# THE GOLDILOCKS PRINCIPLE: READING CHILDREN'S BOOKS WITH EXPLICIT MEMORY REPRESENTATIONS

- author Felix Hill

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# Main contributions of this paper

1. Set up a new corpus - Children Book Test
2. Applying Memory network model into Machine reading comprehension

# Look details of the corpus

Features

- Randomly selecting 10 nouns or Named entities from paragraph.
- The first 20 sentences are considered as document.
- There 10 answer candidates are in same category.
  - Named Entity
  - Nouns
  - Verbs
  - Preposition

"Well, Miss Maxwell, I think it only fair to tell you that you may have trouble with those boys when they do come. Forewarned is forearmed, you know. Mr. Cropper was opposed to our hiring you. Not, of course, that he had any personal objection to you, but he is set against female teachers, and when a Cropper is set there is nothing on earth can change him. He says female teachers can't keep order. He 's started in with a spite at you on general principles, and the boys know it. They know he'll back them up in secret, no matter what they do, just to prove his opinions. Cropper is sly and slippery, and it is hard to corner him."

"Are the boys big ?" queried Esther anxiously.

"Yes. Thirteen and fourteen and big for their age. You can't whip 'em -- that is the trouble. A man might, but they'd twist you around their fingers. You'll have your hands full, I'm afraid. But maybe they'll behave all right after all."

Mr. Baxter privately had no hope that they would, but Esther hoped for the best. She could not believe that Mr. Cropper would carry his prejudices into a personal application. This conviction was strengthened when he overtook her walking from school the next day and drove her home. He was a big, handsome man with a very suave, polite manner. He asked interestedly about her school and her work, hoped she was getting on well, and said he had two young rascals of his own to send soon. Esther felt relieved. She thought that Mr. Baxter had exaggerated matters a little.

$S$:
1 Mr. Cropper was opposed to our hiring you .
2 Not , of course , that he had any personal objection to you , but he is set against female teachers , and when a Cropper is set there is nothing on earth can change him .
3 He says female teachers ca n't keep order .
4 He 's started in with a spite at you on general principles , and the boys know it .
5 They know he 'll back them up in secret , no matter what they do , just to prove his opinions .
6 Cropper is sly and slippery , and it is hard to corner him . ''
7 `` Are the boys big ? ''
8 queried Esther anxiously .
9 `` Yes .
10 Thirteen and fourteen and big for their age .
11 You ca n't whip 'em -- that is the trouble .
12 A man might , but they 'd twist you around their fingers .
13 You 'll have your hands full , I 'm afraid .
14 But maybe they 'll behave all right after all . ''
15 Mr. Baxter privately had no hope that they would , but Esther hoped for the best.
16 She could not believe that Mr. Cropper would carry his prejudices into a personal application .
17 This conviction was strengthened when he overtook her walking from school the next day and drove her home .
18 He was a big , handsome man with a very suave , polite manner .
19 He asked interestedly about her school and her work , hoped she was getting on well , and said he had two young rascals of his own to send soon .
20 Esther felt relieved .

$q$: She thought that Mr. _____ had exaggerated matters a little .

$C$: Baxter, Cropper, Esther, course, fingers, manner, objection, opinion, right, spite.

$a$: Baxter

Figure 1: **A Named Entity question from the CBT** (right), created from a book passage (left, in blue). In this case, the candidate answers $C$ are both entities and common nouns, since fewer than ten named entities are found in the context.

