

## **Miryam de Lhoneux: Do we need recursive subtree composition in dependency parsing?**

In this talk, I ask the question of whether recursively composing subtree representations is necessary in neural transition-based parsing. In a first study, we evaluate the impact of using a recursive composition function, a tree layer, on top of a highly accurate sequential model for dependency parsing: a BiLSTM-based parser, on a sample of typologically varied languages. We find this tree layer to be superfluous in our architecture and investigate its interaction with other parts of the network. In a second study, we investigate transitivity and agreement information learned by our parser for auxiliary verb constructions (AVCs) and the impact of using a tree layer to model the relation between auxiliaries and main verbs. We find the tree layer to be useful here: it allows the parser to learn a similar amount information about these tasks for AVCs as it does for finite main verbs. We motivate why this is desirable by referring to work from theoretical dependency grammar. Our findings from this study indicate that there may be benefits from using a tree layer which does not reflect in parsing accuracy and that we may not have found the best way to incorporate this layer into our architecture yet.