

Final Presentation: Neural Network Doc Summarization

CS4624 Multimedia, Hypertext, and Information Access

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Outline

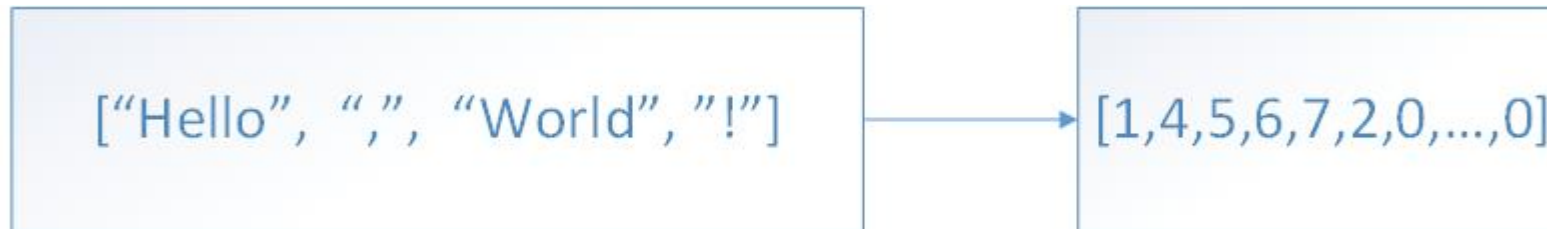
- ▶ Project Overview
- ▶ Data Preprocess
- ▶ Model Architecture
- ▶ Training
- ▶ Model Performance
- ▶ References and Acknowledgements

Project Overview

- ▶ Purpose: generate summarization from long document through deep learning.
- ▶ Model: sequence to sequence model with RNN.
- ▶ Dataset: CNN/Daily Mail news.

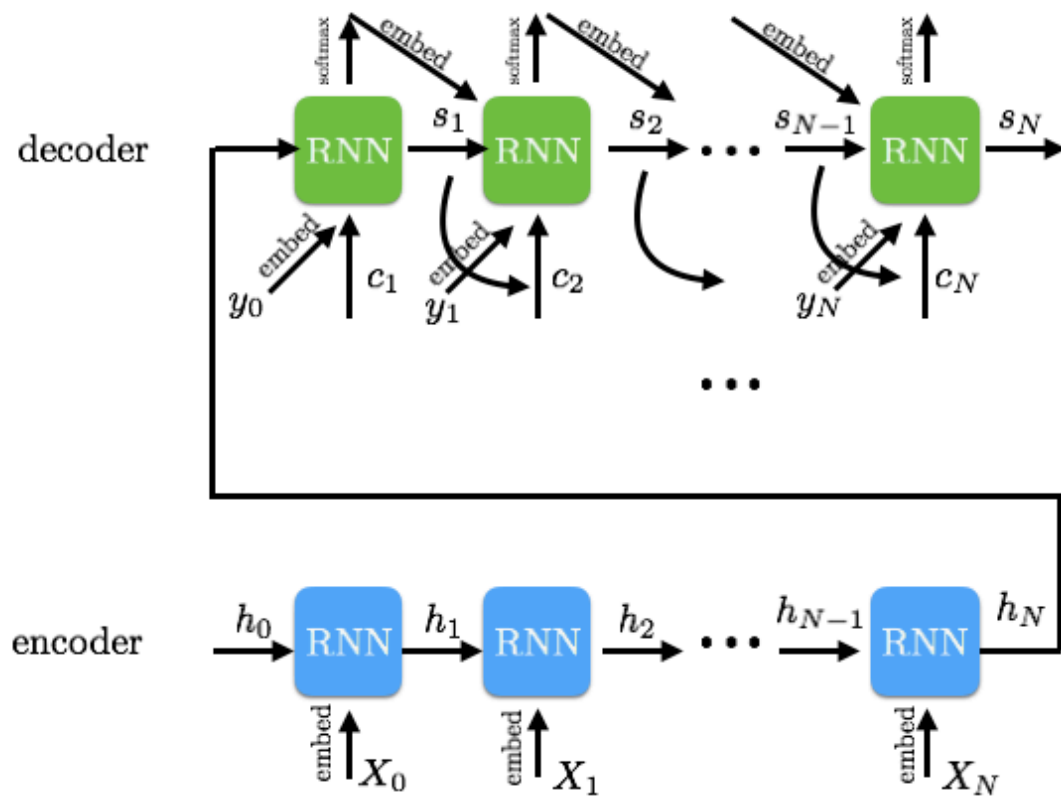
Data Preprocess

- ▶ Vocab size: 50000
- ▶ Input sequence max length: 400
- ▶ Target sequence max length: 100



