Paper Name

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Abstract

1 Introduction

Machine Comprehension (MC) and Question Answering (QA) were increasingly popular in the past few years. Almost all human knowledge are recorded as text. Just like what we did in school doing reading comprehension questions, extracting information from a specific piece of context would enable artificial intelligence to get to a higher level. Different kinds of natural language processing structures such as Gated Recurrent Unit (GRU) and Long Short Term Memory (LSTM) has been introduced.

These years, there are several QA database that has been released. In this paper, we describe a way using an improved version of bi-directional attention flow for the task of question answering using recently published Stanford Question Answering Dataset (SQuAD) which consisted of approximately 100K question-answer pairs with the context.

The objective of the study was to extract the answer for a given question from a certain context. The model was built based on the previous hierarchical multi-stage bi-directional attention flow (BiDAF)) model (Minjoon Seo et al. 2017) while evaluating the correctness using corresponding F1 score and exact-match (EM) score.

2 Models

Our machine learning model (Figure 1) is hierachical multi-stage with 5 layers.

2.1 Word Embedding Layer

The word embedding layer maps each individual word into a high-dimension vector space. It is a set of pretrained GloVe word vectors using datasets provided by Wikipedia 2014 and Gigaword 5. The dimensionality of the vectors are 100.

2.2 Contextual Embedding Layer

In this layer, we introduced a Bi-directional Long Short-Term Memory (BiLSTM) network as our encoding layer. Contexts and questions will be fed into the network seperately, while the output from each state will all be recorded. Note that the output of will be 2d-dimension vectors (where d is 100 in our model) due to the concatenation of two output for each direction of the network.

2.3 Attention Flow Layer

The attention layer is introduced to link together the information from the question and the information given by the context. It tells us how important it is that we should pay attention to each word vector in the text (both contexts and questions). The input of this layer is contextual vector of the context H and the question U.

3 Headings: first level

First level headings are lower case (except for first word and proper nouns), flush left, bold and in point size 12. One line space before the first level heading and 1/2 line space after the first level heading.

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4 Citations, figures, tables, references

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Indicate footnotes with a number[1] in the text. Place the footnotes at the bottom of the page on which they appear. Precede the footnote with a horizontal rule of 2 inches (12 picas).[2]

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All artwork must be neat, clean, and legible. Lines should be dark enough for purposes of reproduction; art work should not be hand-drawn. The figure number and caption always appear after the figure. Place one line space before the figure caption, and one line space after the figure. The figure caption is lower case (except for first word and proper nouns); figures are numbered consecutively.

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[1] Sample of the first footnote

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Table 1: Sample table title

PART	DESCRIPTION
Dendrite	Input terminal
Axon	Output terminal
Soma	Cell body (contains cell nucleus)

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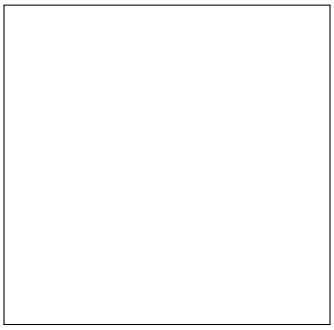

Figure 1: Sample figure caption.

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All tables must be centered, neat, clean and legible. Do not use hand-drawn tables. The table number and title always appear before the table. See Table 1.

Place one line space before the table title, one line space after the table title, and one line space after the table. The table title must be lower case (except for first word and proper nouns); tables are numbered consecutively.

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Acknowledgments

Use unnumbered third level headings for the acknowledgments. All acknowledgments go at the end of the paper. Do not include acknowledgments in the anonymized submission, only in the final paper.

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[1] Alexander, J.A. & Mozer, M.C. (1995) Template-based algorithms for connectionist rule extraction. In G. Tesauro, D. S. Touretzky and T.K. Leen (eds.), *Advances in Neural Information Processing Systems 7*, pp. 609-616. Cambridge, MA: MIT Press.

[2] Bower, J.M. & Beeman, D. (1995) *The Book of GENESIS: Exploring Realistic Neural Models with the GEneral NEural SImulation System.* New York: TELOS/Springer-Verlag.

[3] Hasselmo, M.E., Schnell, E. & Barkai, E. (1995) Dynamics of learning and recall at excitatory recurrent synapses and cholinergic modulation in rat hippocampal region CA3. *Journal of Neuroscience* **15**(7):5249-5262.