“Assessing Humor in Edited News Headlines”

introduced by *Vinh N.* & *Finn R.*

Given Dataset & Task

dev

id	original	edit	grades	meanGrade
1723	Thousands of gay and bisexual <men/> convicted of long-abolished sexual offences are posthumously pardoned	swans	22100	1.0
12736	Special <prosecutor/> appointed to Trump Russia	chef	21100	0.8
12274	Spanish police detain man and search Ripoll addresses in hunt for terror <suspects/>	squad	21000	0.6
8823	N.Y. Times <reprimands/> reporter for sharing ' unfounded rumor ' about Melania Trump	applauds	32210	1.6

- **Specs**
  - **12071 datapoints**
  - **0.0 is min(grades)**
  - **3.0 is max(grades)**

3 Different Approaches

Approach-1

[X]

Approach-2

[ ]

Approach-3

[ ]

Zitate dienen nur Veranschaulichungszwecken

Given Dataset & Interpretation

dev

id	original	edit	grades	meanGrade
1723	Thousands of gay and bisexual <men/> convicted of long-abolished sexual offences are posthumously pardoned	swans	22100	1.0
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[“Special **prosecutor** appointed to Trump Russia”] → [0.0]
[“Special **chef** appointed to Trump Russia”] → [0.8]

Preprocessing Dataset

I. **Unfold dataset** (accordingly to interpretation)
   A. [“Special **prosecutor** appointed to Trump Russia”] → [0.0]
   B. [“Special **chef** appointed to Trump Russia”] → [0.8]

II. **Stemming/Lemmatize & Tokenize according to word frequency**
   A. [12, 833, 401, 6, 7, 9,] → [0.0]
   B. [12, 1050, 401, 6, 7, 9,] → [0.8]

III. **Padding sequences**
   A. [0, 0, 0, 12, 833, 401, 6, 7, 9,] → [0.0]

IV. **Normalize dataset**
   A. [0, 0, 0, 12/n 833/n, 401/n, 6/n, 7/n, 9/n,] → [0.0/m]

Network -

```
25    # Parameters
 1    embed_dim = 25
 2    batch_size = 32
 3    epochs = 25
 4    learning_rate = 0.001
 5
 6    # Model
 7    model = Sequential()
 8    model.add(Dense(embed_dim, input_dim=embed_dim, activation='relu'))
 9    model.add(Dense(200, activation='relu'))
10    model.add(Dense(200, activation='relu'))
11    model.add(Dense(1, activation='sigmoid'))
12    opt = Optimizers.Adam(lr=learning_rate)
13    model.compile(loss='mse', optimizer=opt, metrics=['accuracy'])
14
```

Results

```
Epoch 22/25
19313/19313 [==============================] - 1s 30us/step - loss: 0.0408 - accuracy: 0.5271 - val_loss: 0.0434 - val_accuracy: 0.5256
Epoch 23/25
19313/19313 [==============================] - 1s 32us/step - loss: 0.0407 - accuracy: 0.5271 - val_loss: 0.0434 - val_accuracy: 0.5256
Epoch 24/25
19313/19313 [==============================] - 1s 31us/step - loss: 0.0406 - accuracy: 0.5271 - val_loss: 0.0441 - val_accuracy: 0.5256
Epoch 25/25
19313/19313 [==============================] - 1s 31us/step - loss: 0.0405 - accuracy: 0.5271 - val_loss: 0.0432 - val_accuracy: 0.5256
4829/4829 [==============================] - 0s 10us/step
Test loss: 0.04317193100802472
Test accuracy: 0.5255746245384216
Persist model completely in 'models/fcc_v1'.
(venv) potato:approach1 vngu$
```

mean squared error!

Given Dataset & Interpretation

dev

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1723	Thousands of gay and bisexual <men/> convicted of long-abolished sexual offences are posthumously pardoned	swans	22100	1.0
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~~[“Special **prosecutor** appointed to Trump Russia”]~~ ~~→~~ ~~[0.0]~~

[“Special **chef** appointed to Trump Russia”] → [0.8]

Results

```
9656/9656 [==============================] - 0s 31us/step - loss: 0.0231 - accuracy: 0.0543 - val_loss: 0.0486 - val_accuracy: 0.0480
Epoch 97/100
9656/9656 [==============================] - 0s 31us/step - loss: 0.0231 - accuracy: 0.0543 - val_loss: 0.0480 - val_accuracy: 0.0497
Epoch 98/100
9656/9656 [==============================] - 0s 31us/step - loss: 0.0228 - accuracy: 0.0543 - val_loss: 0.0465 - val_accuracy: 0.0501
Epoch 99/100
9656/9656 [==============================] - 0s 32us/step - loss: 0.0229 - accuracy: 0.0543 - val_loss: 0.0485 - val_accuracy: 0.0484
Epoch 100/100
9656/9656 [==============================] - 0s 31us/step - loss: 0.0227 - accuracy: 0.0543 - val_loss: 0.0486 - val_accuracy: 0.0489
2415/2415 [==============================] - 0s 10us/step
Training loss: 0.04855791383401701
Training accuracy: 0.04886128380894661
Persist model completely in 'models/fcc_v1'.
(venv) potato:approach1-1 vngu$
```

mean squared error!

