```
!wget https://s3.amazonaws.com/fast-ai-nlp/yelp_review_polarity_csv.tgz
!tar zxvf yelp_review_polarity_csv.tgz
```

```
--2019-12-09 04:55:06--  https://s3.amazonaws.com/fast-ai-nlp/yelp_review_pola
Resolving s3.amazonaws.com (s3.amazonaws.com)... 52.217.37.150
Connecting to s3.amazonaws.com (s3.amazonaws.com)|52.217.37.150|:443... connec
HTTP request sent, awaiting response... 200 OK
Length: 166373201 (159M) [application/x-tar]
Saving to: ‘yelp_review_polarity_csv.tgz’

yelp_review_polarit 100%[===================>] 158.67M  63.0MB/s    in 2.5s

2019-12-09 04:55:14 (63.0 MB/s) - ‘yelp_review_polarity_csv.tgz’ saved [166373

yelp_review_polarity_csv/
yelp_review_polarity_csv/train.csv
yelp_review_polarity_csv/readme.txt
yelp_review_polarity_csv/test.csv
```

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Go to this URL in a browser: https://accounts.google.com/o/oauth2/auth?client_

Enter your authorization code:
··········
Mounted at /content/drive
```

```
!cp -r drive/My\ Drive/cache_dir cache_dir
```

```
!pip install -q simpletransformers
```

```
     |████████████████████████████████| 102kB 3.9MB/s
     |████████████████████████████████| 645kB 10.9MB/s
     |████████████████████████████████| 368kB 53.6MB/s
     |████████████████████████████████| 194kB 76.4MB/s
     |████████████████████████████████| 1.0MB 52.2MB/s
     |████████████████████████████████| 860kB 48.3MB/s
  Building wheel for seqeval (setup.py) ... done
  Building wheel for sacremoses (setup.py) ... done
```

```
import pandas as pd
prefix = 'yelp_review_polarity_csv/'

train_df = pd.read_csv(prefix + 'train.csv', header=None)
train_df.head()

eval_df = pd.read_csv(prefix + 'test.csv', header=None)
eval_df.head()

train_df[0] = (train_df[0] == 2).astype(int)
eval_df[0] = (eval_df[0] == 2).astype(int)

train_df = pd.DataFrame({
```

```
    'text': train_df[1].replace(r'\n', ' ', regex=True),
    'label':train_df[0]
})

print(train_df.head())

eval_df = pd.DataFrame({
    'text': eval_df[1].replace(r'\n', ' ', regex=True),
    'label':eval_df[0]
})

print(eval_df.head())
```

```
                                                text  label
0  Unfortunately, the frustration of being Dr. Go...      0
1  Been going to Dr. Goldberg for over 10 years. ...      1
2  I don't know what Dr. Goldberg was like before...      0
3  I'm writing this review to give you a heads up...      0
4  All the food is great here. But the best thing...      1
                                                text  label
0  Contrary to other reviews, I have zero complai...      1
1  Last summer I had an appointment to get new ti...      0
2  Friendly staff, same starbucks fair you get an...      1
3  The food is good. Unfortunately the service is...      0
4  Even when we didn't have a car Filene's Baseme...      1
```

```
!git clone https://www.github.com/nvidia/apex
%cd apex
!pip install -q --no-cache-dir ./
#!python setup.py install
```

```
fatal: destination path 'apex' already exists and is not an empty directory.
/content/apex
  Building wheel for apex (setup.py) ... done
```

```
%cd ..
from apex import amp
from simpletransformers.classification import ClassificationModel
```

```
/content
```

```
model = ClassificationModel('bert', 'bert-base-cased')
#model = ClassificationModel('roberta', 'roberta-base)
```

```
100%|██████████| 313/313 [00:00<00:00, 159245.17B/s]
100%|██████████| 213450/213450 [00:00<00:00, 2410564.97B/s]
100%|██████████| 435779157/435779157 [00:17<00:00, 24595227.67B/s]
```

