IBM Project Name: Real-Time Communication System Powered by AI for Specially Abled

TEAM ID: PNT2022TMID30475

Image Preprocessing

!pip install tensorflow==2.7.1

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/

Collecting tensorflow==2.7.1

  Downloading tensorflow-2.7.1-cp37-cp37m-manylinux2010_x86_64.whl (495.0 MB)

|████████████████████████████████| 495.0 MB 33 kB/s

Requirement already satisfied: absl-py>=0.4.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.3.0)

Requirement already satisfied: wheel<1.0,>=0.32.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (0.38.3)

Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (2.1.0)

Requirement already satisfied: google-pasta>=0.1.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (0.2.0)

Requirement already satisfied: numpy>=1.14.5 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.21.6)

Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.21.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (0.27.0)

Requirement already satisfied: tensorboard~=2.6 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (2.9.1)

Requirement already satisfied: wrapt>=1.11.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.14.1)

Requirement already satisfied: astunparse>=1.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.6.3)

Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (3.3.0)

Requirement already satisfied: protobuf>=3.9.2 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (3.19.6)

Requirement already satisfied: keras-preprocessing>=1.1.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.1.2)

Collecting tensorflow-estimator<2.8,~=2.7.0rc0

  Downloading tensorflow_estimator-2.7.0-py2.py3-none-any.whl (463 kB)

  |████████████████████████████████| 463 kB 56.8 MB/s

Collecting keras<2.8,>=2.7.0rc0

  Downloading keras-2.7.0-py2.py3-none-any.whl (1.3 MB)

  |████████████████████████████████| 1.3 MB 53.7 MB/s

Requirement already satisfied: six>=1.12.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.15.0)

Requirement already satisfied: h5py>=2.9.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (3.1.0)

Requirement already satisfied: flatbuffers<3.0,>=1.12 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.12)

Requirement already satisfied: typing-extensions>=3.6.6 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (4.1.1)

Requirement already satisfied: grpcio<2.0,>=1.24.3 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (1.50.0)

Requirement already satisfied: libclang>=9.0.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (14.0.6)

Requirement already satisfied: gast<0.5.0,>=0.2.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.7.1) (0.4.0)

Requirement already satisfied: cached-property in /usr/local/lib/python3.7/dist-packages (from h5py>=2.9.0->tensorflow==2.7.1) (1.5.2)

Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (2.23.0)

Requirement already satisfied: setuptools>=41.0.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (57.4.0)

Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (0.6.1)

Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (1.8.1)

Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (3.4.1)

Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (2.14.1)

Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (0.4.6)

Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.7/dist-packages (from tensorboard~=2.6->tensorflow==2.7.1) (1.0.1)

Requirement already satisfied: cachetools<6.0,>=2.0.0 in /usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow==2.7.1) (5.2.0)

Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow==2.7.1) (0.2.8)

Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.7/dist-packages (from google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow==2.7.1) (4.9)

Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.7/dist-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard~=2.6->tensorflow==2.7.1) (1.3.1)

Requirement already satisfied: importlib-metadata>=4.4 in /usr/local/lib/python3.7/dist-packages (from markdown>=2.6.8->tensorboard~=2.6->tensorflow==2.7.1) (4.13.0)

Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages (from importlib-metadata>=4.4->markdown>=2.6.8->tensorboard~=2.6->tensorflow==2.7.1) (3.10.0)

Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.7/dist-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow==2.7.1) (0.4.8)

Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow==2.7.1) (3.0.4)

Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow==2.7.1) (2022.9.24)

Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard~=2.6 ->tensorflow==2.7.1) (1.24.3)

Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow==2.7.1) (2.10)

Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.7/dist-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard~=2.6 ->tensorflow==2.7.1) (3.2.2)

Installing collected packages: tensorflow-estimator, keras, tensorflow

  Attempting uninstall: tensorflow-estimator

    Found existing installation: tensorflow-estimator 2.9.0

    Uninstalling tensorflow-estimator-2.9.0:

      Successfully uninstalled tensorflow-estimator-2.9.0

  Attempting uninstall: keras

    Found existing installation: keras 2.9.0

    Uninstalling keras-2.9.0:

      Successfully uninstalled keras-2.9.0

  Attempting uninstall: tensorflow

    Found existing installation: tensorflow 2.9.2

    Uninstalling tensorflow-2.9.2:

      Successfully uninstalled tensorflow-2.9.2

Successfully installed keras-2.7.0 tensorflow-2.7.1 tensorflow-estimator-2.7.0

IMPORT IMAGE DATA GENERATOR AND LIBRARY

from tensorflow.keras.preprocessing.image import ImageDataGenerator

Training Datagen

train_datagen = ImageDataGenerator(rescale=1/255,zoom_range=0.2,horizontal_flip=True,vertical_flip=False)

```python
# Testing Datagen

test_datagen = ImageDataGenerator(rescale=1/255)

import tensorflow as tf

import os

from tensorflow.keras.models import Sequential

from tensorflow.keras.layers import Dense, Conv2D, Flatten, Dropout, MaxPooling2D

from tensorflow.keras.preprocessing.image import ImageDataGenerator

import numpy as np

import matplotlib.pyplot as plt

import IPython.display as display

from PIL import Image

import pathlib
```