# Memory network
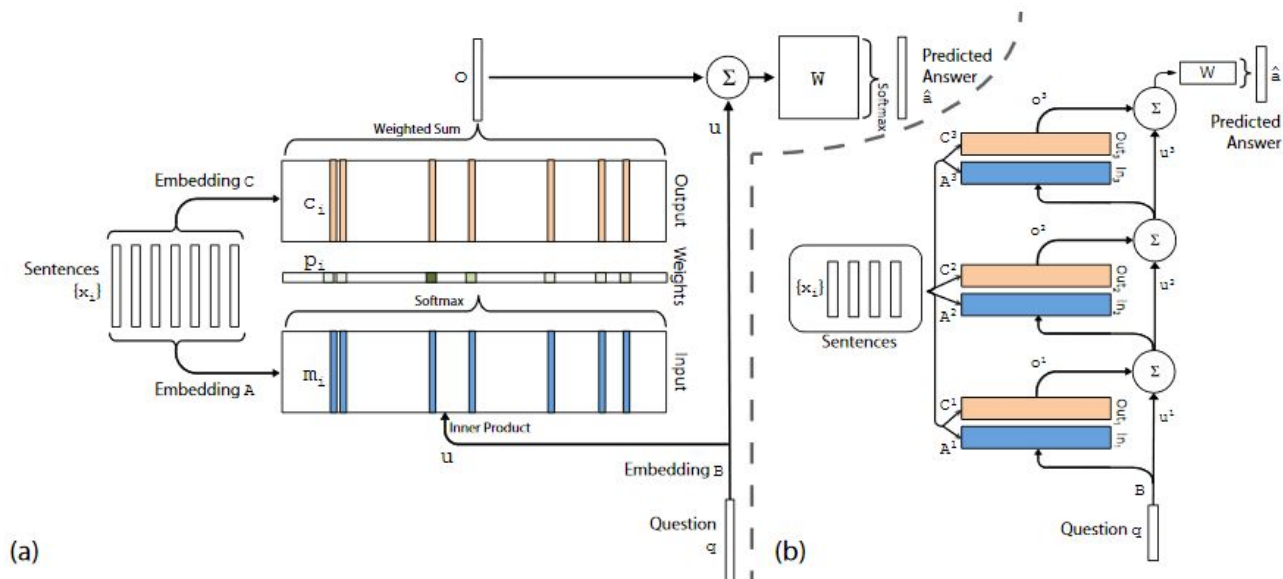


Figure 1: (a): A single layer version of our model. (b): A three layer version of our model. In practice, we can constrain several of the embedding matrices to be the same (see Section 2.2).

Model structure graph

cited "End-To-End Memory Networks" Sainbayar Sukhbaatar, et.

# End to End Memory Networks

- Seq2seq neural network model
- Reading materials
- Word, sentence, paragraph, document embedding
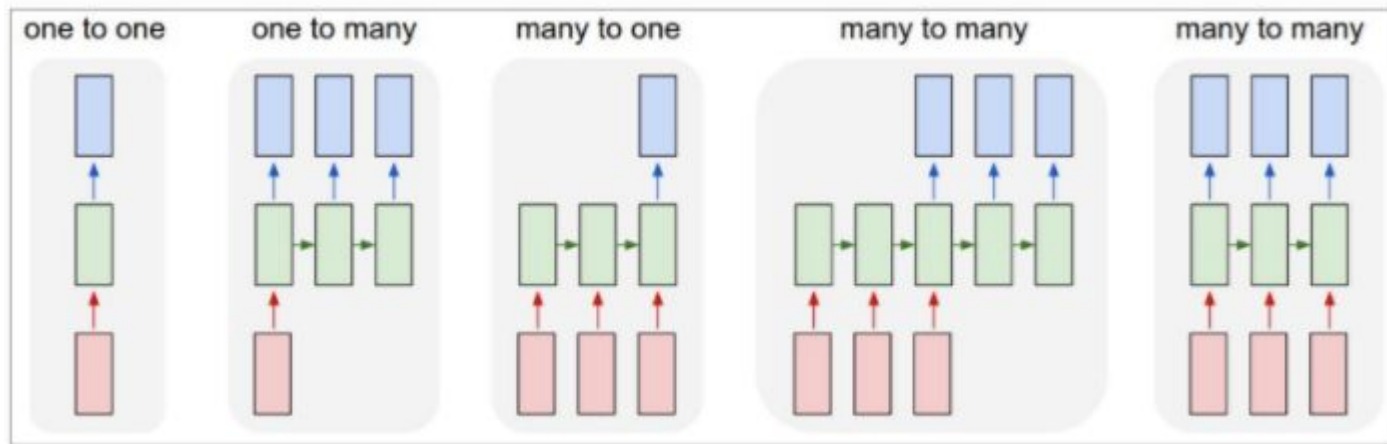


Recurrent neural network architecture

# My current idea

Study statistical Natural language processing & Neural network

Focus on Machine reading comprehension

Reasons

1. Having prior knowledge on "probability", "linear algebra", "calculus", I can learning more about word vector, statistical NLP
2. As Elizebthe masters linguistics, using syntactic and semantic parsing, then we can combine these two methods to implement higher accuracy in the future
3. My background is software engineering and have strong programming skill.

Share

All related materials are in github repository

https://github.com/yipersevere/masterProjectInUTA