

# Pun Location

Group 13:

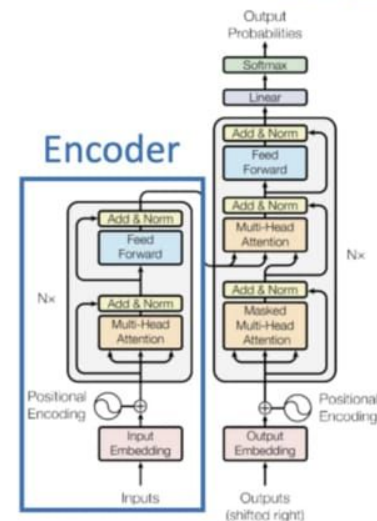
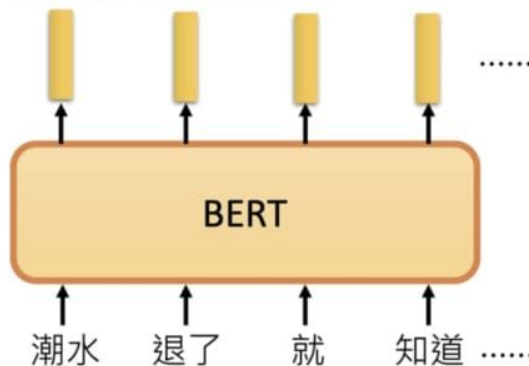
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# Introduction

## Bidirectional Encoder Representations from Transformers (BERT)

- BERT = Encoder of Transformer  
Learned from a large amount of text  
without annotation





# Pre-processing and External resources

- `input_ids`
- `attention_mask`
- `token_type_ids`



## What kind of word sense representation used and experimented in your model

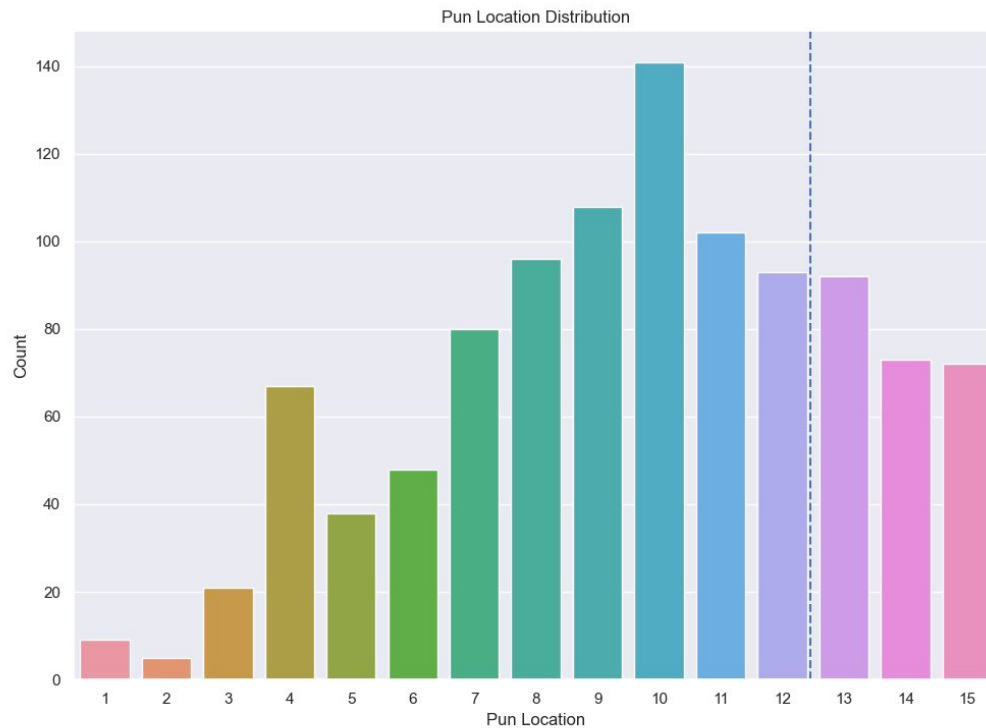
```
words_embeddings = self.word_embeddings(input_ids)
position_embeddings = self.position_embeddings(position_ids)
token_type_embeddings = self.token_type_embeddings(token_type_ids)
```



