

Applying Text-Classification on Question-Answering

An Attempt to Prove the Performance of the Bert-based
Module

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② My Work

③ Conclusion

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Question Answering

- Dataset:SQuAD2

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 - The answer to every question is a segment of text from the corresponding reading passage.
 - In version 2.0, the question might be unanswerable.

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Moduel: Bert

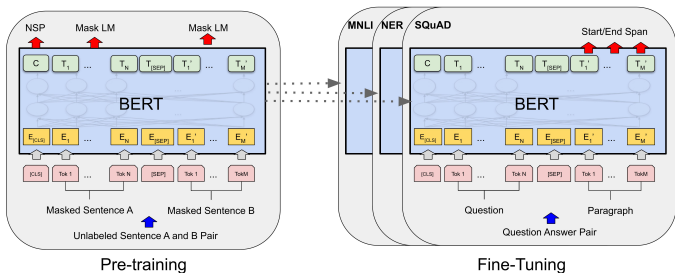
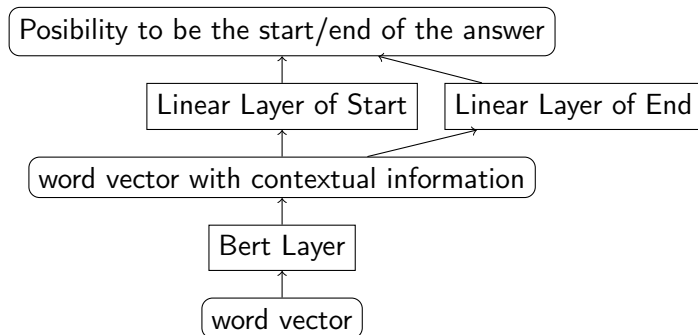


图 1: Bert Demonstration

Moduel: Bert



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Experiment Result
Attention Patterns

3 Conclusion

4 Reference

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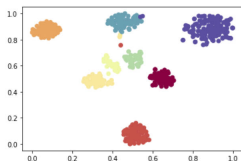
Experiment Result

Attention Patterns

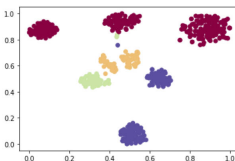
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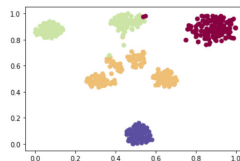
Text Classification



(a) dyed by articles



(b) dyed by manual



(c) dyed by cluster

图 2: tSNE visualizing the paragraph vectors

Manually classified text

表 1: Bert Models on manually classified text

Models	Matric			
	Exact	F1	HasAns F1	NoAns F1
all (std)	65.88	71.02	67.57	74.45
HisGeo (std)	58.97	64.11	69.78	58.43
HisGeo (lim)	51.62	57.35	68.71	45.97
ArtLang (std)	68.88	74.56	66.41	83.57
ArtLang (lim)	63.48	67.96	55.85	81.34
IntroBio (std)	71.86	75.38	71.51	78.94
IntroBio (lim)	60.87	63.24	52.43	73.15
TechSci (std)	68.16	73.14	65.83	79.89
TechSci (lim)	62.55	66.90	60.95	72.41

Unsupervised Classified Text

表 2: XLNet Models on unsupervised classified text

Models	Exact	F1	Matric	
			HasAns F1	NoAns F1
all (std)	75.35	78.62	77.36	80.0
cluster0 (rand)	70.81	74.40	71.05	77.93
cluster0 (lim)	70.69	74.91	72.70	77.23
cluster1 (rand)	71.65	75.22	71.52	78.61
cluster1 (lim)	69.38	73.38	73.04	73.69
cluster2 (rand)	71.55	75.32	73.03	77.68
cluster2 (lim)	71.51	76.02	73.75	78.34
cluster3 (rand)	68.28	71.81	71.92	71.68
cluster3 (lim)	66.11	69.54	72.58	66.17

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Former researches's work

- Pattern 1: Attention to next word.
- Pattern 2: Attention to previous word.
- Pattern 3: Attention to identical/related words.
- Pattern 4: Attention to identical/related words in other sentence.
- Pattern 5: Attention to other words predictive of word.
- Pattern 6: Attention to delimiter tokens.

Other patterns

- Pattern 1: Attention to previous prep. or verb.
- Pattern 2: Attention to the next/previous token in the same entity.
- Pattern 3: Attention to antonym.

Previous prep. or verb.

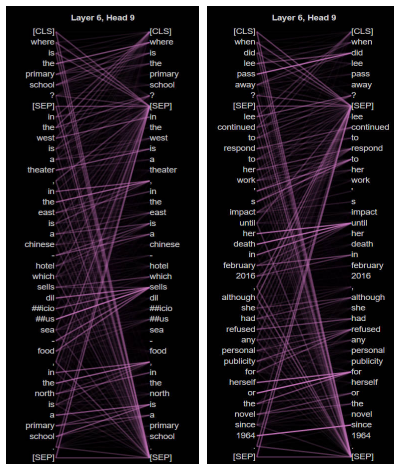


图 3: Attention to previous prep. or verb.

Attention Patterns

next/previous token in the same entity

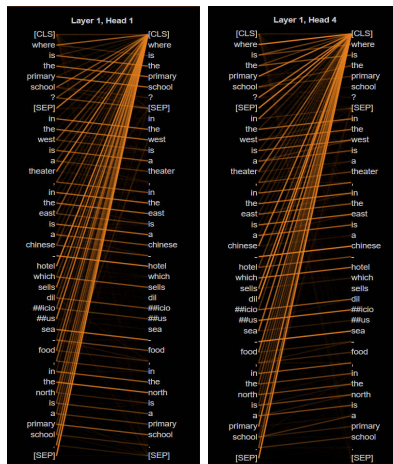


图 4: Attention to next/previous token in the same entity

antonym

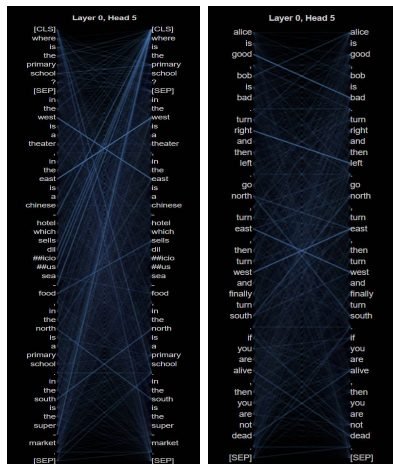


图 5: Attention to antonym

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- attention to identical/related words

- attention to identical/related words
 - find the answer's prompt

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 - find the answer's prompt
- attention to antonym

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 - deal with 'not/no'

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 - find the answer's prompt
- attention to antonym
 - deal with 'not/no'
- attention to previous/next prep. or verb
 - deal with questions about location/objects
- attention to the token in the same entity is enhanced
 - find the answer's span
- So writing style and word frequency in fine-tuning have little influence.

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ref

Q&A!

Thanks!