

CUTKB at NTCIR-14 QALab-PoliInfo Task

Toshiki Tomihira, Yohei Seki
University of Tsukuba Ibaraki, Japan

Abstract

Due to the development of social media, the rapid spread of fake news is a serious problem. We focused on automatic estimation of fact-checkability. To verify the fact-checkability in the sentences correctly, it is essential to focus on the sentences which contain the evidence of the facts. We investigate whether the model combining CNN and LSTM is effective to check the facts.

Purpose

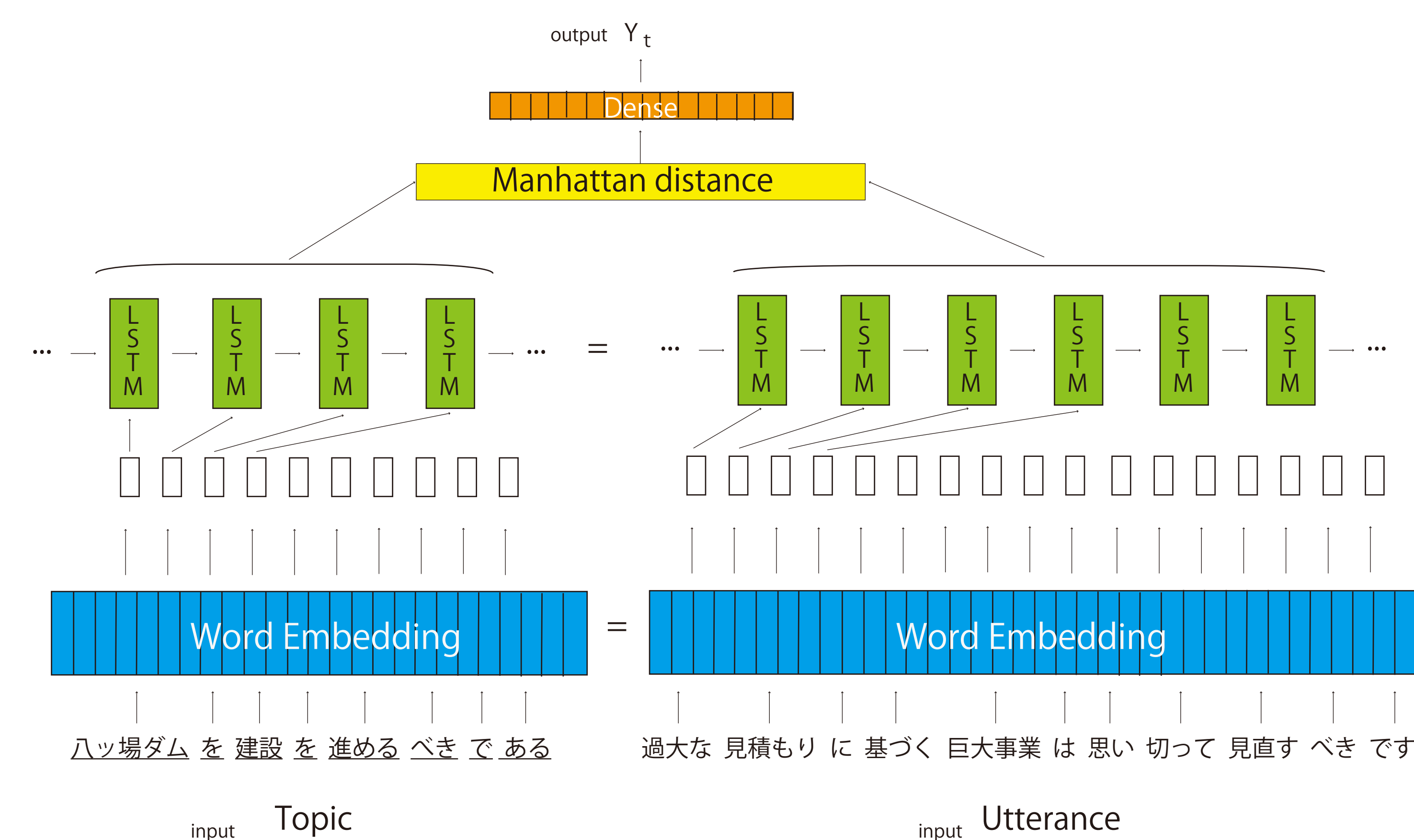
We challenged the classification subtask in NTCIR-14 QALab-PoliInfo, by focusing on checking facts in the Minutes relating to the politics.