# Task Analysis

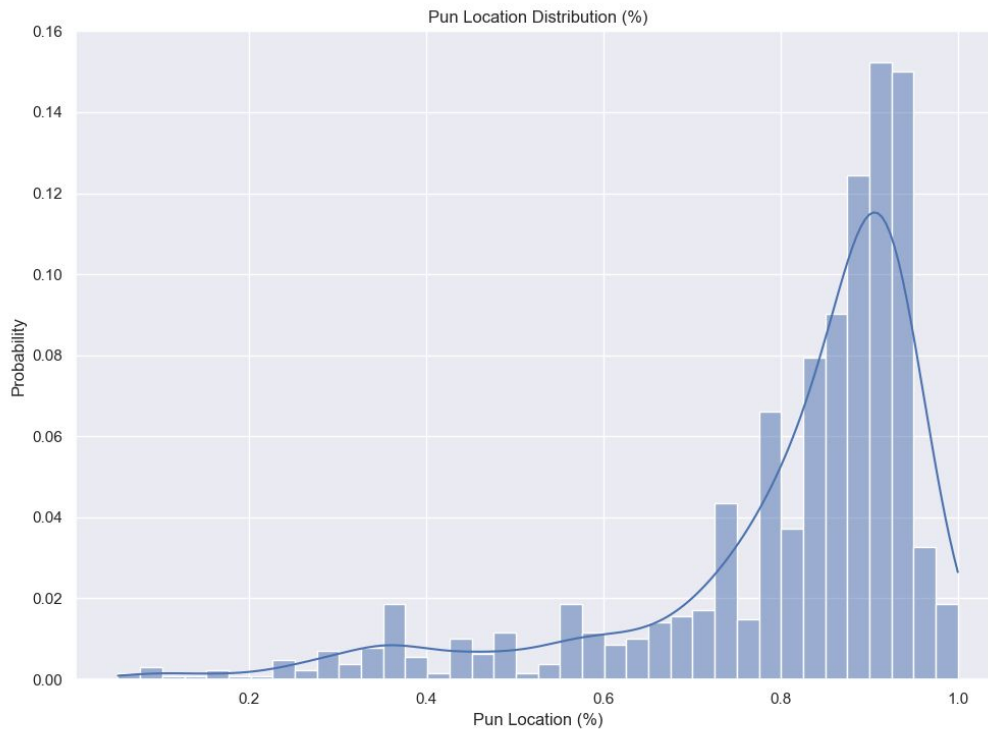


# Location



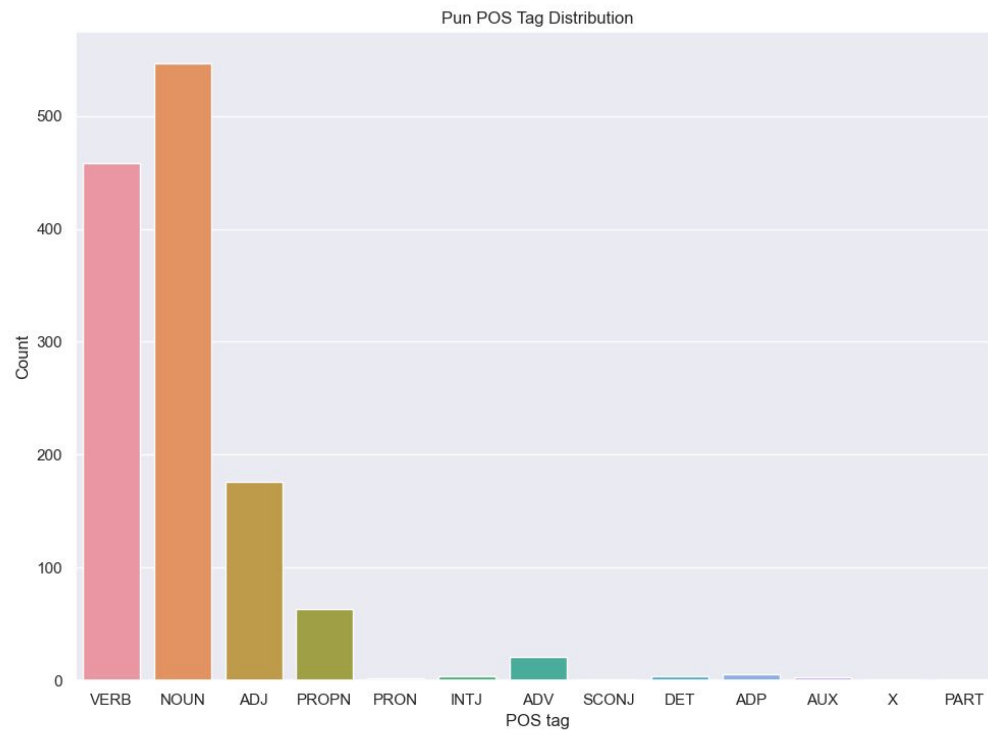


# Location - Percentage





# POS Tag







# Task and Our method



## Task : Pun location

### Input

Text consists of a sequence of  $N$  words  $\{w_1, w_2, \dots, w_N\}$  and one of them is a pun.