3 Different Approaches

Approach-1

[X]

Approach-2

[X]

Approach-3

[ ]

Zitate dienen nur Veranschaulichungszwecken

Given Dataset & Interpretation

dev

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[“Special **prosecutor** appointed to Trump Russia”] → [“0.0”]
[“Special **chef** appointed to Trump Russia”] → [“0.8”]

31 different grades means 31 diff. classes!

Preprocessing Dataset

I. **Unfold dataset** (accordingly to interpretation)
   A. [“Special **prosecutor** appointed to Trump Russia”] → [“0.0 “]
   B. [“Special **chef** appointed to Trump Russia”] → [“0.8”]

II. **Stemming/Lemmatize & Tokenize according to word frequency**
   A. [12, 833, 401, 6, 7, 9,] → [“0.0 “]
   B. [12, 1050, 401, 6, 7, 9,] → [“0.8”]

III. **Padding sequences**
   A. [0, 0, 0, 12, 833, 401, 6, 7, 9,] → [“ 0.0 “]

IV. **Normalize dataset**
   A. [0, 0, 0, 12/n 833/n, 401/n, 6/n, 7/n, 9/n,] → [“0.0”]

Network -

```
17  # Parameters
 1  embed_dim = 25
 2  batch_size = 32
 3  epochs = 100
 4  num_classes = 31
 5
 6  # Model
 7  model = Sequential()
 8  model.add(Dense(256, activation='relu', input_dim=embed_dim))
 9  model.add(Dropout(0.5))
10  model.add(Dense(512, activation='relu', input_dim=embed_dim))
11  model.add(Dropout(0.5))
12  model.add(Dense(num_classes, activation='softmax'))
13  model.compile(loss='categorical_crossentropy', optimizer='adam', metrics=['accuracy'])
14  print(model.metrics_names)
15
```

Results

```
Epoch 96/100
17381/17381 [==============================] - 1s 56us/step - loss: 1.7021 - accuracy: 0.5335 - val_loss: 1.8350 - val_accuracy: 0.5274
Epoch 97/100
17381/17381 [==============================] - 1s 56us/step - loss: 1.7061 - accuracy: 0.5337 - val_loss: 1.8358 - val_accuracy: 0.5264
Epoch 98/100
17381/17381 [==============================] - 1s 57us/step - loss: 1.7033 - accuracy: 0.5347 - val_loss: 1.8412 - val_accuracy: 0.5254
Epoch 99/100
17381/17381 [==============================] - 1s 57us/step - loss: 1.7011 - accuracy: 0.5341 - val_loss: 1.8379 - val_accuracy: 0.5274
Epoch 100/100
17381/17381 [==============================] - 1s 56us/step - loss: 1.7011 - accuracy: 0.5320 - val_loss: 1.8323 - val_accuracy: 0.5274
4829/4829 [==============================] - 0s 13us/step
Test loss: 1.9399894609488817
Test accuracy: 0.5141851305961609
Persist model completely in 'models/fcc_v1'.
(venv) potato:approach2 vngu$
```

mean squared error!

Given Dataset & Interpretation

dev

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1723	Thousands of gay and bisexual <men/> convicted of long-abolished sexual offences are posthumously pardoned	swans	22100	1.0
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~~[“Special **prosecutor** appointed to Trump Russia”]~~ → ~~[“0.0”]~~

[“Special **chef** appointed to Trump Russia”] → [“0.8”]

31 different grades means 31 diff. classes!

Results

```
8690/8690 [==============================] - 0s 56us/step - loss: 2.2917 - accuracy: 0.1973 - val_loss: 2.5283 - val_accuracy: 0.1201
Epoch 96/100
8690/8690 [==============================] - 0s 56us/step - loss: 2.2903 - accuracy: 0.1952 - val_loss: 2.5298 - val_accuracy: 0.1263
Epoch 97/100
8690/8690 [==============================] - 0s 56us/step - loss: 2.2929 - accuracy: 0.1959 - val_loss: 2.5334 - val_accuracy: 0.1170
Epoch 98/100
8690/8690 [==============================] - 0s 56us/step - loss: 2.2904 - accuracy: 0.1992 - val_loss: 2.5376 - val_accuracy: 0.1284
Epoch 99/100
8690/8690 [==============================] - 0s 56us/step - loss: 2.2880 - accuracy: 0.1972 - val_loss: 2.5328 - val_accuracy: 0.1335
Epoch 100/100
8690/8690 [==============================] - 0s 56us/step - loss: 2.2741 - accuracy: 0.2079 - val_loss: 2.5405 - val_accuracy: 0.1284
2415/2415 [==============================] - 0s 14us/step
Test loss: 2.6171468282585066
Test accuracy: 0.10062111914157867
Persist model completely in 'models/fcc_v1'.
(venv) potato:approach2-1 vngu$
```

mean squared error!

