

國立交通大學

資訊科學與工程研究所

碩士論文

基於卷積神經網路的論文自動生成技術

A CNN-based Automatic Thesis Generation Technique

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中華民國 109 年 12 月

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摘 要

在大 AI、ML 時代，自己寫論文已經不再是個有效率的做法，因此我們提出了一套基於卷積神經網路的論文自動生成技術。

關鍵字：卷積神經網路、機器學習



A CNN-based Automatic Thesis Generation Technique

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ABSTRACT

In the era of Big AI and ML, it is not efficient to write thesis by yourself anymore so that we propose a CNN-based approach for automatic thesis generation.

Keywords: convolutional neural network, machine learning

誌 謝

在此感謝吳小松 教授在論文上給我的指導...

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王大明 謹誌于
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Contents

中文摘要	i
英文摘要	ii
誌謝	iii
Contents	iv
List of Tables	vi
List of Figures	vii
1 Introduction	1
2 Background	2
3 Design	3
3.1 Feature Extraction	3
3.2 Thesis Modeling	3
3.3 Thesis Generation	3
4 Implementation	4
5 Evaluation	5
5.1 Datasets	5
5.2 Experiment Design	5
5.3 Experimental Results	5
5.3.1 Training Time	5
5.3.2 Example of Generated Thesis	5

6	Related Work	6
7	Discussion	7
8	Conclusion	8
	References	9



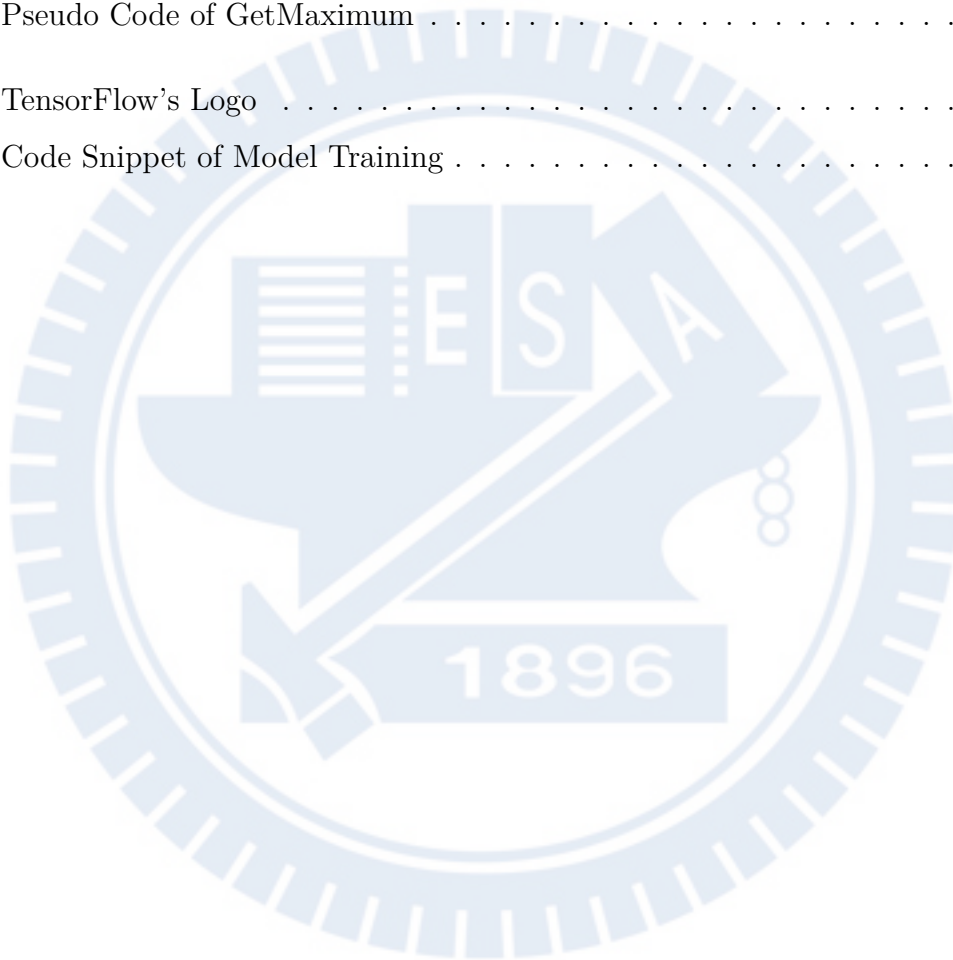
List of Tables

1	Training Time	5
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List of Figures

1	Pseudo Code of GetMaximum	3
2	TensorFlow's Logo	4
3	Code Snippet of Model Training	4



Chapter 1

Introduction

Here is the introduction.



