

A photograph of three students in a library setting. Two students, a man and a woman, are leaning over a laptop, looking at the screen with interest. The man is wearing a dark hoodie and a baseball cap, and the woman is wearing a plaid shirt. A third student, a man with a beard, is standing behind them, pointing at the laptop screen. They are all smiling and appear to be engaged in a collaborative project. The background shows bookshelves filled with books. The entire image has a blue tint.

Microsoft Imagine Community

**Victoria Trinita Pardede's
Final Project**

Final Project Theme:

AI for Good

Sub Theme:

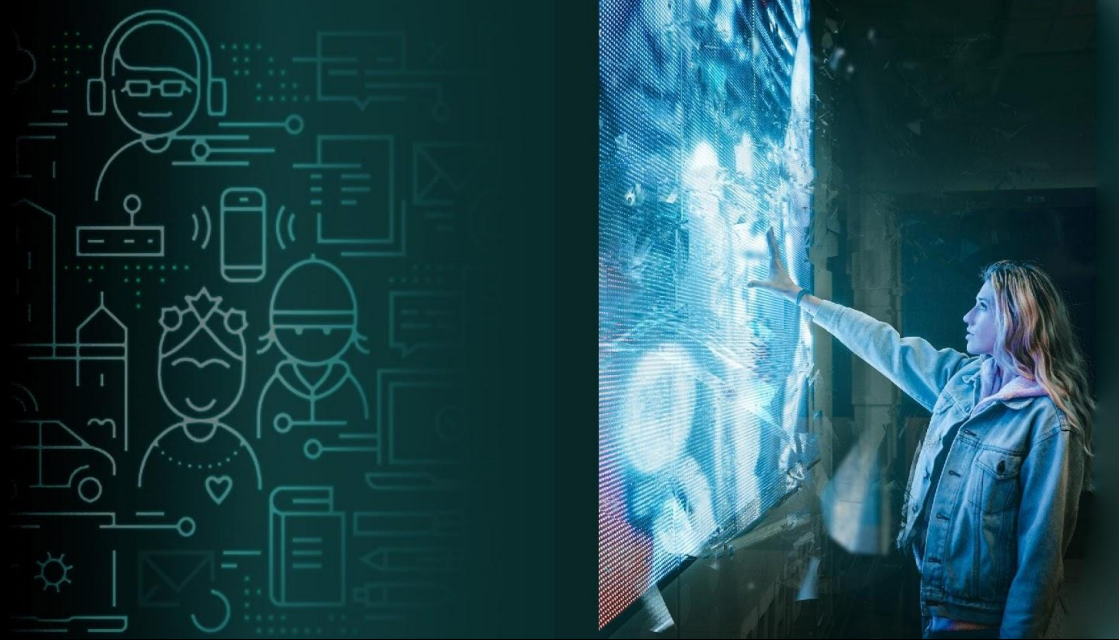
EARTH

ACCESSIBILITY

HEALTH

HUMANITARIAN
ACTION

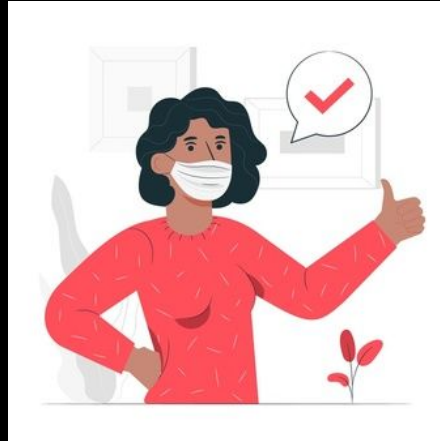
CULTURE



My Theme: Mask-Wearing Classifier

THE STORY BEHIND THE PROJECT

In this covid-19 pandemic period, it is mandatory for everyone to wear a mask when stepping out of the house to help stop the spread of coronavirus. However, some still do not follow. In order to track the ones that do not wear a mask inside a building, we can create a detector. When detected, we can further approach the person and remind them to wear one in order to keep everyone safe.



PREVIEW OF MY PRODUCT

Below is a quick test from Azure Custom Vision service. The interface is already provided by the Azure website. It allows us to input an image URL or upload one from our computer, then shows the prediction at the bottom right, based on the model previously trained.

