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Assessing Wordplay-Pun classification from JOKER dataset with pretrained BERT humorous models

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Introduction

- ① Written humor is a really interesting subject as it has different forms, formats, and interpretations that can cause quite a challenge on the NLP Tasks.
- ① In previous works, using BERT and DistilBERT models short humorous texts were classified.
- ① We decide to approach a binary classification for humorous text with the datasets provided by JOKER and a fine-tuned BERT and DistilBERT in short jokes/One-liners.

Objectives

- ① Is interesting to know if previously trained models have the ability to recognize humor with the high-level tipificated data from JOKER.
- ① Corroborate if our classifiers behave in a good way with other types of humor, from JOKER (Task 1-3) data set.



Implementation

- ① Tasks 1-3 were joined and then preprocessed to ensure a certain homogeneity between them. Of a total of 12,540 registers, after trimming 3,639 remain, then a manual review was applied to end up with 3,601 registers.
- ① Subsequently, the models saved in Tensorflow format were recovered to be used in the classification, with the help of a wrapper called Ktrain to easily load our BERT-like models.

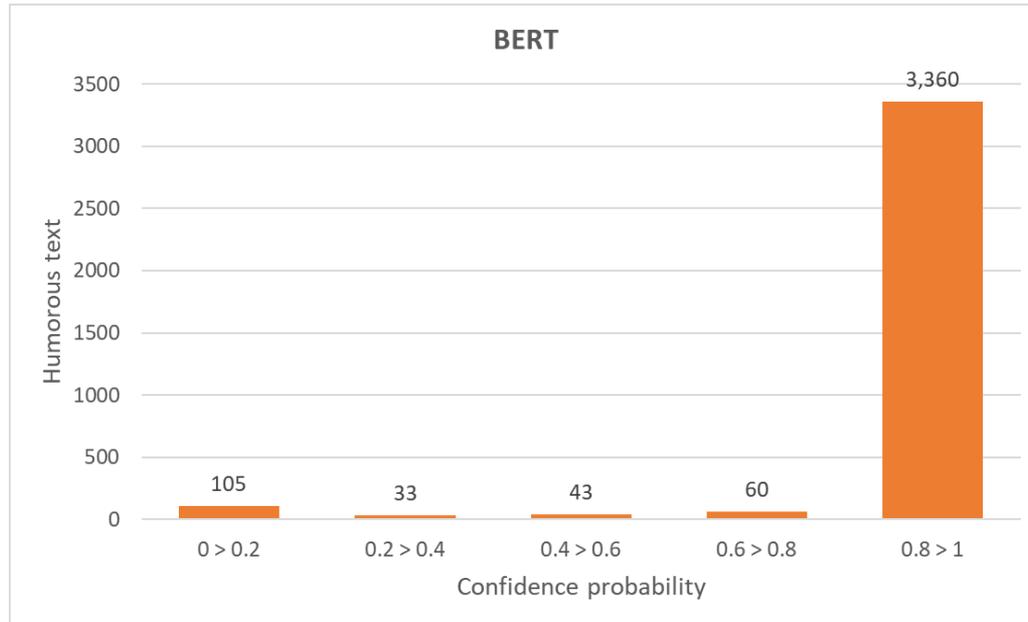
Results

BERT model obtained better results since it identified 95.64% of the data set as humorous, in contrast with DistilBERT which reach a 92.59%. Of a total of 3,601 registers, obtaining a difference of 110 between each treatment.

Models	Performance	Correctly detected	Incorrectly detected
BERT	95.64%	3,444	157
DistilBERT	92.58%	3,334	267