Chapter 2

Background

Here is the background.



Chapter 3

Design

Here is the design.

3.1 Feature Extraction

3.2 Thesis Modeling

3.3 Thesis Generation

Algorithm 1 Get Maximum of Two Numbers

```
1: procedure GETMAXIMUM( $a, b$ )  
2:   if  $a \geq b$  then  
3:     return  $a$   
4:   else  
5:     return  $b$ 
```

Figure 1: Pseudo Code of GetMaximum

Chapter 4

Implementation

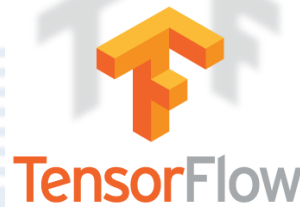


Figure 2: TensorFlow's Logo

We implement the prototype on TensorFlow[1] platform. Figure 2 shows the logo of TensorFlow, and Figure 3 shows the code snippet of model training.

```
import tensorflow as tf

def train(total_loss, global_step):
    # Variables that affect learning rate.
    num_batches_per_epoch = NUM_EXAMPLES_PER_EPOCH / FLAGS.batch_size
    decay_steps = int(num_batches_per_epoch * NUM_EPOCHS_PER_DECAY)

    # Decay the learning rate exponentially.
    lr = tf.train.exponential_decay(INITIAL_LEARNING_RATE,
                                    global_step,
                                    decay_steps,
                                    LEARNING_RATE_DECAY_FACTOR,
                                    staircase=True)
    tf.summary.scalar('learning_rate', lr)
```

Figure 3: Code Snippet of Model Training

Chapter 5

Evaluation

Here is the evaluation.

5.1 Datasets

5.2 Experiment Design

5.3 Experimental Results

5.3.1 Training Time

Table 1 lists the training time of different datasets.

Table 1: Training Time

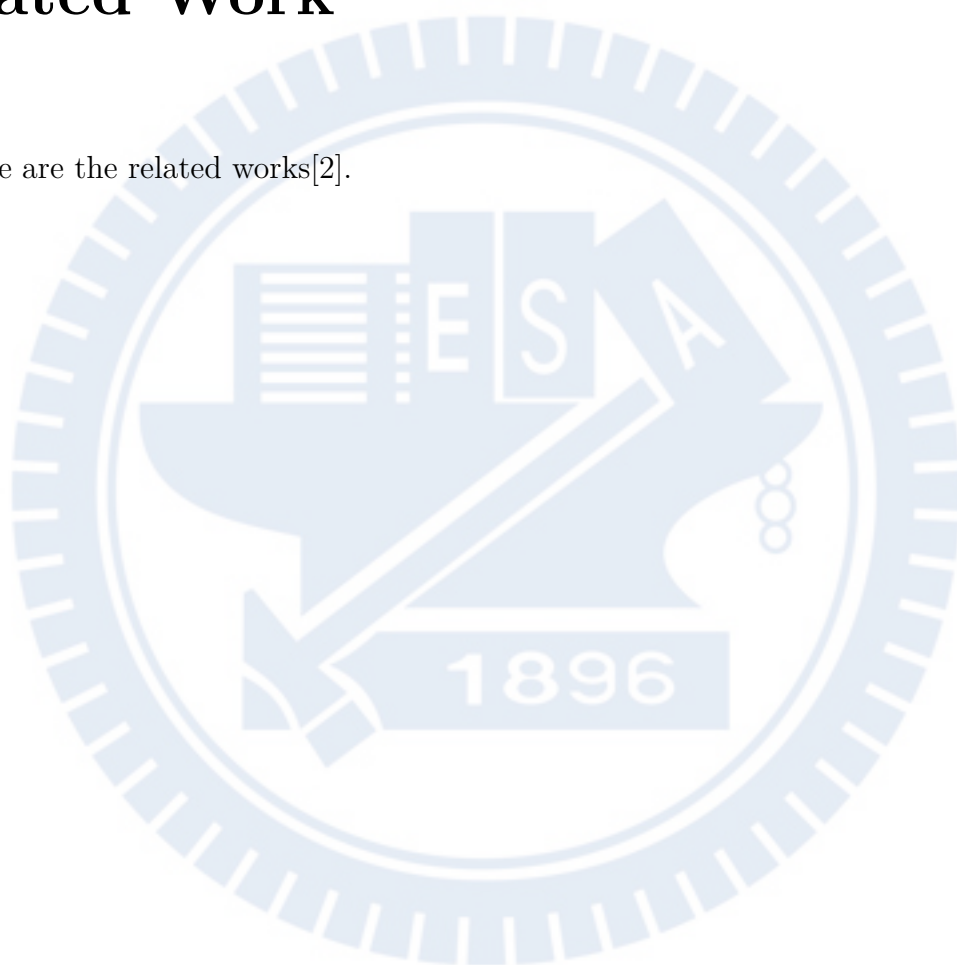
Dataset	Training Time
A	1 hour
B	2 hours
C	3 hours
D	4 hours
E	5 hours

