hand-gesture-recognition

September 4, 2023

0.1 Libraries

```
[16]: import fastai
from fastai.vision.all import *
import numpy as np
import matplotlib.pyplot as plt
import tensorflow as tf
import pandas as pd
```

0.2 Load files

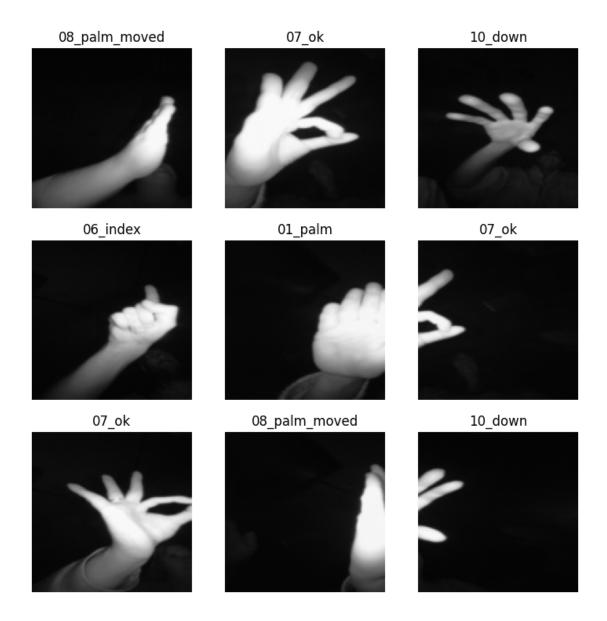
```
[17]: PATH = "/kaggle/input/leapgestrecog/leapGestRecog"
RANDOM_STATE = 42
TEST_SIZE = 0.3
IMG_SIZE = 128
```

0.2.1 Create Datablock

```
[19]: dataloaders = data.dataloaders(PATH, bs=64)
```

0.2.2 Sample from data files

```
[20]: dataloaders.show_batch()
```



[21]: learn = vision_learner(dataloaders, resnet34, metrics = error_rate)

/opt/conda/lib/python3.10/site-packages/torchvision/models/_utils.py:208: UserWarning: The parameter 'pretrained' is deprecated since 0.13 and may be removed in the future, please use 'weights' instead.

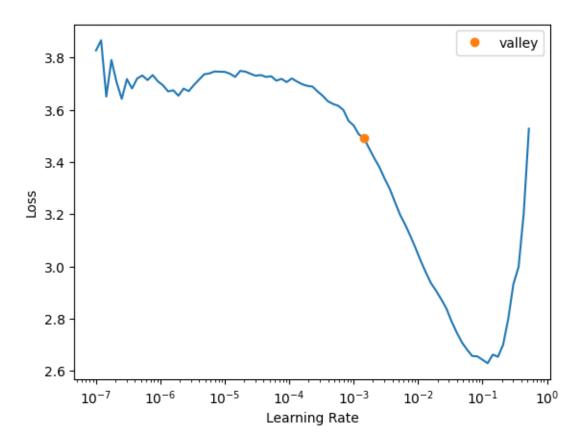
warnings.warn(

/opt/conda/lib/python3.10/site-packages/torchvision/models/_utils.py:223:
UserWarning: Arguments other than a weight enum or `None` for 'weights' are
deprecated since 0.13 and may be removed in the future. The current behavior is
equivalent to passing `weights=ResNet34_Weights.IMAGENET1K_V1`. You can also use
`weights=ResNet34_Weights.DEFAULT` to get the most up-to-date weights.
warnings.warn(msg)

[22]: learn.lr_find()

<IPython.core.display.HTML object>
<IPython.core.display.HTML object>

[22]: SuggestedLRs(valley=0.0014454397605732083)



[23]: learn.fine_tune(4, 3e-2)

<IPython.core.display.HTML object>

<IPython.core.display.HTML object>

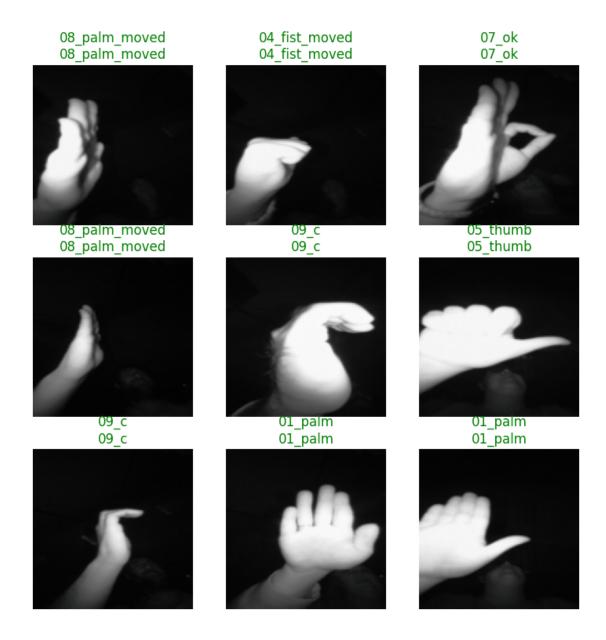
<IPython.core.display.HTML object>

<IPython.core.display.HTML object>

[24]: learn.show_results()

