**MSE\_AnTeDe\_Lab9 – Adrian Willi**

In the notebook for part 2, we familiarize ourselves with the neural dependency parser described in the paper **A Fast and Accurate Dependency Parser using Neural Networks** written by Danqi Chen and Christopher Manning and published at the 2014 Conference on Empirical Methods in Natural Language Processing (EMNLP).

First, the *ParserModel* is defined. This neural network will predict which transition (SHIFT, Left Arc, Right Arc) should be applied to a given partial parse configuration. Then, we have the *PartialParse* that will parse a sentence by following the given transitions.

The *PartialParse* will initialize the parse and these features are then passed to the *ParserModel*, which will output probabilities of the three possible transitions. Then best transition is chosen and passed to the *PartialParse* that will perform the action. This process is repeated until the sentence has been processed.

**Can you modify the parameter n\_classes? Why or why not? What does it represent?**

No, it can not be modified because it corresponds to the three possible transitions (S(hift), L(eft)A(rc), R(ight)A(rc)) that are available.

**Modify some of the parameters of the model (e.g., hidden\_size) and see how the performance changes. Explain, in broad terms, the effect of your changes.**

|  |  |  |  |
| --- | --- | --- | --- |
| **hidden\_size** | **Learning rate** | **UAS Training set** | **UAS Test set** |
| 2000 | 0.0005 | 88.55 | 88.99 |
| 200 | 0.0005 | 88.47 | 88.96 |
| 50 | 0.0005 | 88.55 | 89.04 |
| 5 | 0.0005 | 88.53 | 89.02 |

Is there maybe something wrong?