

News Title Generation

DS 595 Natural Language Processing

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Outline

1. References
2. Introduction
3. Methodology

References

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Introduction

Problem Statement

Given the document D , we want to generate string h_D such that it summarizes the content in D with accurate information and concise.

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Example

D : A handful of other journalists and I had camped outside Basra for days, hanging back out of range of the mortars that puffed in the dry, empty land. We spent our time interviewing the refugees that trickled out of the town or the British soldiers waiting to move in.

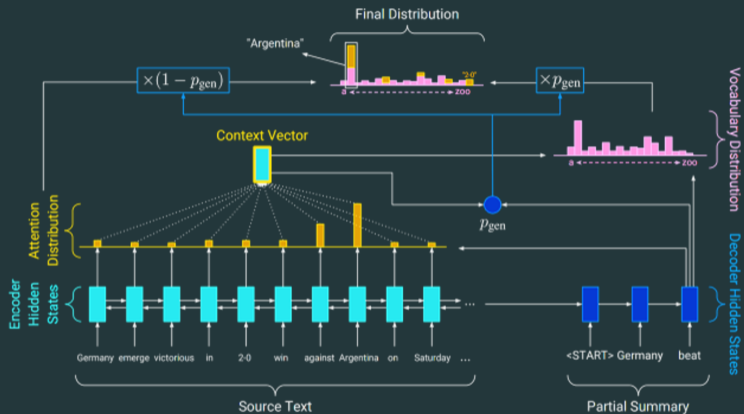
h_D : Basra, 2003: Looting and Mystery
ROUGE-L = 0.07407, BLEU = 0.614788

Methodology

- As suggested by [Sutskever et al., 2014], RNN model can yield us the promising result but it also yield "artifacts" to the result.

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- Bidirectional RNN [Nallapati et al., 2016] shows the better performance.

Architecture



Use bidirectional LSTM along with attention to encode and generate context vector [See et al., 2017].

- What if we combined the method proposed by [See et al., 2017] or [Raffel et al., 2020] with generative model?

- What if we combined the method proposed by [See et al., 2017] or [Raffel et al., 2020] with generative model?
- That is, what if we treat [See et al., 2017] or [Raffel et al., 2020] model as the generator and we then create discriminator on top of that?

- NYT news dataset

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- >100K entries of title, topic, abstract, keywords

- Metric of evaluation: BLEU[Papineni et al., 2002] and ROUGE-I[Lin, 2004]

- Try pretrained T5 (base) model.

Example

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\hat{h}_D : journalists had camped outside basra for days, hanging back out of range of mortars

ROUGE-L = 0.44444, BLEU = 0.50813

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Problem: The input itself is already summarized. Fine-tuning?

- Fine-tune it

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\hat{h}_D : we spent our time interviewing the refugees that trickled out of Basra.
ROUGE-L = 0.36065, BLEU = 0.52664

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ROUGE-L = 0.36065, BLEU = 0.52664

Problem: Problem with fine tuning? Summarization can't generate the title?

To-do

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- Replicate the model from [See et al., 2017] for reference (Next week)
- Create GAN model on top/try to change the model to min-max optimization (This week + Next week)
- Evaluate and finalize the model (December)