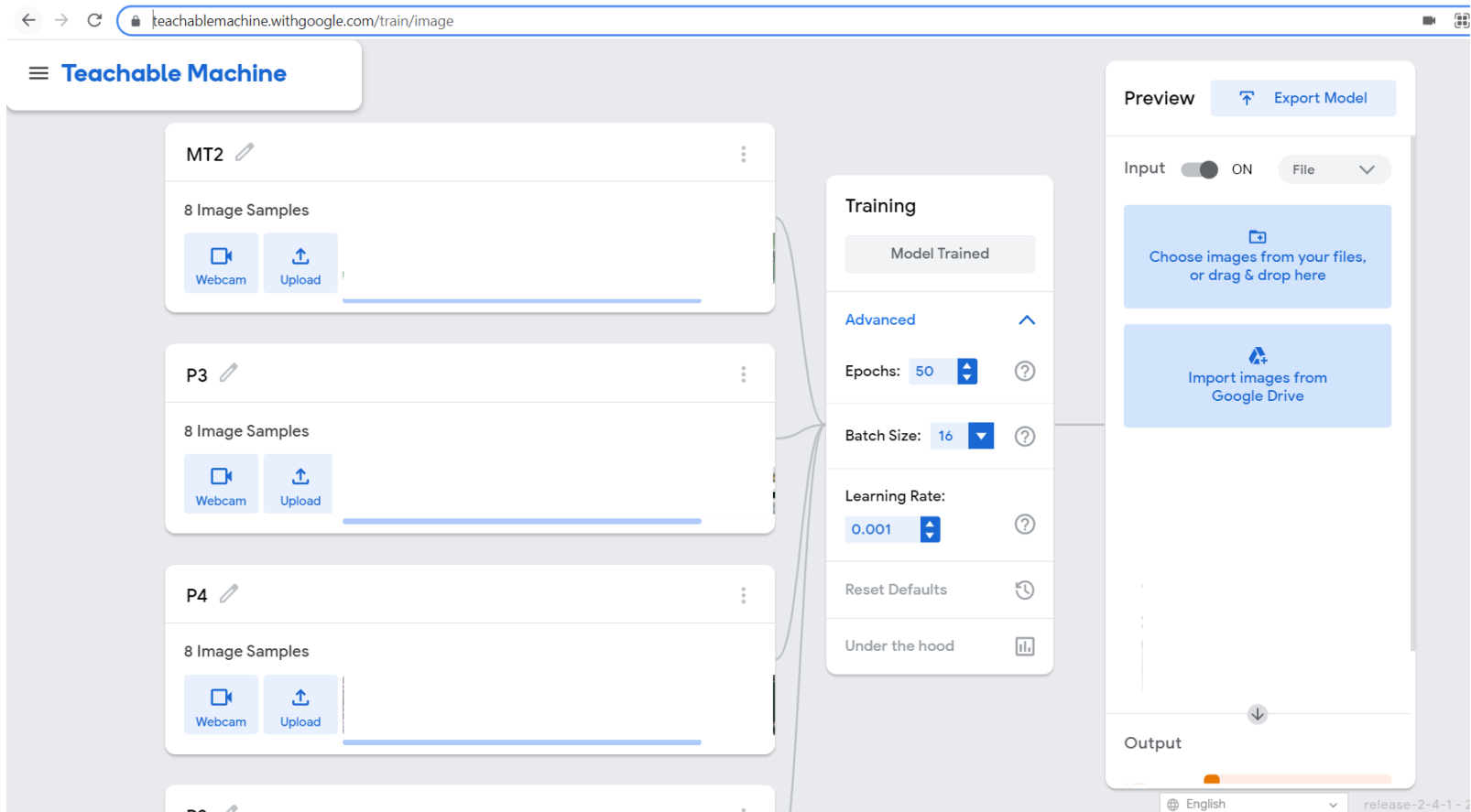
Upload image to into classes, or categories, that you want the computer to learn.



Webcam



Upload



Upload
dataset all
object

Export your model to use it in projects. ×

Tensorflow.js ⓘ Tensorflow ⓘ TensorFlow Lite ⓘ

Model conversion type:
☒ Keras ☐ Savedmodel Converting model...

Converting your model in the cloud. This may take a few minutes.

