CS 585 - Intro to NLP

Yes/No Question Answering

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Problem

Answering Question using supporting data.

Dataset

Facebook bAbI dataset [1]:

- Simulated
- Human-readable
- Limited Vocabulary
- 1000 Train / 1000 Test
- Balanced

```
John went to the bathroom.
Sandra took the football there.
Mary journeyed to the kitchen.
John journeyed to the bedroom.
```
1 Story

```
Is John in the Bedroom?
```
YES

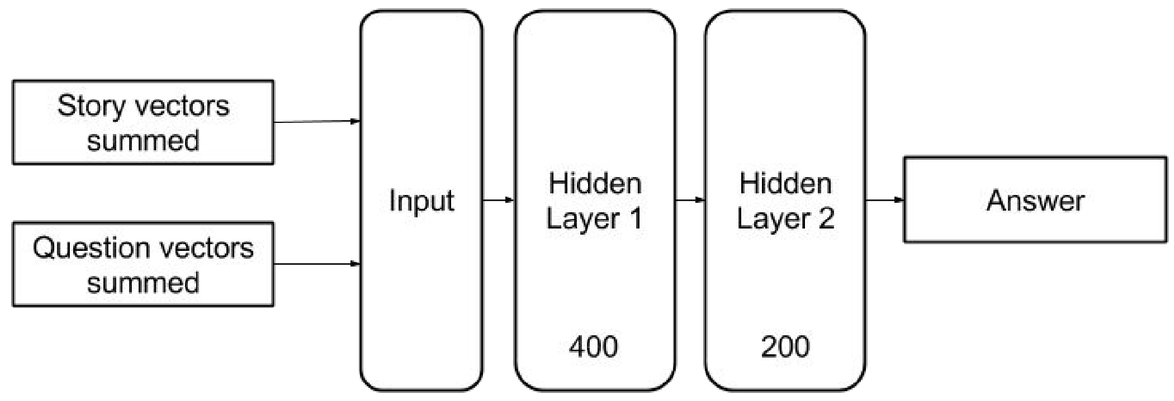
2 Question

3 Answer

Solution

- FCNN (Baseline)
- MemN2N[2]

FCNN (Baseline)



- 50-dimensional GloVe[3] vectors
- Log loss
- 20 epochs

MemN2N

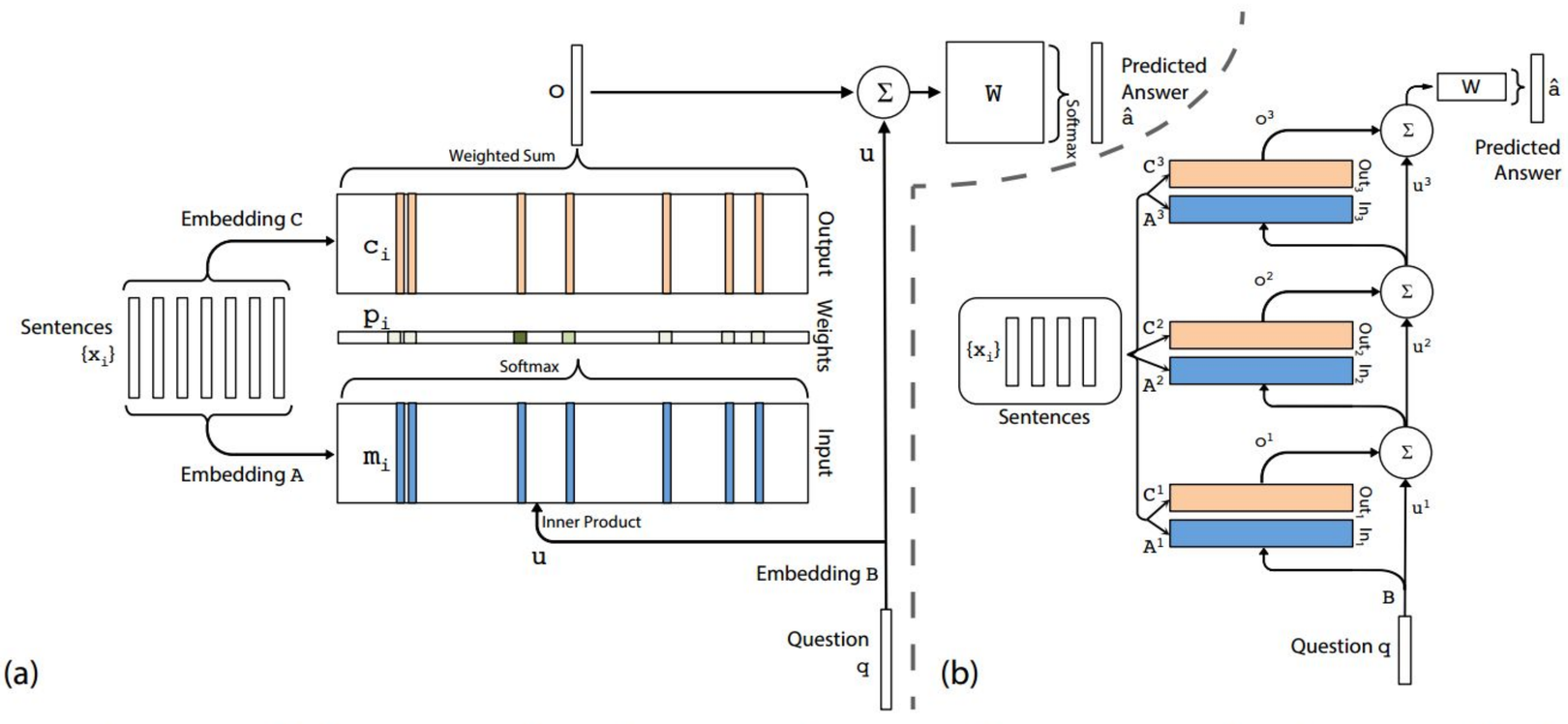


Figure 1: (a): A single layer version of our model. (b): A three layer version of our model. In practice, we can constrain several of the embedding matrices to be the same (see Section 2.2).

- Smooth version of Memory Networks
- Easy to train as they can be trained end-to-end.
- Trained for 100 epochs
- 3 hops
- 0.01 learning rate
- Cross-entropy loss

- **Position Encoding:** Encode order of words in a sentence
- **Temporal Encoding:** Encode order of sentences in story.
- **Random noise regularization:** Add dummy memories

Results

Model	Classification Accuracy
FCNN	50.3%
MemN2N	87.4%

References:
[1] Weston, Jason, et al. "Towards ai-complete question answering: A set of prerequisite toy tasks." arXiv preprint arXiv:1502.05698 (2015).APA
[2] Sukhbaatar, Sainbayar, Jason Weston, and Rob Fergus. "End-to-end memory networks." Advances in neural information processing systems. 2015.APA
[3] Pennington, J., Socher, R., & Manning, C. (2014). Glove: Global vectors for word representation. In Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP) (pp. 1532-1543).