3 Different Approaches

Approach-1

[X]

Approach-2

[X]

Approach-3

[X]

Zitate dienen nur Veranschaulichungszwecken

Given Dataset & Interpretation

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[“Special **prosecutor** appointed to Trump Russia”] + [“Special **chef** appointed to Trump Russia”] → [“0.8”]

Preprocessing Dataset

I. **Unfold dataset** (accordingly to interpretation)
   A. [“Special **prosecutor** appointed to Trump Russia”] + [“Special **chef** appointed to Trump Russia”] → [“0.8”]

II. **Stemming/Lemmatize & Tokenize according to word frequency**
   A. [12, 833, 401, 6, 7, 9] + [12, 1050, 401, 6, 7, 9] → [“0.8”]

III. **Padding sequences**
   A. [**0, 0, 0,** 12, 833, 401, 6, 7, 9] + [**0, 0, 0,** 12, 1050, 401, 6, 7, 9] → [“0.8”]

IV. **Normalize dataset** (and join)
   A. [**0, 0, 0,** 12/n, 833/n, 401/n, 6/n, 7/n, 9/n, **0, 0, 0,** 12/n, 1050/n, 401/n, 6/n, 7/n, 9/n] → [“0.8”]

Network - Architecture

```
    # Parameters
    embed_dim = 25 * 2
    batch_size = 32
    epochs = 100
    num_classes = 31

    # Model
    model = Sequential()
    model.add(Dense(256, activation='relu', input_dim=embed_dim))
    model.add(Dropout(0.5))
    model.add(Dense(512, activation='relu', input_dim=embed_dim))
    model.add(Dropout(0.5))
    model.add(Dense(num_classes, activation='softmax'))
    model.compile(loss='categorical_crossentropy', optimizer='adam', metrics=['accuracy'])
    print(model.metrics_names)

```

Results

```
Epoch 96/100
8690/8690 [==============================] - 1s 61us/step - loss: 2.1714 - accuracy: 0.2453 - val_loss: 2.6208 - val_accuracy: 0.1108
Epoch 97/100
8690/8690 [==============================] - 1s 59us/step - loss: 2.1754 - accuracy: 0.2427 - val_loss: 2.6204 - val_accuracy: 0.1128
Epoch 98/100
8690/8690 [==============================] - 1s 59us/step - loss: 2.1750 - accuracy: 0.2406 - val_loss: 2.6238 - val_accuracy: 0.1180
Epoch 99/100
8690/8690 [==============================] - 1s 67us/step - loss: 2.1713 - accuracy: 0.2379 - val_loss: 2.6211 - val_accuracy: 0.1128
Epoch 100/100
8690/8690 [==============================] - 1s 59us/step - loss: 2.1772 - accuracy: 0.2381 - val_loss: 2.6163 - val_accuracy: 0.1149
2415/2415 [==============================] - 0s 13us/step
Test loss: 2.6561957538991736
Test accuracy: 0.11594203114509583
Persist model completely in 'models/fcc_v1'.
(venv) potato:approach3 vngu$
```

mean squared error!

Evaluation & Conclusion

Conclusion

- Approach 1 (and 1-1)
  - ...
- Approach 2 (and 2-1)
  - ...
- Approach 3 most promising
  - Training-Dataset
    - 0.23 accuracy on train
    - 1.4754 on loss
  - Test- Dataset
    - 0.11 accuracy test
    - 1.6298 on loss
  - (vs. expected value of 3%)

- Current Rank 1: 0.512 train loss
- FCC works just as well as LSTM (but a lot faster)

Sub-Task 1 Results (ignore when viewing resu

#	User	Entries	Date of Last Entry	Team Name	RMSE ▲	RM
1	HonoMi	39	02/20/20		0.51276 (1)	0.
2	alonzorz	27	01/09/20	Amobee	0.51568 (2)	0.
3	vgtomahawk	72	01/04/20	Hasyatarangini	0.51622 (3)	0.
4	BramVanroy	32	12/31/19		0.51800 (4)	0.

Conclusion

- Approach 1 (and 1-1)
  - ...
- Approach 2 (and 2-1)
  - ...
- Approach 3 most promising
  - Training-Dataset
    - 0.23 accuracy on train
    - 1.4754 on loss
  - Test- Dataset
    - 0.11 accuracy test
    - 1.6298 on loss
  - (vs. expected value of 3%)

- Current Rank 1: 0.512 train loss
- FCC works just as well as LSTM (but a lot faster)

Questions? :)