FaceMask Detection Project

This presentation showcases the workflow for a FaceMask Detection project in deep learning.

Face Mask Detection Training Phase

Phase 1 Data Preprocessing

Phase 2 Model Training

Phase 3 Save the Best Model

Phase 1: Data Preprocessing

Collect Image Dataset

Preprocess the Image

Separate Input Image and output label

Convert input and output data into matrix format

Split into Train and Test set

Define Data Augmentation

How the Image is Preprocessed?


```
array([[[[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0.]],

        [[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0.]],

        [[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0.]]],


       [[[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0.]],

        [[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0.]],

        [[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
          0., 0.]]],
```

```
data = np.array(data, dtype="float32")
labels = np.array(labels)
```

Dataset Images

Numpy Arrays

Phase 2: Model Training

A

1. Load the Pre-trained model
2. Construct the Head model

B

3. Create a New Model (base and head
4. Compile the model

C

5. Train the Model

How the model is trained ?

IMAGENET

NEWLY INITIALIZED WEIGHTS

1000 classes

TRANSFER LEARNING

INPUTS

image_1

image_2

image_3

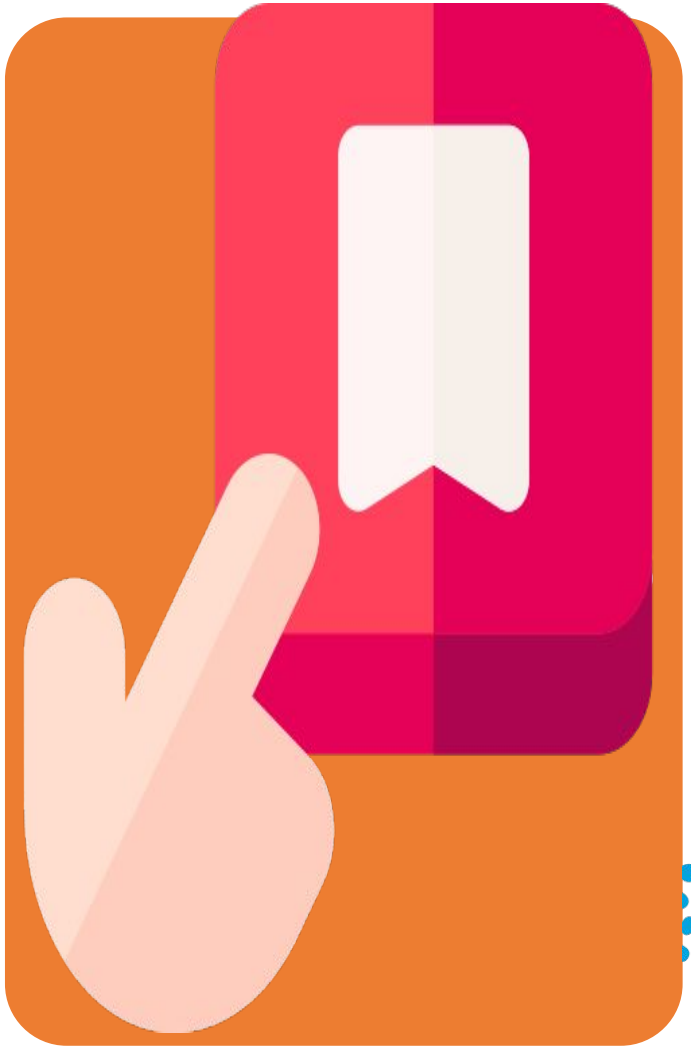
image_4

PRETRAINED WEIGHTS

LEARNED WEIGHTS

No mask

With mask



Phase 3: Save the Best Model

1. Evaluate the Model
2. Make Classification Report
3. Save the Model with best accuracy
4. Plot graph for loss and accuracy

Thank you for your time and attention 🙂

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