5.3.2 Example of Generated Thesis

Chapter 6

Related Work

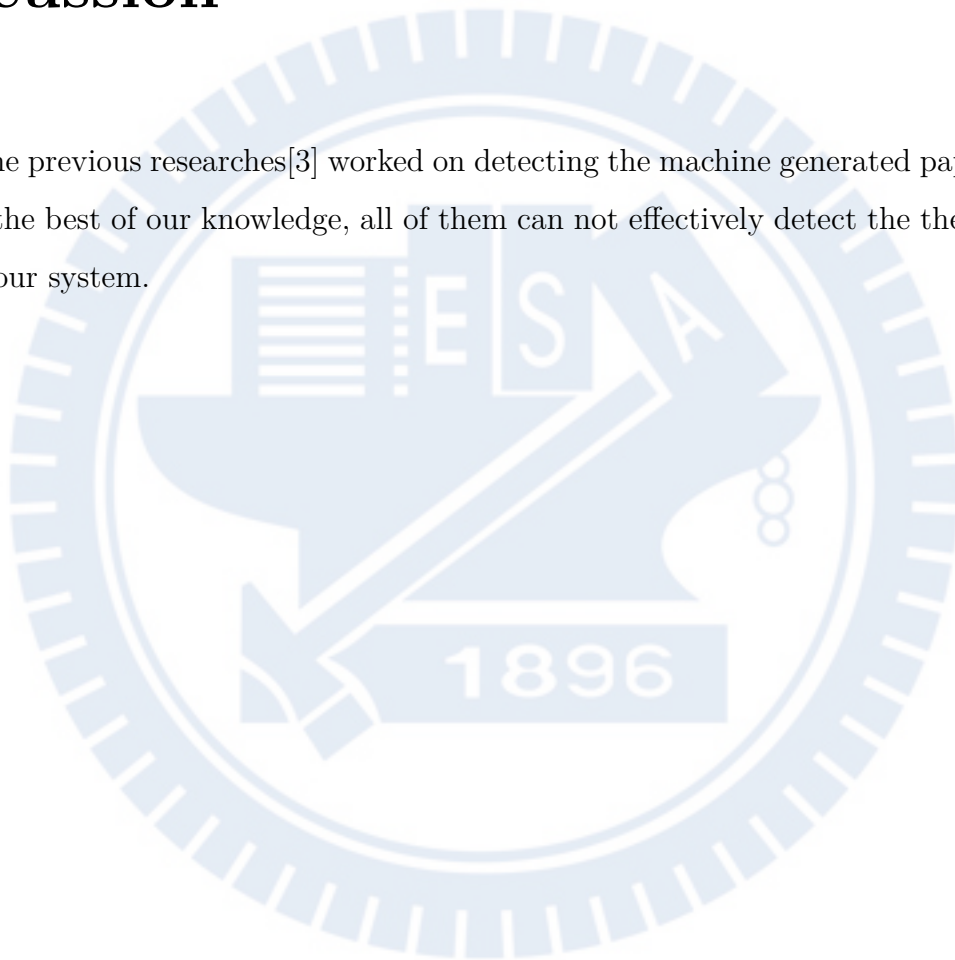
Here are the related works[2].