Code snippets to use your model:

Keras Contribute on Github

```
import tensorflow.keras
from PIL import Image, ImageOps
import numpy as np

# Disable scientific notation for clarity
np.set_printoptions(suppress=True)

# Load the model
model = tensorflow.keras.models.load_model('keras_model.h5')

# Create the array of the right shape to feed into the keras model
# The 'length' or number of images you can put into the array is
# determined by the first position in the shape tuple, in this case 1.
data = np.ndarray(shape=(1, 224, 224, 3), dtype=np.float32)

# Replace this with the path to your image
image = Image.open('test_photo.jpg')
```

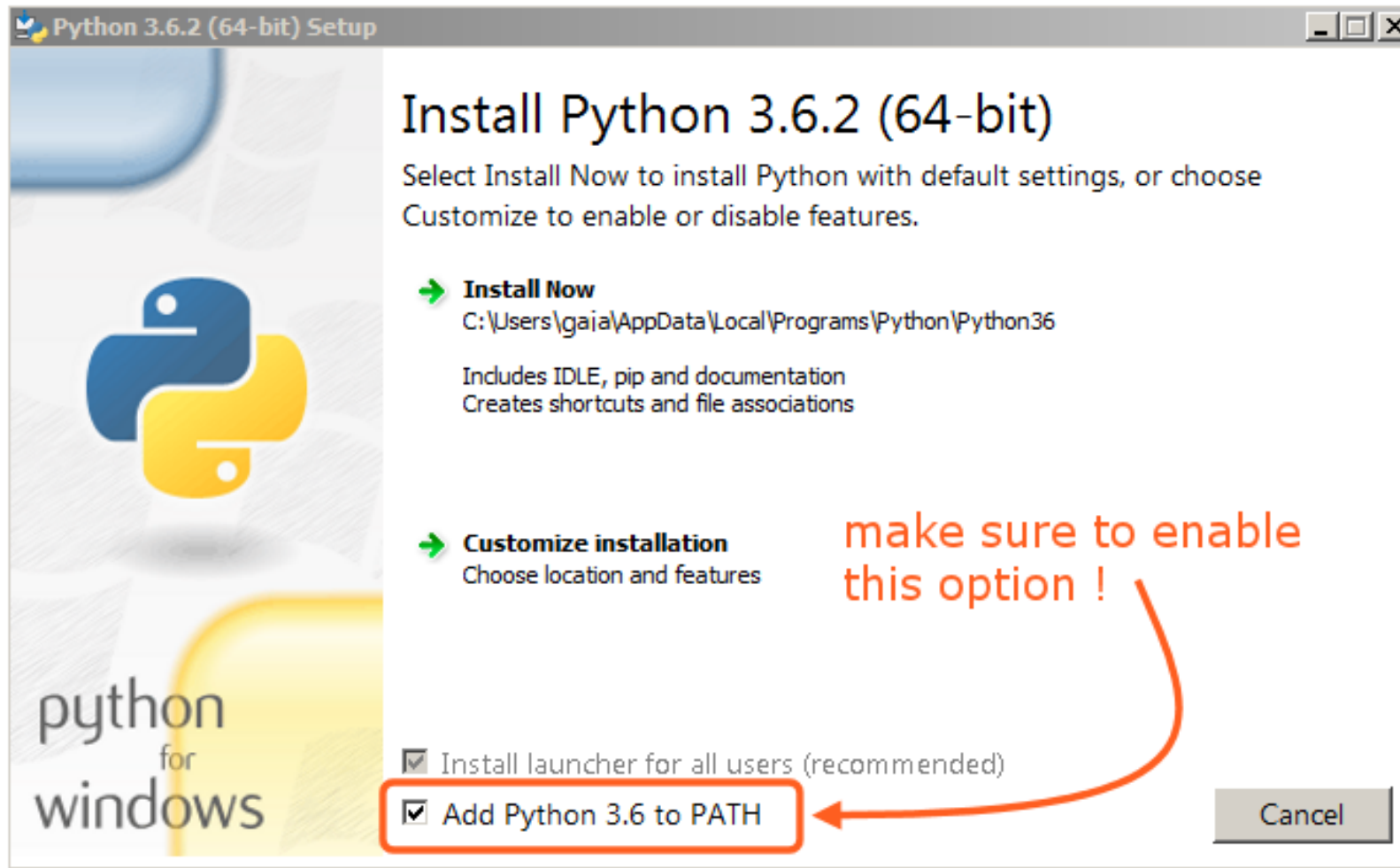
Copy

Export Model Tensorflow

Install Python

- <https://www.python.org/downloads/>



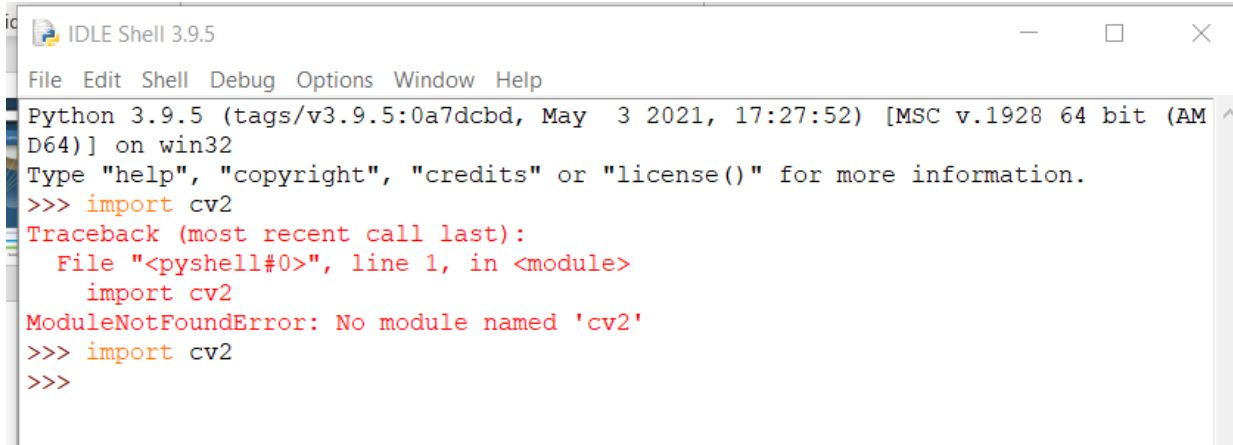


make sure to enable
this option !

Install
Python

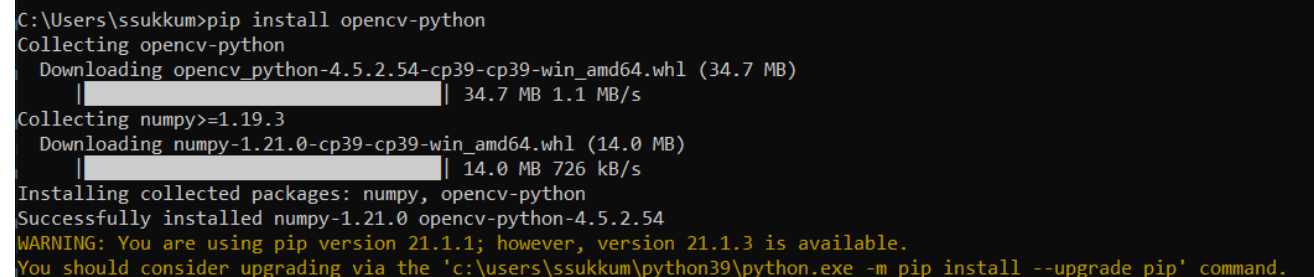
Install OpenCV

- If error below please install Install opencv



```
IDLE Shell 3.9.5
File Edit Shell Debug Options Window Help
Python 3.9.5 (tags/v3.9.5:0a7dcdb, May 3 2021, 17:27:52) [MSC v.1928 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> import cv2
Traceback (most recent call last):
  File "<pyshell#0>", line 1, in <module>
    import cv2
ModuleNotFoundError: No module named 'cv2'
>>> import cv2
>>>
```

Command by cmd prompt
pip install opencv-python



```
C:\Users\ssukkum>pip install opencv-python
Collecting opencv-python
  Downloading opencv_python-4.5.2.54-cp39-cp39-win_amd64.whl (34.7 MB)
    |#####| 34.7 MB 1.1 MB/s
Collecting numpy>=1.19.3
  Downloading numpy-1.21.0-cp39-cp39-win_amd64.whl (14.0 MB)
    |#####| 14.0 MB 726 kB/s
Installing collected packages: numpy, opencv-python
Successfully installed numpy-1.21.0 opencv-python-4.5.2.54
WARNING: You are using pip version 21.1.1; however, version 21.1.3 is available.
You should consider upgrading via the 'c:\users\ssukkum\python39\python.exe -m pip install --upgrade pip' command.
```