```
# Train the model
model.train_model(train_df,args={'train_batch_size': 110,'eval_batch_size': 110})
```

```
Features loaded from cache at cache_dir/cached_train_bert_128_2_560000
Selected optimization level O1:  Insert automatic casts around Pytorch functio

Defaults for this optimization level are:
enabled                : True
opt_level              : O1
cast_model_type        : None
patch_torch_functions  : True
keep_batchnorm_fp32    : None
master_weights         : None
loss_scale             : dynamic
Processing user overrides (additional kwargs that are not None)...
After processing overrides, optimization options are:
enabled                : True
opt_level              : O1
cast_model_type        : None
patch_torch_functions  : True
keep_batchnorm_fp32    : None
master_weights         : None
loss_scale             : dynamic
Warning:  multi_tensor_applier fused unscale kernel is unavailable, possibly b
```

Epoch 100% 1/1 [1:51:01<00:00, 6661.38s/it]

Current iteration 100% 5091/5091 [1:51:01<00:00, 1.28s/it]

```
Running loss: 0.714348/usr/local/lib/python3.6/dist-packages/torch/optim/lr_sc
  "https://pytorch.org/docs/stable/optim.html#how-to-adjust-learning-rate", Us
Running loss: 0.432277Gradient overflow.  Skipping step, loss scaler 0 reducin
Running loss: 0.139281
Training of bert model complete. Saved to outputs/.
```

```
model2 = ClassificationModel('bert', 'outputs/checkpoint-4000')
```

```
model2.train_model(train_df,output_dir='outputs_2/',args={'train_batch_size': 110,
```

```
Features loaded from cache at cache_dir/cached_train_bert_128_2_560000
Selected optimization level O1:  Insert automatic casts around Pytorch functio

Defaults for this optimization level are:
enabled                : True
opt_level              : O1
cast_model_type        : None
patch_torch_functions  : True
keep_batchnorm_fp32    : None
master_weights         : None
loss_scale             : dynamic
Processing user overrides (additional kwargs that are not None)...
After processing overrides, optimization options are:
enabled                : True
opt_level              : O1
cast_model_type        : None
patch_torch_functions  : True
keep_batchnorm_fp32    : None
master_weights         : None
loss_scale             : dynamic
```

Epoch 100% 1/1 [1:51:57<00:00, 6717.29s/it]

Current iteration 100% 5091/5091 [1:51:57<00:00, 1.29s/it]

```
Running loss: 0.063018/usr/local/lib/python3.6/dist-packages/torch/optim/lr_sc
  "https://pytorch.org/docs/stable/optim.html#how-to-adjust-learning-rate", Us
Running loss: 0.103669
Training of bert model complete. Saved to outputs_2/.
```

```
# Evaluate the model
import sklearn
result, model_outputs, wrong_predictions = model.eval_model(eval_df, acc=sklearn.me
```

```
Features loaded from cache at cache_dir/cached_dev_bert_128_2_38000
```

100% 346/346 [02:24<00:00, 2.79it/s]

```
result
```

```
{'acc': 0.9568947368421052,
 'eval_loss': 0.11206961244430845,
 'fn': 823,
 'fp': 815,
 'mcc': 0.9137895546849503,
 'tn': 18185,
 'tp': 18177}
```

```
model2.args['max_seq_length'] = 450
```

```
result_2, model_outputs_2, wrong_predictions_2 = model2.eval_model(eval_df,acc=skle
```

```
    Converting to features started.
```

100% 38000/38000 [01:10<00:00, 536.20it/s]

100% 346/346 [10:01<00:00, 1.46s/it]

```
result_2
```

```
{'acc': 0.9752368421052632,
 'eval_loss': 0.06789457843762774,
 'fn': 528,
 'fp': 413,
 'mcc': 0.9504910946812395,
 'tn': 18587,
 'tp': 18472}
```