Presentation Script

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Time: 5 minutes

581 words

Slide 1: Title

Hi everyone, thank you for coming to my presentation. My name is Jiachen Li; I am doing a Master of Computer Science and research in the Natural Language Process field. My supervisor is Jianzhong Qi.

Slide 2: Research question

My research question is Can the pre-trained language models use to improve the current solution to natural sentence generation from the knowledge graph problem? Note that there are two technical terms going on here. One is the pre-trained language models and the 'natural sentence generation from the knowledge graph'. We will explain those two terms in the following slides.

Slide 3: Pre-trained model

The instance of the pre-trained language model that will be used in this research is BERT, which was developed by Google. The model is designed based on a multi-layer bidirectional Transformer encoder, which means that the model will turn words into vectors in embedding space based on the context before and after the word. The model was trained on BooksCorpus and English Wikipedia, two extremely large corpora and learnt syntactic and semantic information. The best thing about BERT is that it can be easily applied to any NLP downstream tasks by simply adding an output layer to the existing neural architecture.

Slide 4: NLG from the knowledge graph

The natural language generation from the knowledge graph is a sub-task of NLG, which can also be from images, tables, speeches or any other unstructured data. On the right-hand side is

an example of the input and output of such a task. The state-of-art model is the GTR-LSTM model proposed by Trisedya.

Slide 5: Why this research?

We commit to this research because NLG is not only used for Artificial Intelligence or question-answering systems but also for Metaverse, which is expected to have a compound annual growth rate in the market value of 43.20% between 2022 to 2030 and eventually reach a spectacular 39.25 billion USD market value in 2030. However, the GTR-LSTM model did not make use of the pre-trained model, so naturally, we would want to experiment with what would happen if we put two things together.

Slide 6: Scenario 1

The task in the first scenario is to map an entity to its type to help the model handle unseen entities. An example would be Li to name and Beijing to city. The original model used API calls for type information, and we propose to use NER-BERT to solve it as it's a named entity recognition problem. The model will be evaluated using those three benchmarks mentioned in the original paper. Also, we will record the running time, memory and internet usage. The experiment expects to contribute an internet-free model with potentially higher accuracy.

Slide 7: Scenario 2

The task in the second scenario is entity alignment which is merging two entities referring to the same thing in different ways to expand the graph. An example is Beijing and Peking. The original baseline model used Joint learning to learn entity names and their relation with other entities. We proposed to use the BERT embedding learnt syntactic and semantic knowledge, as we discussed before. We will evaluate the model using DWY-NB and other benchmarks in the original paper while recording running time and memory usage. The experiment expects to contribute a model with faster running speed and likely higher accuracy.

Slide 8: Thank you

And that's all the content of the presentation. Thank you for listening.