

BUHSCITU AT SEMEVAL-2020 TASK 7: ASSESSING HUMOUR IN EDITED NEWS HEADLINES USING HAND-CRAFTED FEATURES AND ONLINE KNOWLEDGE BASES

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Problem: Given a original news headline: What kind of simple replacement makes a news headline funny?

Idea: Learn a mapping from 4 simple features, a knowledge graph and word embeddings to a score between 0 – 3. Our proposed model combine the information from the three inputs to analyse a given headline.

Code: <https://github.com/bachelorbois/HumorHeadlines>

Feature Encoder

Relative position

Headline examples	Value
Goldman warns dances on irreversible Brexit plans	0.33
Elon Musk has just blasted the world's most powerful rocket into space wall .	1.00
Recent Scandals Highlight Trump's Chaotic Management Fashion Style	0.86

Fig. 1: Example of the relative position feature

Sentence length

Headline examples	Value
Goldman warns dances on irreversible Brexit plans	0.30
Elon Musk has just blasted the world's most powerful rocket into space wall .	0.60
Recent Scandals Highlight Trump's Chaotic Management Fashion Style	0.35

Fig. 2: Example of the Sentence length feature

Relative distance

Headline examples	Value
Goldman warns dances on irreversible Brexit plans	0.21
Elon Musk has just blasted the world's most powerful rocket into space wall .	0.45
Recent Scandals Highlight Trump's Chaotic Management Fashion Style	0.45

Fig. 3: Example of the Relative distance feature

Phonetic distance

Replaced/replacement	Levenshtein distance
'Syria' → 'S IH1 R IYO AHO'	0.1176
'cereal' → 'S IH1 R IYO AHO L'	
'coup' → 'K UW1'	0.9474
'ignorance' → 'IH1 G N ERO AHO N S'	

