**Introduction**

- **Coreference resolution**
  - Definition: the task of finding all expressions that refer to the same real-world entity in a text or dialogue.
  - Example: "I voted for [name] because he was most aligned with my values," she said.

- **Methods for coreference resolution**
  - Mention-pair classifiers (Bengtson et al., 2008)
  - Entity-level models (Clark and Manning, 2016)
  - Latent-tree models (Martschat and Strube, 2015)
  - Mention-ranking models (Wiseman et al., 2015)
  - Span-ranking models (Lee et al., 2017)
  - Compute embedding representations of spans for scoring potential mentions.
  - Compute antecedent scores from pairs of span representations.
  - Formulate the task as a set of antecedent assignments for each span.
  - First-end to-end neural model for coreference resolution.
  - Not rely on syntactic parsers and many hand-engineered features.
  - Make independent decisions about whether two mentions are coreferential.
  - Establish a coreference cluster through this kind of coreference relation.

**Dataset**

- **English coreference resolution corpus**
  - Contains 2802 training documents, 343 development documents, and 348 test documents.
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**Experiments**

- **Margin tuning on development dataset**
  - The only hyperparameter in our method is margin in the inequalities, which is used to measure the possibility of global inconsistence of coreference cluster.
  - The coreference clusters with less than 10 spans accounted for 93% of all coreference clusters.
  - Average F1 on test dataset with different maximum spans width

- **Results on the test set on the English CoNLL-2012 shared task**
  - The baseline model of our methods was the span-ranking model from Lee et al. (2017) which achieved an F1 score of 67.2.
  - Our method achieved an F1 score of 67.3, improving the performance for coreference resolution.
  - We can achieve a higher F1 score of 68.4 after parameter tuning.
  - Our method has the advantage of simplicity and it can be considered as a rule-based post-processing of the output given by the baseline model.

**Conclusion**

- We proposed a cluster modification algorithm which can help modify coreference clusters to reduce errors caused by global inconsistence of coreference clusters.
- Our experiments show that the model is susceptible to the maximum mention width which can help to increase the accuracy of coreference resolution.
- We replace the scoring function with a feed-forward neural network which can help pick out the most important word.

**References**

2. Clark, Kevin, and Christopher D. Manning. "Improving Coreference Resolution by Learning Entity-Level Distributed Representations."