I trained the tagger and the dependency parser for the "English Web Treebank" from the Universal Dependencies website. Upon evaluating the trained model on this Treebank using spaCy, the following evaluation metrics were achieved:

- Parts of Speech Tagger Accuracy, POS: 94.07
- Unlabelled Accuracy per sentence, UAS: 86.12
- Labelled Attachment Score, LAS: 81.70

"I had a rose named after me and I was very flattered" is a sentence in the Treebank for which the spaCy dependency parser makes some errors. Below is the dependency parser graph (Figure 1) for this sentence.

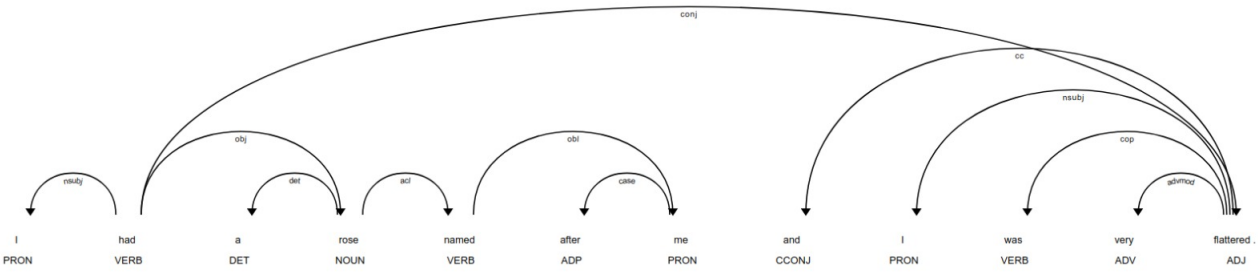

Figure 1: Dependency Parser Graph from spaCy

The falsely-proposed dependency arcs, denoted by 'F', that shouldn't be there according to the gold standard are:

```
F named acl rose
```

The arcs that were missed, denoted by 'M', and should have been there according to the gold standard are:

```
M named xcomp had
```

By using Grew-match, the dependency graph as in Figure 2 is achieved.

The dependency from the head text 'rose' to the text 'named' was falsely proposed as 'acl' by the spaCy dependency parser graph, whereas, no dependency is depicted between these two by the Grew-match dependency parser graph. Generally, adjectival clauses modify nominal clauses, i.e, in adjectival clauses, the head text of the acl relation is modified by the head of the dependent clause. In this case, no such modification by the head clause on the dependent

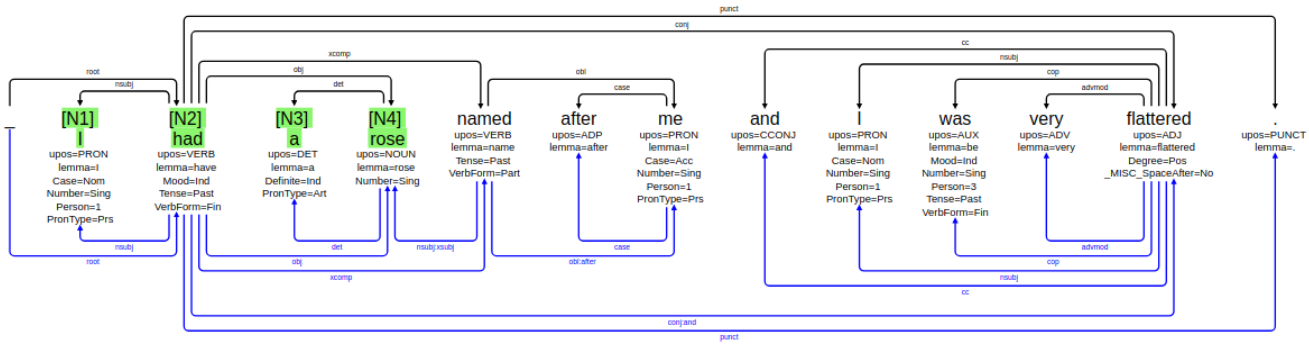

Figure 2: Dependency Parser Graph from Grew-match

clause is apparent. Thus, the 'acl' dependency from 'rose' to 'named' was falsely proposed.

The dependency from the head text 'had' to the text 'named' (depicted to be 'xcomp' by the gold-standard) was missing in the spaCy dependency parser graph, whereas the 'xcomp' dependency is also shown by the Grew-match dependency parser graph. Generally, open clausal complements of a verb is a clausal complement without it's own subject, and in the open clause 'named after me', there is no subject; the subject, i.e, 'rose' is inherited from the head clause. Thus, the 'xcomp' dependency from 'had' to 'named' should not have been missed.