Fig. 4: Example of the Phonetic distance feature

Model

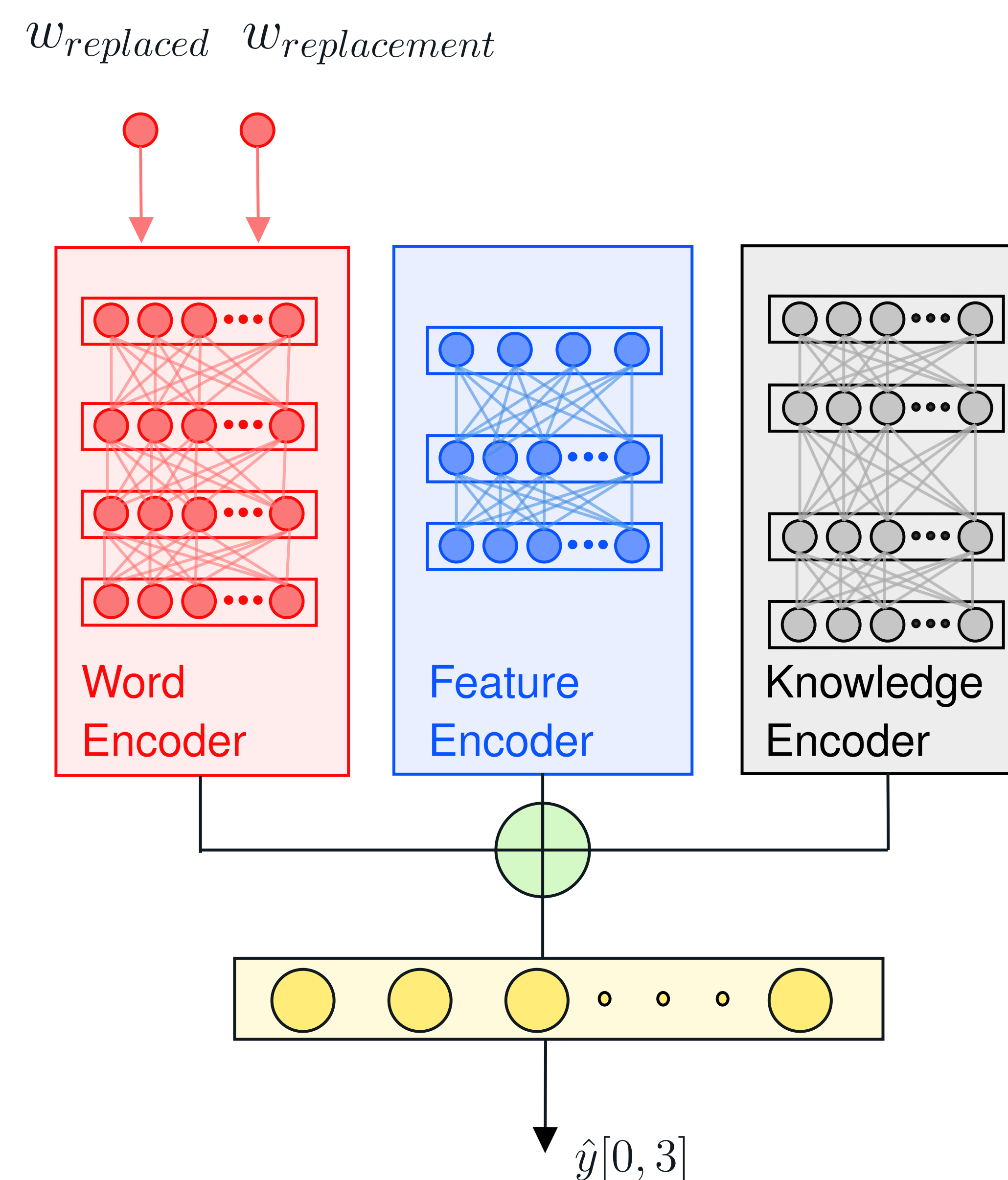


Fig. 5: Our proposed model

Knowledge Encoder

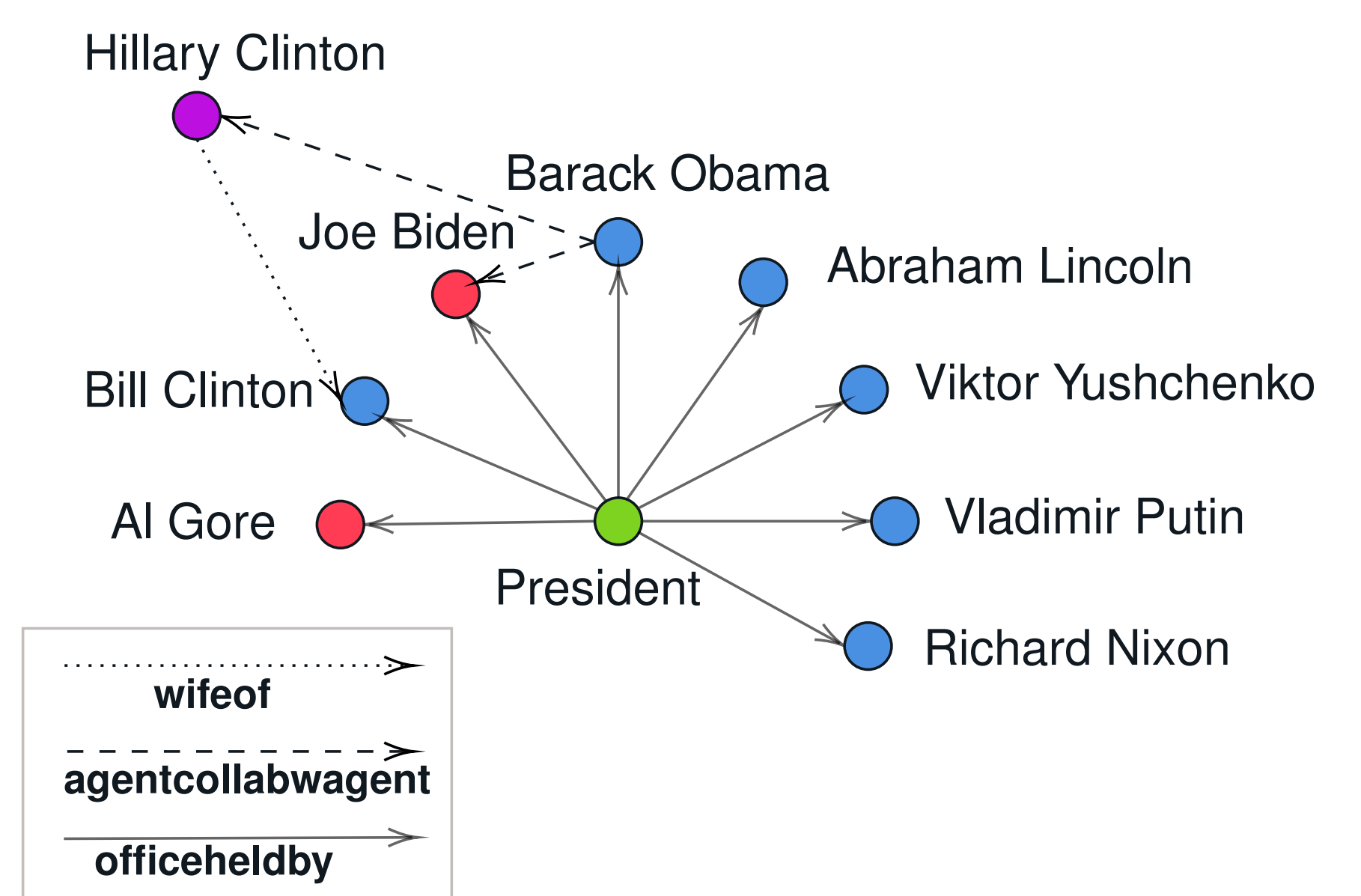


Fig. 6: Small snippet of the large knowledge graph produced by NELL [2]

Results

System	Test Score
Official Baseline (Mean)	0.57471
Linear Regression	0.57361
Our official submission	0.55115
HP Tuned official model	0.54376
Model w/ Albert context	0.54341

Fig. 7: Scores on the test set

Word Encoder

Siamese Neural Network using a pre-trained neural probabilistic language model([1]) to embed the words

$$OUT = FFNN(NNLM(W_{replaced})) \oplus FFNN(NNLM(W_{replacement}))$$

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Limitations

- Context
- Incorporation of the knowledge base
- Hand-crafted features

References

- [1] Yoshua Bengio et al. "A neural probabilistic language model". In: *Journal of machine learning research* 3.Feb (2003), pp. 1137–1155.
- [2] T. Mitchell et al. "Never-Ending Learning". In: *Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI-15)*. 2015.