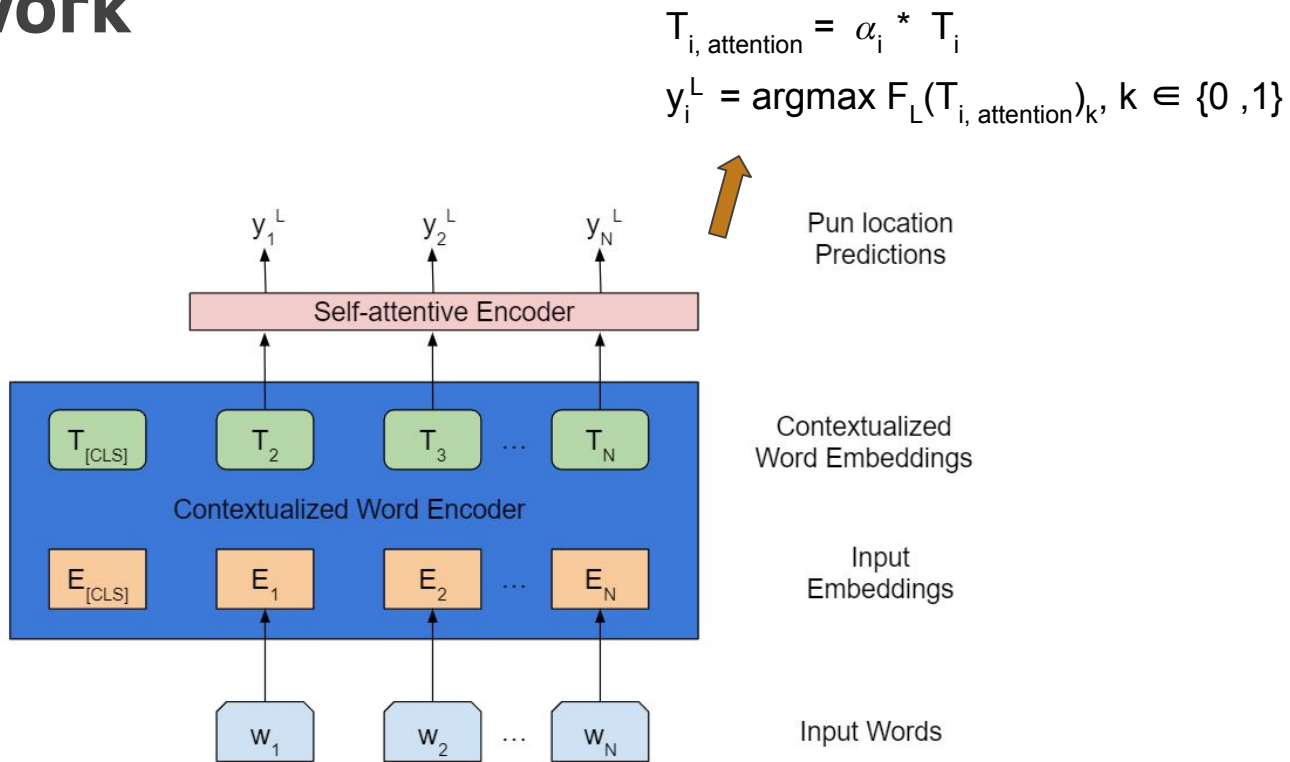
### Goal

For each word  $w_i$ , we would like to predict a binary label  $y_i^L$  that indicates if  $w_i$  is a punning word.

# Framework



BERT





# Model: BERT BASE

```
class BertConfig(object):
    """Configuration class to store the configuration of a `BertModel`.
    """
    def __init__(self,
                  vocab_size_or_config_json_file,
                  hidden_size=768,
                  num_hidden_layers=12,
                  num_attention_heads=12,
                  intermediate_size=3072,
                  hidden_act="gelu",
                  hidden_dropout_prob=0.1,
                  attention_probs_dropout_prob=0.1,
                  max_position_embeddings=512,
                  type_vocab_size=2,
                  initializer_range=0.02):
```



# Experiment Results



# Experiment Results

- default :
  - batch size : 32
  - epoch : 3
  - learning rate : 0.00005
  - pretrained model : bert-based-cased

batch size	score
16	0.90000
32	0.90625
64	0.86250

learning rate	score
0.00003	0.85625
0.00005	0.90625
0.00008	0.85625
0.00010	0.83125

