SPEECH RECOGNITION ACCOUNTBOT

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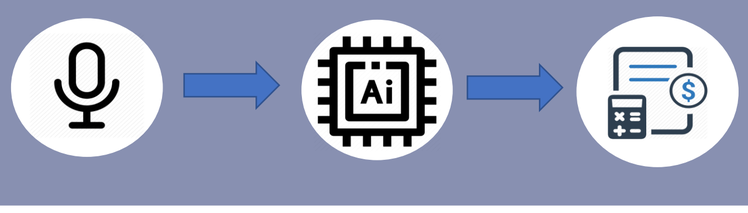
Abstract

Bookkeeping is one of the daily routine for most people to track their money. But it takes a lot of time on the complicated procedure. In this project, we propose a speech recognition robot named AccountBot to keep the income and expenditure automatically. Specifically, we first apply a speech recognition module for speech input. Then, we build BERT-BiLSTM and BERT-MLP. Finally, we extract the item and money amount from the speech content.



Introduction

Press confirm if the sentence is correct

Press and start speech recognition

Clear the record area

Experiment & Result

(1)Dataset

	expense	income
train	99	99
valid	40	31

the size of training set and validation set

(2)Result

(a)ID F1 score

	income	expense
BERT-MLP	0.91	0.92

(b)SF Recall

	O	B-item	I-item	B-money	I-money
BERT-MLP	0.95	0.69	0.90	0.96	0.99
BERT-BiLSTM	0.95	0.86	0.92	0.96	1.00

(c)SF Precision

	O	B-item	I-item	B-money	I-money
BERT-MLP	0.92	0.89	0.83	1.00	0.98
BERT-BiLSTM	0.95	0.88	0.90	1.00	0.98

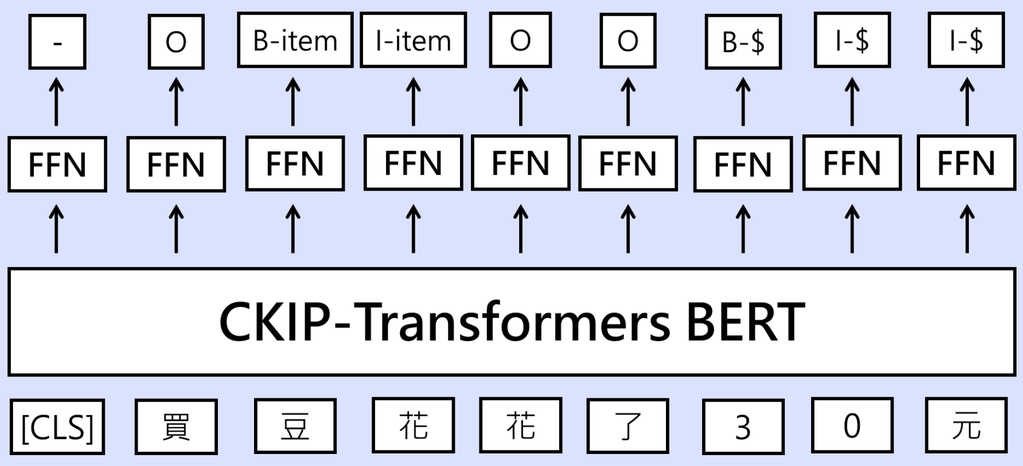
(d)SF F1 score

	O	B-item	I-item	B-money	I-money
BERT-MLP	0.94	0.78	0.86	0.98	0.99
BERT-BiLSTM	0.95	0.87	0.91	0.98	0.99

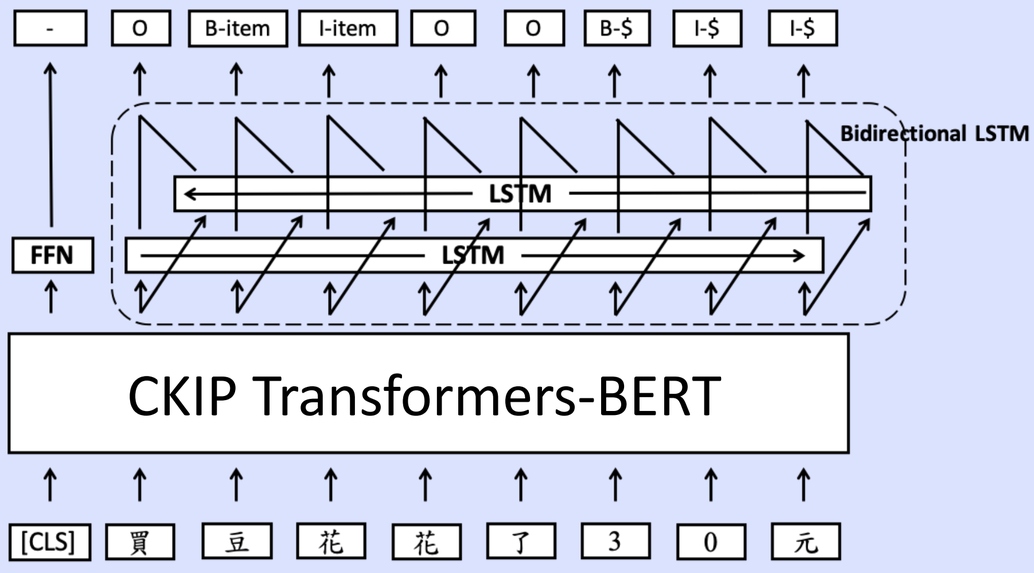
Method

(1)For intent detection(ID), we predict the intent by BERT-MLP

(2)For slot filling(SF), we predict the slots by BERT-BiLSTM & BERT-MLP



(a)BERT-MLP



(b)BERT-BiLSTM