

**Mask Wear Detector**

Project Architecture

Domain: Deep Learning Technology (Computer Vision)

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**Architecture**

**Data Preparation**

**Model Development**

**Architecture Description**

**Data Preparation**

Data Description

COVID-19 pandemic has rapidly affected our day-to-day life disrupting the world trade

and movements. Wearing a protective face mask has become a new normal. In the near

future, many public service providers will ask the customers to wear masks correctly to

avail of their services. Therefore, face mask detection has become a crucial task to help

global society.

COVID-19 mask detector could potentially be used to help ensure your safety and the

safety of others.

Importing dataset

We downloaded the dataset from github.com/cabani/MaskedFace-Net. There are 67,049 images with Correctly Masked Face Dataset (CMFD) at 1024×1024 and 66,734 images with Incorrectly Masked Face Dataset (IMFD) at 1024×1024. However, for time limit, I used only one folder of correctly and incorrectly Masked Face Dataset. Overall, i used 1143 images for training and 286 images for validation.

Exploratory Data Analysis

Using matplotlib, we visualized images with 4x4 configuration.

Data Preprocessing

In data preprocessing step, using ImageDataGenerator we scaled, shuffled, inserted target size, which was 150x150, and chose appropriate class mode (binary) with specified batch size.

**Model Development**

Model implementation

As we had very few data for reliable model output, I used Transfer Learning method with InceptionV2 model. I imported local weights for the model from the API. I split the model from “mixed7” layer and merged the model with my own Functional custom layers.

Model Prediction

Having used Callbacks, the model stopped at the 2nd epoch with 100% accuracy and 2.9379e-04 on training dataset and 100% accuracy, 2.4872e-04 loss on validation dataset. At the end, I saved the as 'model\_v1.h5'.

Real time face mask detection

That was the interesting part of all coding part. I used my webcam to test the results and the model very well on real time face mask prediction very well. The important point is that using ‘haarcascade\_frontalface\_default.xml’, the model is able to identify faces.