Install tensorflow

Install tensorflow via anaconda shell prompt

```
PS C:\Users\ssukkum> conda create -n tensorflow python=python_version
>> activate tensorflow
>> pip install --ignore-installed --upgrade tensorflow
>> conda install tensorflow
```

- conda create -n tensorflow python=python_version
- activate tensorflow
- pip install --ignore-installed --upgrade tensorflow

Successful install

```
Successfully built termcolor wrapt
Installing collected packages: urllib3, pyasn1, idna, chardet, certifi, six, setuptools, rsa, requests, pyasn1-modules,
oauthlib, cachetools, requests-oauthlib, google-auth, wheel, werkzeug, tensorboard-plugin-wit, tensorboard-data-server,
protobuf, numpy, markdown, grpcio, google-auth-oauthlib, absl-py, wrapt, typing-extensions, termcolor, tensorflow-estima
tor, tensorboard, opt-einsum, keras-preprocessing, keras-nightly, h5py, google-pasta, gast, flatbuffers, astunparse, ten
sorflow
Successfully installed absl-py-0.13.0 astunparse-1.6.3 cachetools-4.2.2 certifi-2021.5.30 chardet-4.0.0 flatbuffers-1.12
gast-0.4.0 google-auth-1.32.1 google-auth-oauthlib-0.4.4 google-pasta-0.2.0 grpcio-1.34.1 h5py-3.3.0 idna-2.10 keras-ni
ghtly-2.5.0.dev2021032900 keras-preprocessing-1.1.2 markdown-3.3.4 numpy-1.19.5 oauthlib-3.1.1 opt-einsum-3.3.0 protobuf
-3.17.3 pyasn1-0.4.8 pyasn1-modules-0.2.8 requests-2.25.1 requests-oauthlib-1.3.0 rsa-4.7.2 setuptools-57.1.0 six-1.15.0
tensorboard-2.5.0 tensorboard-data-server-0.6.1 tensorboard-plugin-wit-1.8.0 tensorflow-2.5.0 tensorflow-estimator-2.5.
0 termcolor-1.1.0 typing-extensions-3.7.4.3 urllib3-1.26.6 werkzeug-2.0.1 wheel-0.36.2 wrapt-1.12.1
WARNING: You are using pip version 21.1.1; however, version 21.1.3 is available.
You should consider upgrading via the 'c:\users\ssukkum\python39\python.exe -m pip install --upgrade pip' command.
```

- Test coding in python

```
test.py - D:\Sample picture 24-June-21\test.py (3.9.5)
File Edit Format Run Options Window Help
from tensorflow.keras.models import load_model
import cv2
import numpy as np
img = cv2.imread("D:/Sample picture 24-June-21/Cam AFU420-CCS 40MP Lens 25mm/1_N
sizeTarget = (224, 224)

np.set_printoptions(suppress=True)
dataObj = np.ndarray(shape=(1, 224, 224, 3), dtype=np.float32)

model = load_model("D:/Sample picture 24-June-21/keras_model.h5") #path model

if img is not None:
    img_resize = cv2.resize(img,sizeTarget) #resize image

    image_array = np.asarray(img_resize)#convert image to array

    normalized_image_array = (image_array.astype(np.float32) / 127.0) - 1 #norma

    dataObj[0] = normalized_image_array #get frist dimention
    prediction = list(model.predict(dataObj)[0])#change np.ndarray to list
    idx = prediction.index(max(prediction)) #get index is maximun value

    if idx == 0:
        cv2.putText(img, "P2: "+str(round(prediction[idx]*100,2))+"%", (50, 50)
    elif idx == 1:
        cv2.putText(img, "MT2: "+str(round(prediction[idx]*100,2))+"%", (50, 50)
    elif idx == 2:
        cv2.putText(img, "P3: "+str(round(prediction[idx]*100,2))+"%", (50, 50),

    cv2.imshow("Predict Result", img) #image show
    k = cv2.waitKey(0)#wait all key for close window

cv2.destroyAllWindows()
```

