"End of Story": A commonsense-augmented encoder-decoder model for story completion

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1. Introduction

We propose to adapt BART (Bidirectional and Auto-Regressive Transformer) [1] model, fine-tuned with the ROCStories[2] dataset and augmented with commonsense knowledge from ConceptNet[3] to generate story endings and tackle the Story Cloze Test. Story Cloze Test evaluates a model's accuracy of classifying whether a sentence is a plausible or implausible story ending for the given story body.

2. Motivation and Challenges

We are motivated to create a lightweight non-proprietary model to generate an ending for a given story body. However, one challenge is that a story ending is often open-ended; in other words, there are likely multiple candidates that are good story endings, and each story ending may have different semantics or structure, which diminishes the usefulness of similarity metrics like perplexity or BLUE for evaluation. This poses a challenge for evaluating generated endings, given there is no single correct answer. Therefore, we aim to mainly tackle the Story Cloze Test, which is a classification problem; then, we'd like to explore the model's potential for story ending generation.

3. Datasets

- **ROCStories Corpora and Story Cloze Test** [2], a dataset with five-sentence common-sense stories
- **ConceptNet** [3], a dataset with general common sense knowledge

4. Algorithms and models

We propose building a text-generation model capable of continuing a given story to its logical ending. In order to support our task of generating story endings, we need a model that is good at coherent and fluent text generation and can be augmented with external knowledge for the task. Considering the compute resources available and the need for a balance between model capability and efficiency, we have decided to go with the **BART model**. This model has an encoder-decoder structure that helps to build rich context before text generation.

The model will be fine-tuned on the **ROCStories** dataset, where it will learn patterns in

the story progression including sequence of events, causal relationships and will also learn to recognize sentiments and other subtle characteristics that are useful for creating plausible story endings.

To further enhance the model's understanding of the world and its ability to generate realistic and contextually accurate continuations, we plan to augment the ROCStories[2] dataset with relevant common sense knowledge from **ConceptNet**[3]. This external knowledge will help the model grasp relationships between real-world concepts that may not explicitly be mentioned in the story itself but are vital for coherent and logical story endings.

For evaluation, we will use the well known **Story Cloze Test,** with **accuracy** as the metric. This test presents a story along with both correct and incorrect endings, allowing us to evaluate the model's accuracy in selecting or generating the appropriate story conclusion.

5. Related papers

1. Lewis et al. (2019) *BART: Denoising Sequence-to-Sequence Pre-training for Natural Language Generation, Translation, and Comprehension*
2. Mostafazadeh et al. (2016) *A Corpus and Cloze Evaluation for Deeper Understanding of Commonsense Stories*
3. Speer et al. (2016) *ConceptNet 5.5: An Open Multilingual Graph of General Knowledge*
4. Chen et al. (2019) *Incorporating Structured Commonsense Knowledge in Story Completion*
5. Huang et al. (2021) *Story Ending Generation with Multi-Level Graph Convolutional Networks over Dependency Trees*