Chapter 7

Discussion

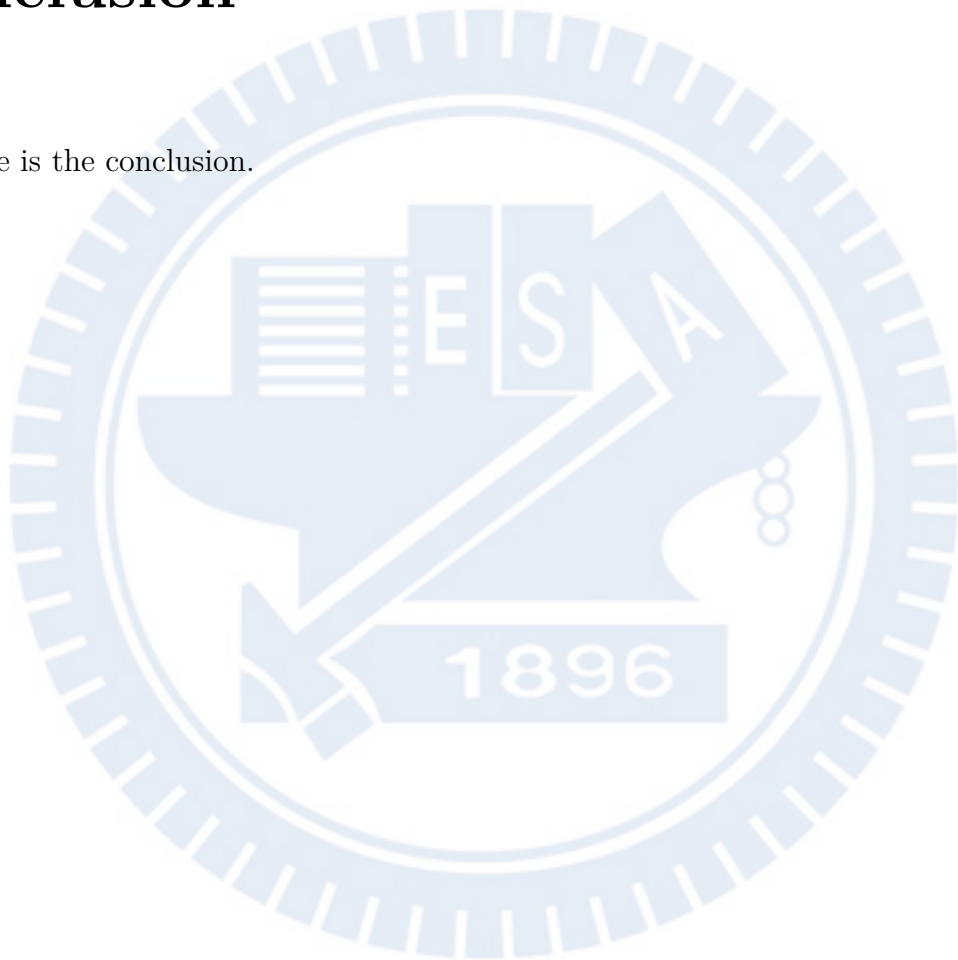
Some previous researches[3] worked on detecting the machine generated paper. However, to the best of our knowledge, all of them can not effectively detect the thesis generated by our system.



Chapter 8

Conclusion

Here is the conclusion.



References

- [1] *TensorFlow*. URL: <https://pdos.csail.mit.edu/archive/scigen/>.
- [2] MIT CSAIL. *SCIgen - An Automatic CS Paper Generator*. URL: <https://pdos.csail.mit.edu/archive/scigen/>.
- [3] Jiping Xiong and Tao Huang. “An effective method to identify machine automatically generated paper”. In: *Knowledge Engineering and Software Engineering, 2009. KESE'09. Pacific-Asia Conference on*. IEEE. 2009, pp. 101–102.