Approach

Relevance

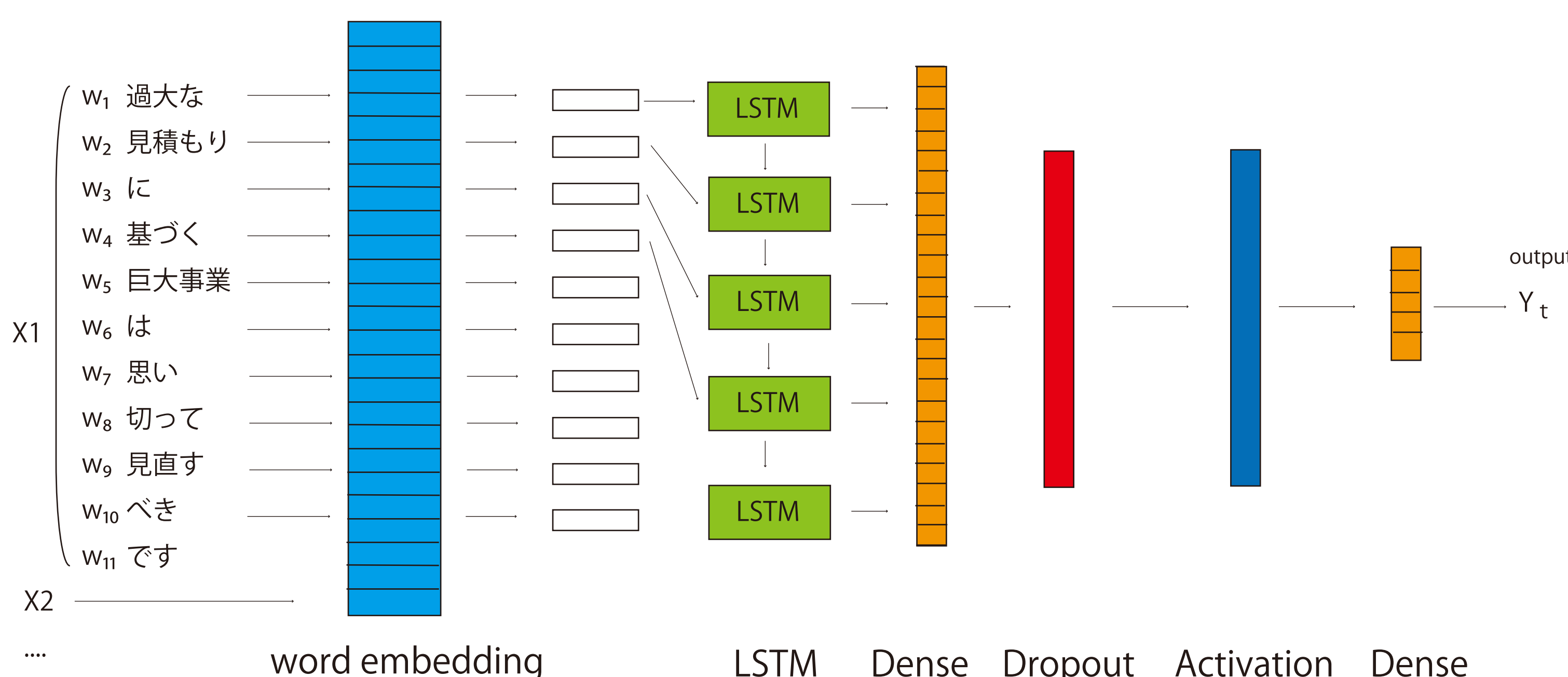
- Binary classification: "relevance" or "irrelevance"
- Pair of input are "Topic" and "Utterance"
- We defined optimizer as Manhattan distance between two LSTMs obtained from the topic and from the utterance.

$$\text{optimizer} = \exp(-\|h^{(left)} - h^{(right)}\|_1)$$



Stance

- Three classification: "support", "disapproval", "no matter"
- We use simple LSTM model.
- The loss function is sparse categorical crossentropy.
- The activation function is ReLU.

