Not Hotdog Classifier Using fast.ai

This is a classic Silicon Valley: Season 4 Episode 4: Not Hotdog (HBO): https://www.youtube.com/watch?v=pqTntG1RXSY (https://www.youtube.com/watch?v=pqTntG1RXSY)

Blog: https://medium.com/@timanglade/how-hbos-silicon-valley-built-not-hotdog-with-mobile-tensorflow-keras-react-native-ef03260747f3 (https://medium.com/@timanglade/how-hbos-silicon-valley-built-not-hotdog-with-mobile-tensorflow-keras-react-native-ef03260747f3)

The original code reference that I slightly modified: https://github.com/pvhee/fastai-hotdog/blob/master/notebooks/hotdog.ipynb (https://github.com/pvhee/fastai-hotdog/blob/master/notebooks/hotdog.ipynb)

Dataset downloaded from "https://www.kaggle.com/dansbecker/hot-dog-not-hot-dog/downloads/hot-dog-not-hot-dog.zip (https://www.kaggle.com/dansbecker/hot-dog-not-hot-dog/downloads/hot-dog-not-hot-dog.zip)"

Just experimenting with my new EVGA RTX 2080 Ti XC Gaming GPU

In [1]:

```
%reload_ext autoreload
%autoreload 2
%matplotlib inline
```

In [2]:

```
from fastai import *
from fastai.vision import *
import zipfile
```

Run in specific GPU

In [3]:

```
# Update the GPU to run or delete this cell
 completely.
# I'm testing my new EVGA 2080 Ti XC Gaming
 gpu :)
import torch

for i in range(torch.cuda.device_count()):
    print(f"GPU NO. {i}\tNAME: {torch.cuda.g
et_device_name(i)}")

torch.cuda.set_device(0)
```

```
GPU NO. 0       NAME: GeForce RT
X 2080 Ti
GPU NO. 1       NAME: GeForce GT
X 1060 6GB
```

Prepare the data

In [4]:

```
dataset = "hot-dog-not-hot-dog.zip"
data_path = Path("data-images/")
data_path
```

Out[4]:

```
PosixPath('data-images')
```

In [5]:

```
zip_ref = zipfile.ZipFile(dataset, "r")
zip_ref.extractall(data_path)
zip_ref.close()
```

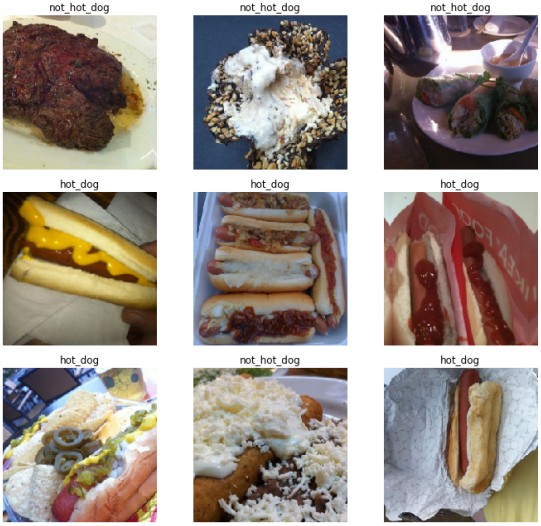
In [6]:

```
np.random.seed(42)

bs = 64 # lower the batch size if your GPU h
as low memory or you are just using CPU. Thi
s network uses ResNet50
data = (ImageDataBunch
         .from_folder(data_path, train=".",
valid_pct=0.2, ds_tfms=get_transforms(), siz
e=224, bs=bs)
         .normalize(imagenet_stats))
```

In [7]:

```
data.show_batch(rows=3, figsize=(10,9))
```



In [8]:

```
data.classes, data.c, data
```

Out[8]:

```
(['hot_dog', 'not_hot_dog'], 2,
ImageDataBunch;

 Train: LabelList (1597 items)
 x: ImageList
 Image (3, 224, 224),Image (3, 2
24, 224),Image (3, 224, 224),Ima
ge (3, 224, 224),Image (3, 224,
224)
 y: CategoryList
 not_hot_dog,not_hot_dog,not_hot
_dog,not_hot_dog,not_hot_dog
 Path: data-images;

 Valid: LabelList (399 items)
 x: ImageList
 Image (3, 224, 224),Image (3, 2
24, 224),Image (3, 224, 224),Ima
ge (3, 224, 224),Image (3, 224,
224)
 y: CategoryList
 hot_dog,not_hot_dog,hot_dog,hot
_dog,hot_dog
 Path: data-images;

 Test: None)
```

SOURCE CODE FOR TORCHVISION.MODELS.RESNET

See:
https://pytorch.org/docs/stable/_modules/torchvision/models/re
(https://pytorch.org/docs/stable/_modules/torchvision/models/r

This sample uses the resnet50 model. If your gpu or you are using a cpu to train, you can use resnet34, resnet18 or lower.

Good read about ResNet:
https://towardsdatascience.com/introduction-to-resnets-c0a830a288a4
(https://towardsdatascience.com/introduction-to-resnets-c0a830a288a4)

Now train em....

In [9]:

```
learn = cnn_learner(data, models.resnet50, metrics=accuracy)
```

In [10]:

```
learn.fit_one_cycle(5) # Experimented 5 epoc
hs which resulted with high accuracy. Just p
reventing overfitting.
```

epoch	train_loss	valid_loss	accuracy	tin
0	0.588014	0.448769	0.902256	00:(
1	0.425513	0.203998	0.944862	00:(
2	0.300958	0.086315	0.972431	00:(
3	0.210306	0.074175	0.969925	00:(
4	0.162175	0.055461	0.977444	00:(

In [11]:

```
learn.save("hotdog-stage-1") # saving the we
ights
learn.load("hotdog-stage-1");
```

In [12]:

```
interp = ClassificationInterpretation.from_learner(learn)
interp.plot_top_losses(9, figsize=(12,12), heatmap=False) # Some imperfections in prediction :)
```

Let's predict some HOTDOGs!!!

Prediction No. 1: Hotdog

In [13]:

```
hotdog1 = open_image("./predict-images/hotdog_1.jpeg")
hotdog1
```

Out[13]:

In [14]:

```
pred_class, pred_idx, outputs = learn.predict(hotdog1)
pred_class, pred_idx, outputs
```

Out[14]:

```
(Category hot_dog, tensor(0), tensor([1.0000e+00, 1.2579e-08]))
```

Prediction No. 2: Not Hotdog

In [15]:

```
not_hotdog1 = open_image("./predict-images/not_hotdog_1.jpeg")
not_hotdog1
```

Out[15]:

In [16]:

```
pred_class, pred_idx, outputs = learn.predict(not_hotdog1)
pred_class, pred_idx, outputs
```

Out[16]:

```
(Category not_hot_dog, tensor(1), tensor([0.3231, 0.6769]))
```

Prediction No. 3: Hotdog

In [17]:

```
hotdog2 = open_image("./predict-images/hotdog_2.jpeg")
hotdog2
```

Out[17]:

In [18]:

```
learn.predict(hotdog2)
```

Out[18]:

```
(Category hot_dog, tensor(0), tensor([0.9972, 0.0028]))
```

Prediction No. 4: Not Hotdog

In [19]:

```
not_hotdog2 = open_image("./predict-images/not_hotdog_2.jpeg")
not_hotdog2
```

Out[19]:

In [20]:

```
learn.predict(not_hotdog2)
```

Out[20]:

```
(Category not_hot_dog, tensor
(1), tensor([0.0363, 0.9637]))
```

In [ ]:

```

```