epoch	score
2	0.88125
3	0.90625
4	0.87500

pretrained model	score
bert-based-uncased	0.88125
bert-based-cased	0.90625

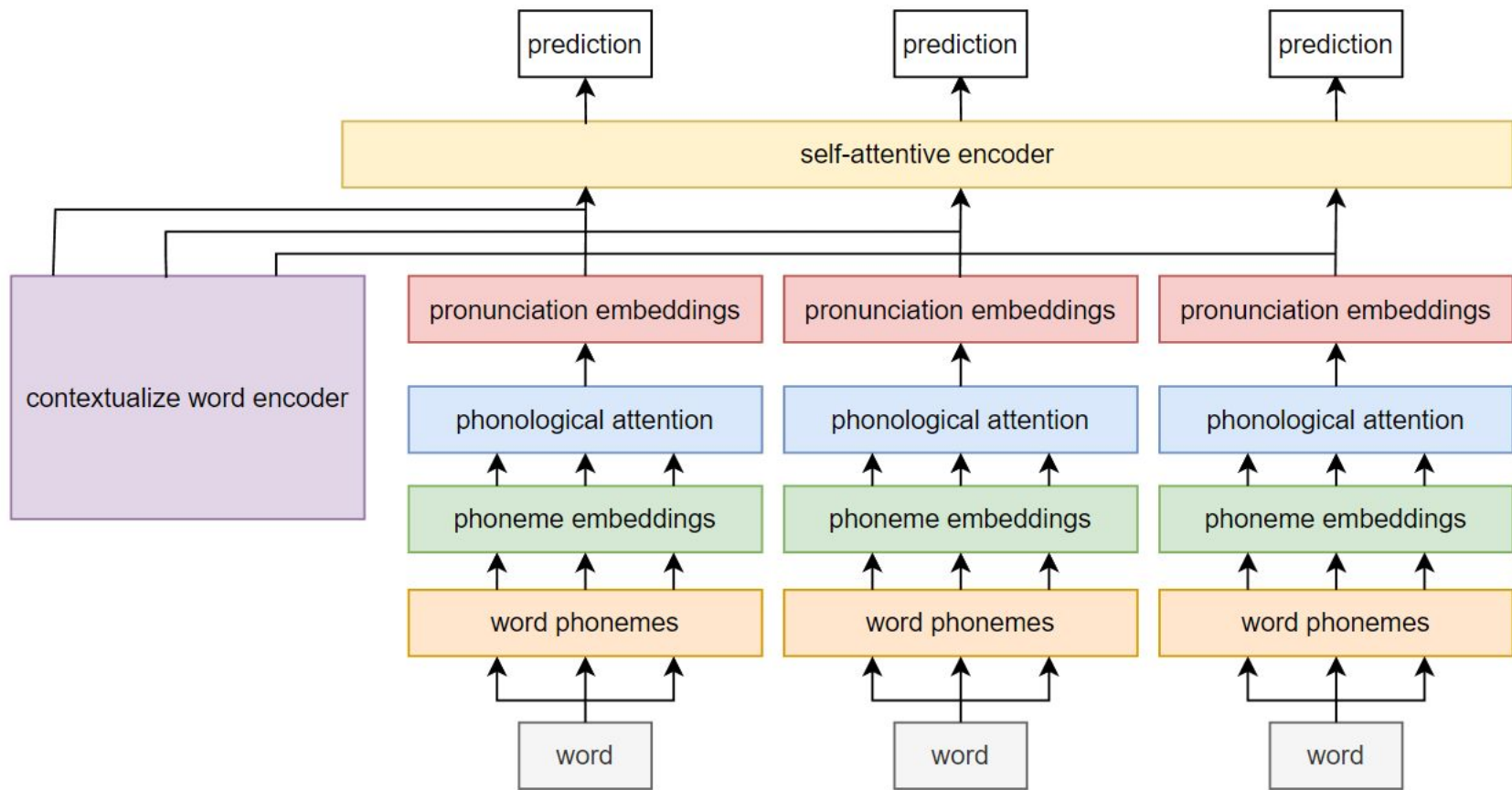
random seed 誤差	0.0125
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# Experiment Results

- “The Boating Store Had Its Best Sail Ever”: Pronunciation-attentive Contextualized Pun Recognition
  - contextualized word embedding
  - pronunciation embedding
- phoneme : 人類語言中能區別意義的最小聲音單位
  - e.g. nature -----> N, EY, CH, ER







# Experiment Results

- same result
  - same contextualized word embeddings
  - too little data
    - 1200 train data
    - 320 test data



# Error Analysis and Discussion

3 type :

- word related to pun
- pun inside of an idiom
- pun with seldom used meaning



## Word Related to Pun

- Scientists have created a flea from a scratch.
  - predict : flea
  - pun : scratch
- My friend came around for dinner. We ate for 20 minutes, then he fainted again.
  - predict : fainted
  - pun : came
- I'm a sap for tree jokes.
  - predict : tree
  - pun : sap



# Pun Inside of an Idiom

- My job as head chef at a top rated restaurant is in jeopardy because my latest culinary creation was called a recipe for disaster.
  - idiom : a recipe for disaster
  - pun : recipe
- The astronauts said their experience on the moon was out of this world.
  - idiom : out of this world
  - pun : world



# Pun with Seldom Used Meaning

- She was only a fruit vendor's daughter, but, my, she had big melons.
  - pun : melons
- "Waiter, there's a fly in my soup!" "Force of habit, sir, the chef used to be a tailor."
  - pun : fly
- If an animal loses its tail it should shop at a retail store.
  - pun : retail



**Thank You**