Character-based Neural Machine Translation

Encuentro estudiantes de doctorado

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Why characters?

Lack of perfect word segmentation algorithms (Chung et al., 2016). Similar words treated as completely different entities.

- Difficulties when generalizing into new words.
- Problems modeling morphological variants.

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Pros

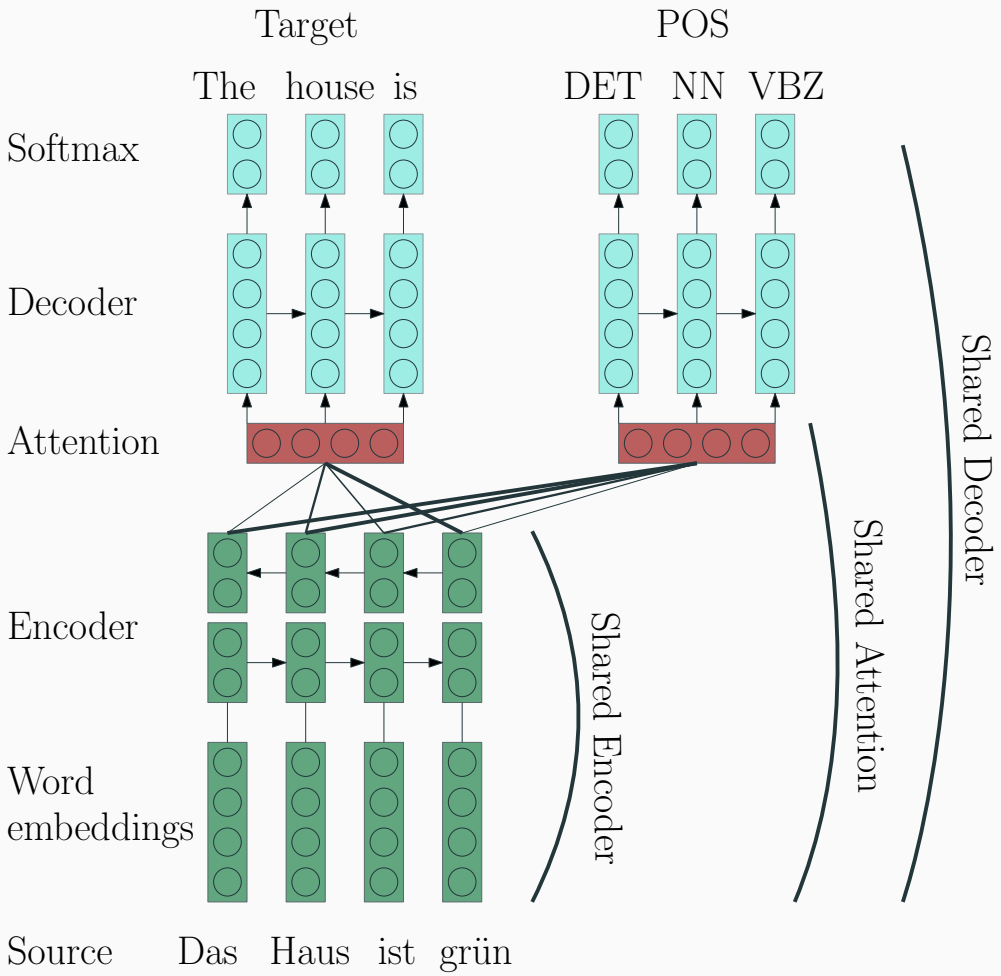
- Smaller vocabularies.
- Reduce out-of-vocabulary words.
- Profit from in-word lexical information.

Cons

- Longer input sequences.
- References at word level.

How?

- Based on Niehues and Cho (2017) work. (POS Tagging)
- Shared information may benefit both sides.
- Different granularities.



Architecture overview (Niehues and Cho, 2017)

Conclusions

- Characters act as an important piece of information in the translation process.
- Less out-of-vocabulary words, better results and more fluent translations can be obtained.

References

Chung, J., Cho, K., and Bengio, Y. (2016). A character-level decoder without explicit segmentation for neural machine translation. In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics*, volume 1.

Niehues, J. and Cho, E. (2017). Exploiting linguistic resources for neural machine translation using multi-task learning. In *Proceedings of the Second Conference on Machine Translation, WMT 2017, Copenhagen, Denmark, September 7-8, 2017*, pages 80–89.