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      "train_datagen = ImageDataGenerator(rescale = 1./255, shear_range=0.2, zoom_range=
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        "import os\n",
        "from tensorflow.keras.models import Sequential\n",
        "from tensorflow.keras.layers import Dense, Conv2D, Flatten, Dropout, MaxPooling2D\n",
        "from tensorflow.keras.preprocessing.image import ImageDataGenerator\n",
        "import numpy as np\n",
        "import matplotlib.pyplot as plt\n",
        "import IPython.display as display\n",
        "from PIL import Image\n",
        "import pathlib"
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    "# and use \n",
    "# image.ImageDataGenerator()\n",
    "# image.load_img()"
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    "print(\"This dataset has been created and uploaded by IBM-TeamID-IBM-Project-  
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    }
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    "from keras.models import Sequential\n"
```

```
"from keras.layers import Dense\n",  
"from keras.layers import Convolution2D\n",  
"from tensorflow.keras.layers import Conv2D, MaxPooling2D\n",  
"from keras.layers import Dropout\n",  
"from keras.layers import Flatten"  
],  
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    ],  
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    "model.save('Realtime.h5')"
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```
"print(b)"

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      "47\n"

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    "TEST THE MODEL\n",
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    "from tensorflow.keras.models import load_model\n",
    "from tensorflow.keras.preprocessing import image\n",
    "import numpy as np\n",
    "import cv2"
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    "img = image.load_img('/content/drive/MyDrive/IBM PROJECT/DATA\nCOLLECTION/test_set/D/101.png',target_size = (500,500))\n",
    "img"
  ]
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"from skimage.transform import resize\n",
"arr=image.img_to_array(frame)\n",
"arr = resize(arr,(64,64,1))\n",
"arr = np.expand_dims(arr,axis=0)\n",
"pred=np.argmax(model.predict(arr))\n",
"op=['A','B','C','D','E','F','G','H','I']\n",
"print(\"THE PREDICTED LETTER IS \",op[pred])"
],
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"execution_count": 67,
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  {
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    "name": "stdout",
    "text": [
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      "THE PREDICTED LETTER IS D\n"
    ]
  }
]

```

```

]
},
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    "def detect(frame):\n",
    "    img=resize(frame,(64,64,1))\n",
    "    img=np.expand_dims(img,axis=0)\n",
    "    if(np.max(img)>1):\n",
    "        prediction=model.predict(img)\n",
    "        print(prediction)\n",
    "        prediction=model.predict_classes(img)\n",
    "        print(prediction)"
  ],
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  "execution_count": 69,
  "outputs": []
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{
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  "source": [
    "arr= image.img_to_array(img)"
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```

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"execution_count": 70,  
  
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},  
  
{  
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  "source": [  
    "frame=cv2.imread('/content/drive/MyDrive/IBM PROJECT/DATA  
COLLECTION/test_set/F/107.png')\n",  
    "data=detect(frame)\n",  
    "from google.colab.patches import cv2_imshow\n",  
    "cv2_imshow(frame)\n",  
    "cv2.waitKey(0)\n",  
    "cv2.destroyAllWindows"  
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      ],

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"data=detect(frame)\n",

"from google.colab.patches import cv2_imshow\n",

"cv2_imshow(frame)\n",

"cv2.waitKey(0)\n",

"cv2.destroyAllWindows()\n"

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"data=detect(frame)\n",

"from google.colab.patches import cv2_imshow\n",

"cv2_imshow(frame)\n",

"cv2.waitKey(0)\n",

"cv2.destroyAllWindows()\n",

"print(\"THE PREDICTED LETTER IS \",op[pred])"

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]

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