<IPython.core.display.HTML object>

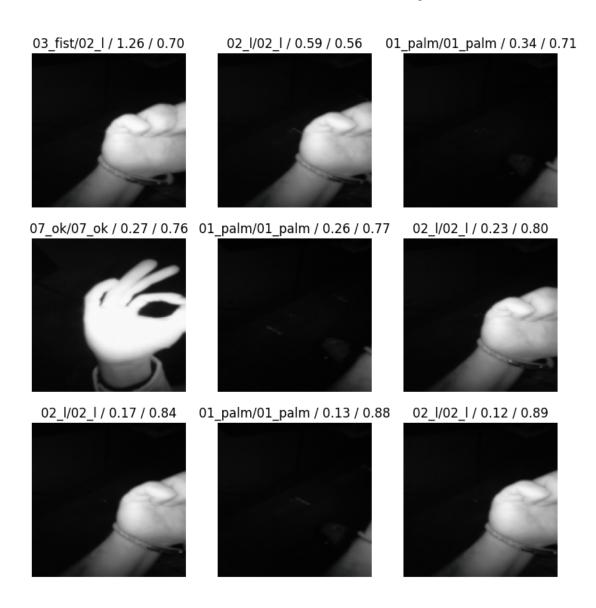
<IPython.core.display.HTML object>



[25]: interp = Interpretation.from_learner(learn)
interp.plot_top_losses(9)

<IPython.core.display.HTML object>
<IPython.core.display.HTML object>
<IPython.core.display.HTML object>

Prediction/Actual/Loss/Probability



[26]: learn.summary()

<IPython.core.display.HTML object>
<IPython.core.display.HTML object>

64 x 64 x 64 x 64

MaxPool2d Conv2d	Conv2d BatchNorm2d ReLU		9408 128	True True	
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64 x 256 x 8 x 8

Conv2d	294912	True
BatchNorm2d	512	True
ReLU	012	1145
Conv2d	589824	True
BatchNorm2d	512	True
Conv2d	32768	True
BatchNorm2d	512	True
Conv2d	589824	True
BatchNorm2d	512	True
ReLU	OIZ	1140
Conv2d	589824	True
BatchNorm2d	512	True
Conv2d	589824	True
BatchNorm2d	512	True
ReLU	012	11 46
Conv2d	589824	True
BatchNorm2d	512	True
Conv2d	589824	True
BatchNorm2d	512	True
ReLU	312	iide
Conv2d	589824	True
BatchNorm2d	512	True
Conv2d	589824	True
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	512	irde
ReLU Conv2d	E00004	Тт.
BatchNorm2d	589824	True
Conv2d	512 589824	True
		True
BatchNorm2d	512	True
ReLU	F00004	T
Conv2d	589824	True
BatchNorm2d	512	True
64 x 512 x 4 x 4		
Conv2d	1179648	True
BatchNorm2d	1024	True
	1024	irde
ReLU	0250006	Т
Conv2d	2359296	True
BatchNorm2d	1024	True
Conv2d	131072	True
BatchNorm2d	1024	True
Conv2d	2359296	True
BatchNorm2d	1024	True
ReLU	0050000	T
Conv2d	2359296	True
BatchNorm2d	1024	True
Conv2d	2359296	True

BatchNorm2d 1024 True

ReLU

 Conv2d
 2359296
 True

 BatchNorm2d
 1024
 True

64 x 512 x 1 x 1

AdaptiveAvgPool2d AdaptiveMaxPool2d

64 x 1024

Flatten

BatchNorm1d 2048 True

Dropout

64 x 512

Linear 524288 True

 ${\tt ReLU}$

BatchNorm1d 1024 True

Dropout

64 x 10

Linear 5120 True

Total params: 21,817,152

Total trainable params: 21,817,152 Total non-trainable params: 0

Optimizer used: <function Adam at 0x7a0ed796c3a0> Loss function: FlattenedLoss of CrossEntropyLoss()

Model unfrozen

Callbacks:

- TrainEvalCallback
- CastToTensor
- Recorder
- ProgressCallback

0.2.3 Exported model

[27]: learn.export("model-r34")