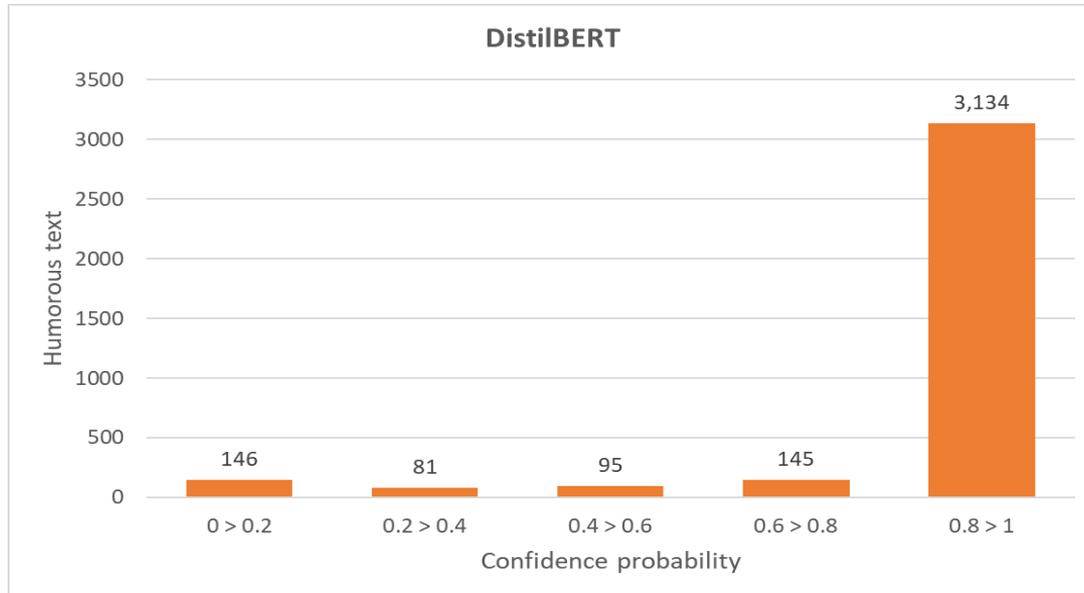
Results

The confidence extracted from the predictions made by BERT reflects that for most of the texts the model classified them as humor with certainty greater than 0.8.



Results

In the case of the DistilBERT model, the results obtained are similar to those found with BERT, since the largest amount of data had high confidence as 3,134 texts reached a value greater than 0.8.



Results

Top BERT positive cases

Tag	Humorous text	Probability
PUN	Why did the pig leave the party early? Because everyone thought he was a boar!	0.9999985
PUN	Why are ghosts bad liars? Because you can see right through them!	0.9999982
HOM	Why don't people like to talk to garbage men? They mostly talk trash.	0.9999981
PUN	Why don't sharks eat clowns? Because they taste funny.	0.9999980
PUN	Why did the student eat his homework? Because the teacher told him it was a piece of cake!	0.9999980

Top DistilBERT positive cases

Tag	Humorous text	Probability
PUN	What's the best fruit for avoiding scurvy? Naval oranges, of course.	0.9996407
PUN	What does an angry pepper do? It gets jalapenos face.	0.9996404
PUN	What do you call a duck that gets all A's? A wise quacker.	0.9996402
HOM	There was an eye doctor who wanted to re-locate but couldn't find a job because he didn't have enough contacts.	0.9996402
HET	What is the best store to be in during an earthquake? A stationery store.	0.9996401

Results

Top BERT negative cases

Tag	Humorous text	Probability
HET	Opportunities take "now" for an answer	0.0000654
HET	Podiatrist malpractice: Callous neglect	0.0001483
HOM	Bill Gates took advantage of his Windows of opportunity	0.0001519
HET	Exposure to the son may prevent burning	0.0002049
PUN	Can honeybee abuse lead to a sting operation?	0.0002278

Top DistilBERT negative cases

Tag	Humorous text	Probability
HET	Exposure to the son may prevent burning	0.0007237
HET	Opportunities take "now" for an answer	0.0007271
HET	Exposure to the son prevents burning	0.0007380
HOM	Could modern submarines be the wave of the future?	0.0007441
HET	A budget helps us live below our yearnings	0.0007591

Prospection

Bert - humorous texts with the best scores:

Why did the pig leave the party early? because everyone thought he was a boar!

Why are ghosts bad liars? because you can see right through them!

DistilBERT - humorous texts with the best scores:

What's the best fruit for avoiding scurvy? Naval oranges, of course.

What does an angry pepper do? It gets jalapenos face.

Bert - humorous texts with the worst scores:

Opportunities take "now" for an answer

Podiatrist malpractice: Callous neglect

DistilBERT - humorous texts with the worst scores:

Exposure to the son may prevent burning

Opportunities take "now" for an answer

Conclusions

- ① The pre-trained models used in this work that addresses the subject of humorous text identification, managed to detect the majority of the data set obtained from JOKER as humor with a good outcome for both models.
- ② It should be noted that certain curiosities were found within the best and worst classified elements, certain patterns that have a lot to do with the counterpart of the humor with which it was trained, giving a view of some weaknesses in the fine-tuning process.

THANK YOU FOR YOUR ATTENTION



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