```
import os
import sys
import glob
import pandas as pd
import numpy as np
import matplotlib as mpl
%matplotlib inline
%matplotlib notebook
from matplotlib import pyplot as plt
from PIL import Image
from sklearn.model_selection import train_test_split
from keras.utils.np_utils import to_categorical
from keras.models import Sequential
from keras.layers import Dense, Dropout, Flatten
from keras.layers.convolutional import Conv2D, MaxPooling2D
from keras.callbacks import ModelCheckpoint
from keras.preprocessing.image import ImageDataGenerator, load_img, img_to_array
from keras.utils.vis_utils import plot_model
from keras.models import load_model
from keras.optimizers import Adadelta, Adam, RMSprop
from keras.utils.vis_utils import model_to_dot
from keras.preprocessing.image import ImageDataGenerator
from keras.utils.vis_utils import plot_model
from keras.models import load_model
from keras.optimizers import Adadelta, Adam, RMSprop
from keras.utils.vis_utils import model_to_dot
```

```
!ls -lhrt /kaggle/input/
```

```
total 4.0K
drwxr-xr-x 3 root root 4096  Apr 27 2020 fer2013
```

```
!ls -lhrt /kaggle/input/fer2013/
```

```
total 61M
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 test
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 train
-rw-r------ 1 root root 61M  Apr 27 2020 fer2013.tar.gz
```

```
!ls -lhrt /kaggle/input/fer2013/train
```

```
total 4.0K
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 happy
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 neutral
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 surprised
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 sad
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 fearful
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 disgusted
drwxr-xr-x 2 root root 4.0K  Apr 27 2020 angry
```

```
!ls -lhrt /kaggle/input/fer2013/train/happy | head -10
```

```
total 1.0M
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000000.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000001.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000002.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000003.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000004.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000005.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000006.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000007.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10000008.jpg
```

```
!ls -lhrt /kaggle/input/fer2013/train/happy | tail -10
```

```
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10028990.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10028991.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10028992.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10028993.jpg
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-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10028998.jpg
-rw-r------ 1 root root 4.0K  Apr 27 2020 Training_10028999.jpg
```

```
!ls -lhrt /kaggle/input/fer2013/train/happy | wc -l
```

```
8989
```

Source: C.J. Adams
Date: 11/10/2021
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