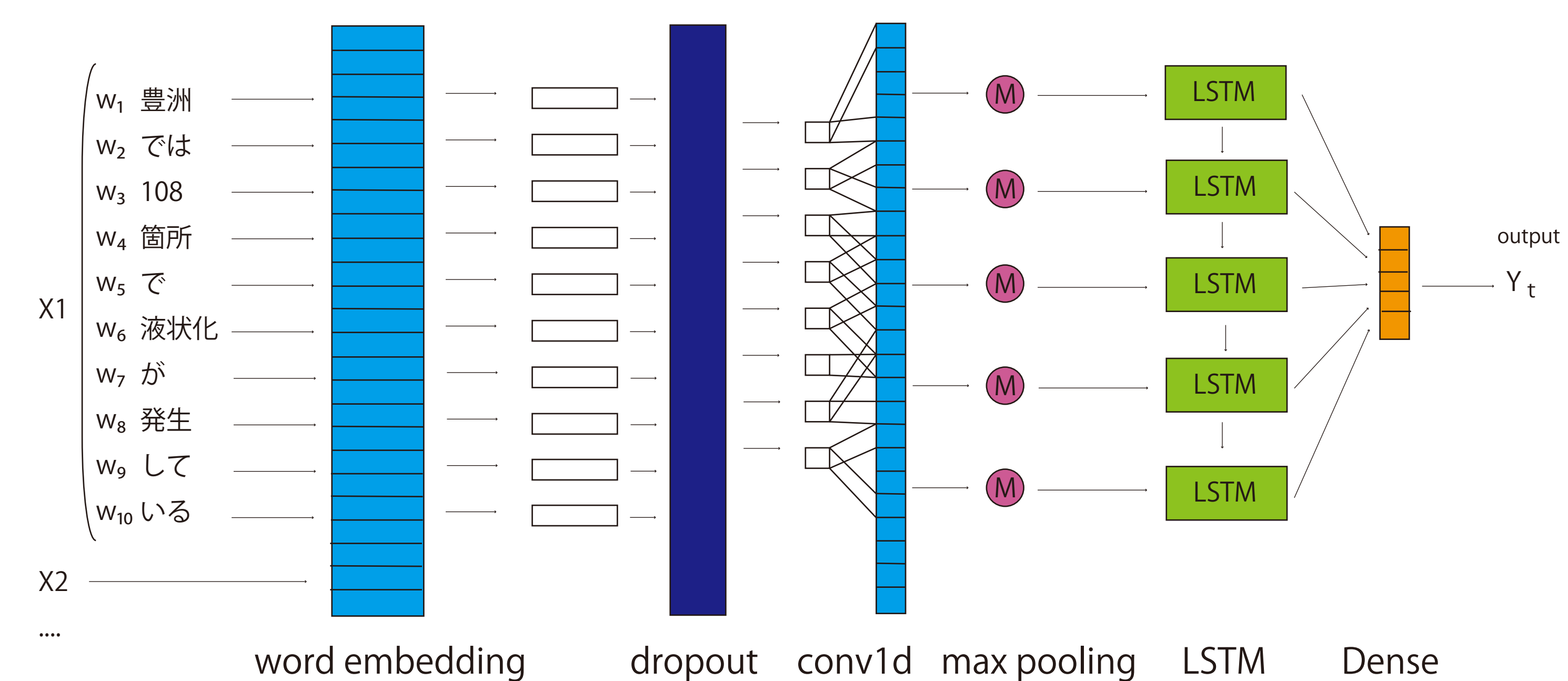


Fact-checkability

We aim to improve judgment of fact checkable by performing convolution and time series prediction to take into consideration the relationship between the minutes as a substitute for evidence.

We two models were tested:

- Only LSTM model.
 - Combination model of LSTM and CNN.
- We confirm the improvement in the Combination model.



Result(Fact-checkability)

The score was higher for all three people who gave a correct answer than for SC.

It is considered that the result regardless of people is better.

Gold Standard	Accuracy	existence		absence	
		Recall	Precision	Recall	Precision
N1	0.966	0.782	0.978	0.406	0.938
N2	0.810	0.863	0.865	0.660	0.673
N3	0.918	0.944	0.945	0.841	0.839
SC	0.730	0.843	0.763	0.523	0.646

N1: one or more; N2: two or more assessors;

N3: three or more; SC: the weight of the correct score;

Conclusion

It was clarified that both convolution and sequence operations were necessary to estimate the fact-checkability.

From the data set, it was confirmed that the sentences including the fact checkable information shared similar facts with the target sentence provided in the task.

We need to adjust the models of Relevance and Stance in future.