Model Architecture

Sequence to Sequence Model



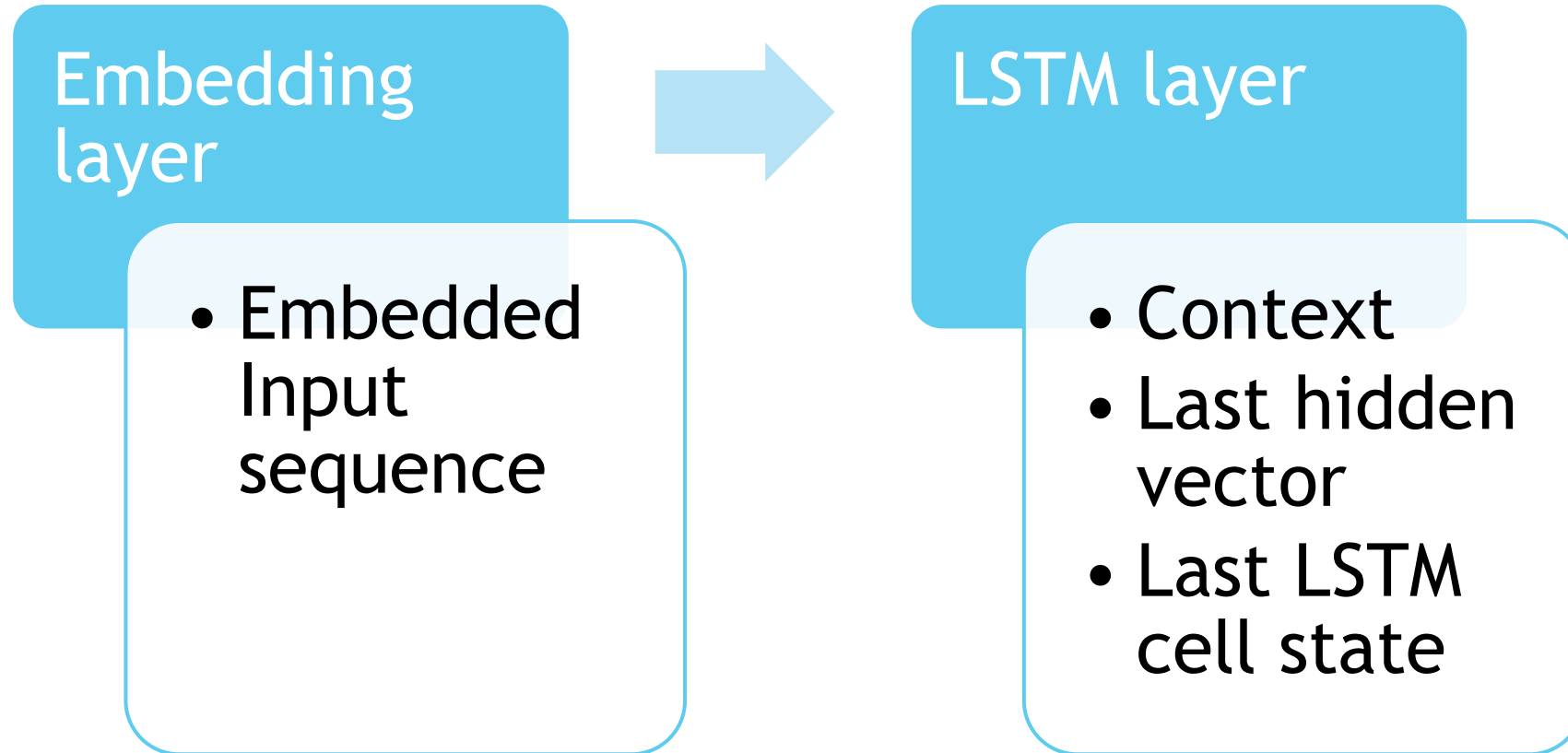
Encoder Architecture

Encoder

Shared embedding layer

Bidirectional LSTM layer

Encoder Workflow



Decoder Architecture

Decoder

Shared embedding layer

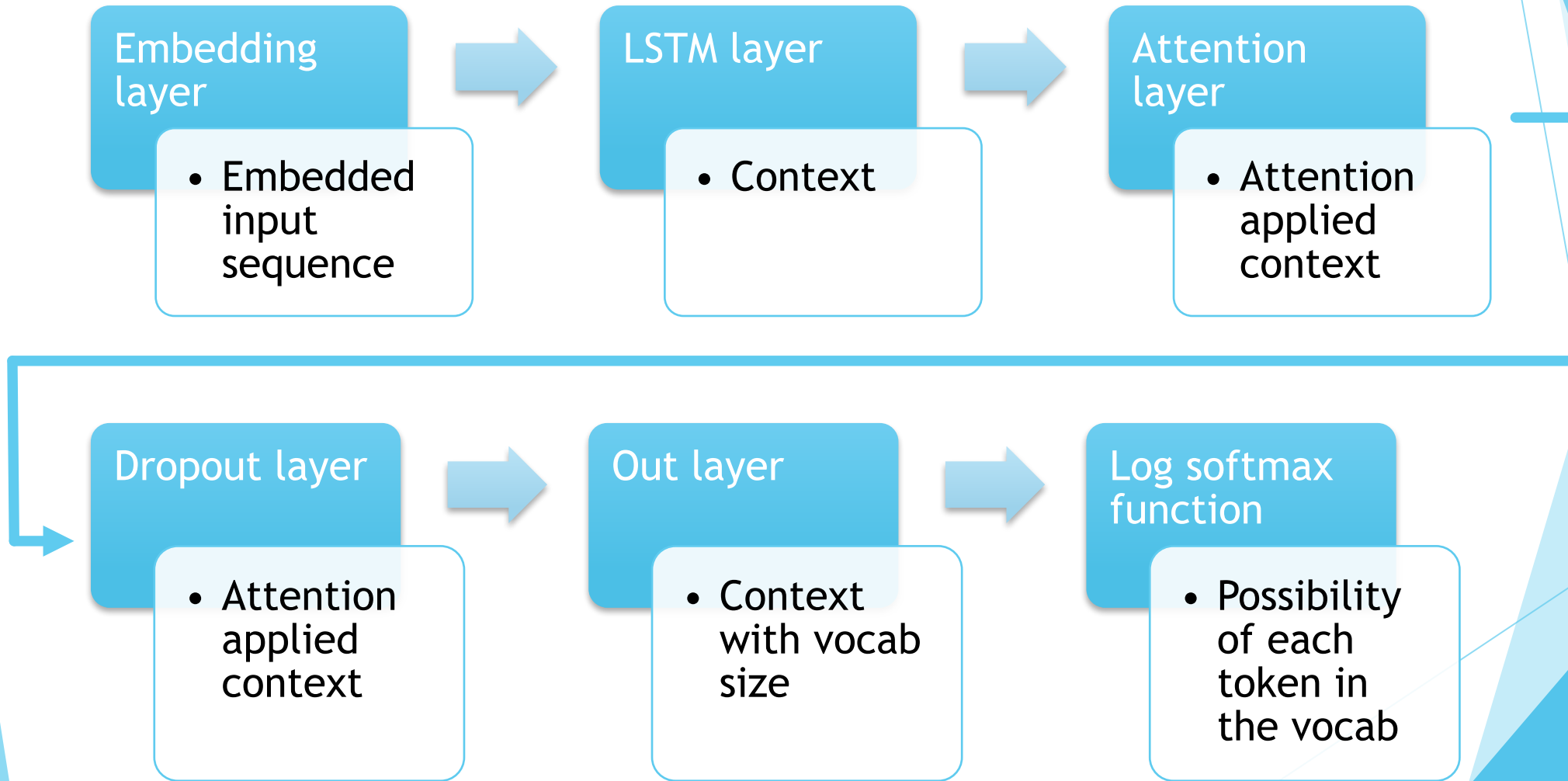
LSTM layer

MLP attention Layer

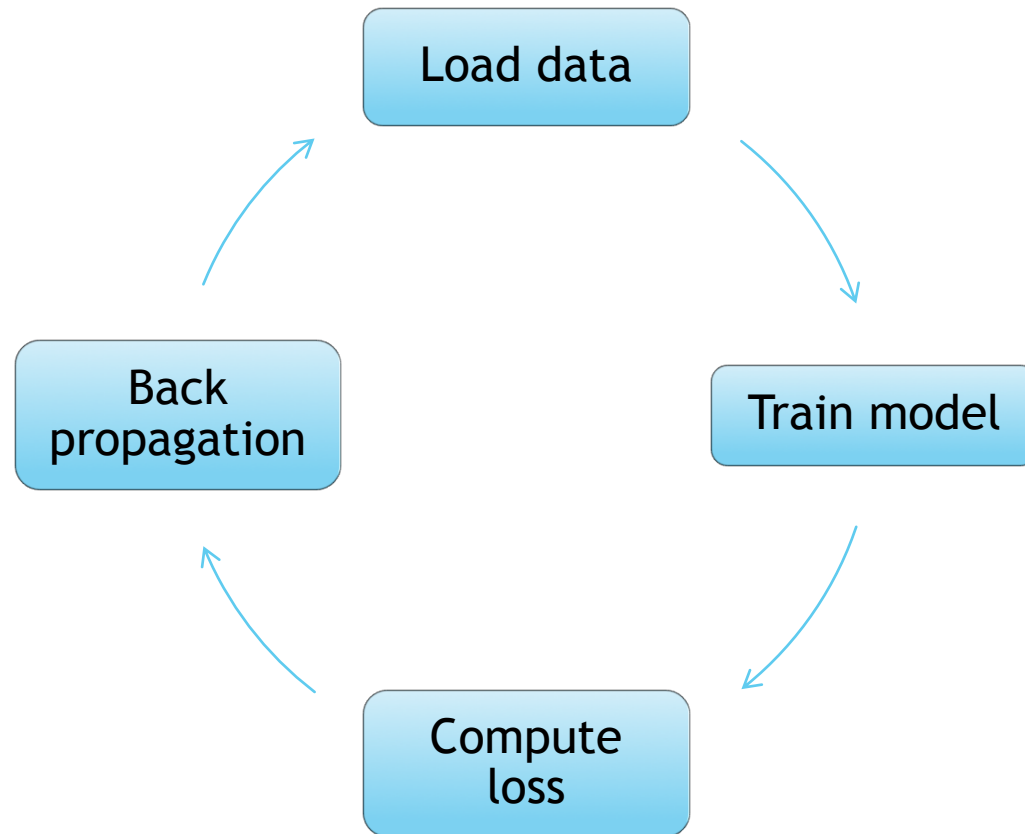
Dropout layer

Out layer

Decoder Workflow



Training Workflow



Training Architecture

- ▶ Optimizer: SGD
- ▶ Criterion: NLLLoss

- ▶ Batch size: 3
- ▶ Epoch number: 100
- ▶ Loss: 6.7 → 1.4
- ▶ Learning rate: 1
- ▶ Hidden size: 256
- ▶ Word embedding size: 128

Model Performance

- ▶ Generated summary: “have beaten three of their last three league games . the <UNK> scored in the second half of the last minute . the win takes all three points to move ahead of champions league place”
- ▶ Human-produced summary: “two goals from lionel messi help barcelona to a 3-1 win over almeria . kaka bags brace as real madrid coast to 3-0 victory at athletic bilbao . inter milan move up to second place in serie a with 2-0 win over chievo .”

Acknowledgements

- ▶ Client: Yufeng Ma
- ▶ Mr. Ma is a PhD student at Virginia Tech. He worked as the client of this project and guided the project through all project phases.



Reference

- ▶ Gokumohandas. Recurrent Neural Networks (RNN) - part 3: encoder-decoder. <https://theneuralperspective.com/2016/11/20/recurrent-neural-networks-rnn-part-3-encoder-decoder/>. Web. accessed: March 26, 2018.