Quick Test





Image URL



or

Browse local files

File formats accepted: jpg, png, bmp

File size should not exceed: 4mb

Using model trained in

Iteration

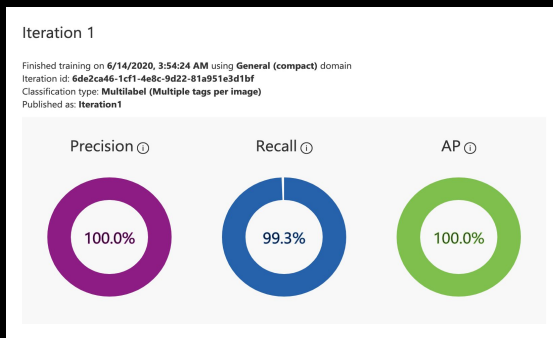
Iteration 1

Predictions

Tag	Probability
no_mask	94.4%
mask	0%

PREVIEW OF MY PRODUCT

The model trained on Azure Custom Vision has a performance as follows:



Performance Per Tag

Tag	Precision	Recall	A.P.	Image count
no_mask	100.0%	99.2%	100.0%	635
mask	100.0%	100.0%	100.0%	90

Azure automatically generates an API as well:

How to use the Prediction API

If you have an image URL:

```
https://victoria-customvis.cognitiveservices.azure.com/customvision/v3.0/Prediction
```

Set Prediction-Key Header to: 9c5456bbd465479082a4508bbfcb903
Set Content-Type Header to: application/json
Set Body to: {"Url": "https://example.com/image.png"}

If you have an image file:

```
https://victoria-customvis.cognitiveservices.azure.com/customvision/v3.0/Prediction
```

Set Prediction-Key Header to: 9c5456bbd465479082a4508bbfcb903
Set Content-Type Header to: application/octet-stream
Set Body to: <image file>

Got it!

PREVIEW OF MY PRODUCT

I wanted to create a real-time ‘wearing or not wearing a mask’ detector from a device’s camera using the model at the beginning. Sadly, after looking for ways to do it for days, I still haven’t figured it out...

After training the model on Azure and exporting the tensorflow model, I firstly tried to implement it on a python script + opencv, which I expected to pop up the laptop webcam and show labels “mask” and “no_mask” real-time when being ran. After being stuck for a long time, I then tried to implement it on Android since Azure has an official tutorial for it. Yet, I was still unsuccessful.

Since it is close to the deadline, I am only submitting the progress that I was able to accomplish. The product presented here is far from what I wanted and imagined. However, the whole process gave me a lot of insight about how things related to custom vision works--which I believe will be useful for later use beyond this workshop.

FRAMEWORK AND TOOLS

- Microsoft Azure Cognitive Service: Custom Vision
- Tensorflow
- PIL (Python Imaging Library)
- OpenCV2
- Numpy

I exported the Tensorflow model from Azure Custom Vision then implemented it in a python script in order for it to run offline.

GITHUB LINK

<https://github.com/victoriatrinita/azure-customvision>

The screenshot shows the GitHub repository page for `victoriatrinita/azure-customvision`. The repository description is "Implement 'mask or no mask' custom vision TensorFlow model from Azure Cognitive Services to python". The repository has 2 commits, 1 branch, 0 packages, 0 releases, and 1 contributor. The file list includes `README.md`, `customvis.py`, `cvexport.manifest`, `labels.txt`, and `model.pb`. The `README.md` file is selected, showing the title `azure-customvision` and the description "Implement 'mask or no mask' custom vision TensorFlow model from Azure Cognitive Services to python". The dataset used for the model is credited to Prajna Bhandary with a link to <https://github.com/prajnasb/observations>.

<> Code Issues 0 Pull requests 0 Actions Projects 0 Wiki Security 0 Insights Settings

Implement 'mask or no mask' custom vision TensorFlow model from Azure Cognitive Services to python Edit

[Manage topics](#)

2 commits 1 branch 0 packages 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

victoriatrinita Create README.md Latest commit 483ee09 1 minute ago

README.md	Create README.md	1 minute ago
customvis.py	first commit	5 minutes ago
cvexport.manifest	first commit	5 minutes ago
labels.txt	first commit	5 minutes ago
model.pb	first commit	5 minutes ago

README.md

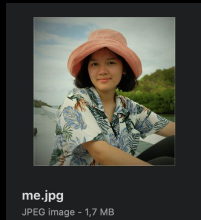
azure-customvision

Implement 'mask or no mask' custom vision TensorFlow model from Azure Cognitive Services to python

Dataset used for the model is created by Prajna Bhandary <https://github.com/prajnasb/observations>

PRODUCT DEMO

Source image



A photo of a person without a mask

Run python script

output:

```
= RESTART: /Users/victoriatrinita/Downloads/6de2ca461cf14e8c9d2281a951e3d1bf.Ten  
sorFlow/customvis.py  
Input image path:
```

Instruction to input image path

Input image path 'me.jpg'

output:

```
= RESTART: /Users/victoriatrinita/Downloads/6de2ca461cf14e8c9d2281a951e3d1bf.Ten  
sorFlow/customvis.py  
Input image path: me.jpg  
Classified as: no_mask  
  
mask 0.00010928999836323783  
no_mask 0.9454394578933716  
>>>
```

The result is:
no_mask with a probability of 99%
mask with a probability of 0%