Motivation

- The research trend in Japanese PAS analysis is shifting from pointwise prediction models with local features to global models designed to search for globally optimal solutions.
- However, the existing global models tend to employ only relatively simple local features; therefore, the overall performance gains are rather limited.

Model

- GRU
- Predicate

Task Setting

Input: tokenized sentence and predicate positions

Output: NOM, ACC, DAT arguments for each predicate in the sentence

Dataset: NAIST text corpus 1.5 [Iida+, 2007]
Standard TRAIN, DEV, and TEST divisions [Taira+, 2008]

Impact of Feature Representations

- The case markers of the other dependents feature significantly improves the prediction in both Dep and Zero cases, especially on Zero argument detection.
- WBP-Roth and WB compete in our setting
  - The word inputs at both ends of the path embedding overlap with the word embedding and the additional effect of the path embedding is rather limited.
- WBP-Shwartz obtains better result compared with WBP-Roth
  - The performance of WBP-Shwartz remains without lexical and path binary features.

Comparison to Related Work

- B model that uses only binary features already outperforms the state-of-the-art global models [Ouchi+, 2015, 2017]
  - [Ouchi et al. 2015] contains almost the same binary features as ours.
- The WBP-Shwartz (ens) shows a further 1.8 points improvement in overall F1, which achieves 13% error reduction compared with the state-of-the-art global model.
  - 81.42% of [Ouchi et al., 2017]-multi-seq