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"# IBM Project Name: Real-Time Communication System Powered by AI for Specially Abled \n",

"# TEAM ID: PNT2022TMID36138 \n",

"# TEAM Member:Ganesh K M"

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"import os\n",

"import cv2\n",

"import numpy as np\n",

"import matplotlib.pyplot as plt\n",

"from keras.preprocessing.image import ImageDataGenerator"

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"Define DATA FILES"

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"def rename\_imgs(file\_name):\n",

" folder\_path = r'test\_dataset/'+file\_name\n",

"\n",

" num = 0\n",

" for file in os.listdir(folder\_path):\n",

" # if num%10 == 0:\n",

" # print(f'Renamed {num} files...')\n",

" # os.rename(folder\_path+'\\\\'+file, folder\_path+'\\\\'+file\_name+'\_'+str(num)+'.jpeg')\n",

" num += 1"

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"for fn in file\_names:\n",

" rename\_imgs(fn)"

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"def display(img,sign=None):\n",

" \n",

" img = cv2.cvtColor(img,cv2.COLOR\_BGR2RGB)\n",

" fig = plt.figure(figsize=(7,7))\n",

" ax = fig.add\_subplot(111)\n",

" plt.title(sign)\n",

" ax.imshow(img)"

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"display(sign\_img,'A')"

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"display(sign\_img,'3')"

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"display(sign\_img,'Space')"

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"display(sign\_img,'S')"

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"display(sign\_img,'Z')"

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"\*\*Image Data Generator\*\*"

]

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"outputs": [],

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"image\_gen = ImageDataGenerator(rotation\_range=30,\n",

" width\_shift\_range=0.1,\n",

" height\_shift\_range=0.1,\n",

" shear\_range=0.2,\n",

" zoom\_range=0.2,\n",

" rescale=1/255,\n",

" horizontal\_flip=True,\n",

" fill\_mode='nearest',\n",

" validation\_split=0.25)"

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"## Original Image"

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"display(sign\_img,'3')"

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"## Augmented Images"

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]

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"metadata": {

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"display(image\_gen.random\_transform(sign\_img))"

]

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"Split into Test & Validation dataset"

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"text": [

"Found 41625 images belonging to 37 classes.\n"

]

}

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"source": [

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" target\_size=(250,250),\n",

" batch\_size=16,\n",

" shuffle=True,\n",

" class\_mode='binary',\n",

" subset='training')"

]

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"Validation Data Generator"

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"Found 13875 images belonging to 37 classes.\n"

]

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" target\_size=(250,250),\n",

" batch\_size=16,\n",

" shuffle=True,\n",

" class\_mode='binary',\n",

" subset='validation')"

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"Test Data Generator"

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"Found 2586 images belonging to 37 classes.\n"

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" batch\_size=8,\n",

" shuffle=True,\n",

" class\_mode='categorical',\n",

" )"

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" '3': 3,\n",

" '4': 4,\n",

" '5': 5,\n",

" '6': 6,\n",

" '7': 7,\n",

" '8': 8,\n",

" '9': 9,\n",

" 'A': 10,\n",

" 'B': 11,\n",

" 'C': 12,\n",

" 'D': 13,\n",

" 'E': 14,\n",

" 'F': 15,\n",

" 'G': 16,\n",

" 'H': 17,\n",

" 'I': 18,\n",

" 'J': 19,\n",

" 'K': 20,\n",

" 'L': 21,\n",

" 'M': 22,\n",

" 'N': 23,\n",

" 'O': 24,\n",

" 'P': 25,\n",

" 'Q': 26,\n",

" 'R': 27,\n",

" 'S': 28,\n",

" 'Space': 29,\n",

" 'T': 30,\n",

" 'U': 31,\n",

" 'V': 32,\n",

" 'W': 33,\n",

" 'X': 34,\n",

" 'Y': 35,\n",

" 'Z': 36}"

]

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"train\_data\_gen.class\_indices"

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"output\_type": "execute\_result"

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"test\_data\_gen.classes"

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"41625"

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"version": 3

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"version": "3.10.0"

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