# Introduction to NLP Project
# Interim Submission

## Outline: Dependency Parser

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**Progress Till Now**

We have completed the literature review and started implementing the paper. First we have tried to implement the standard one which uses shift reduce parser and try to understand how it is working like what is the output and the way which we are going to expect the output.

Paper that we have read-
“Deep Biaffine Attention for Neural Dependency Parsing” by Timothy Dozat and Christopher Manning - Link to Paper

The authors introduce a novel attention mechanism, called "biaffine attention," which is designed to model the relationships between pairs of words in a sentence. Unlike previous approaches that used linear or bilinear scoring functions, the biaffine attention model is able to capture non-linear interactions between words, and can handle cases where there are multiple possible heads or dependents for a word.

The paper also introduces a new transition-based parsing algorithm, which uses the biaffine attention mechanism to make parsing decisions. The algorithm achieves state-of-the-art results on several benchmark datasets, including the English Penn Treebank, the Chinese Treebank, and the French Treebank.

One of the strengths of this paper is its clear and detailed explanation of the proposed model, which includes a number of helpful diagrams and visualizations to aid in understanding. The authors also provide a thorough experimental evaluation of their approach, comparing it to a wide range of baselines and demonstrating its effectiveness on several different languages.

Overall, "Deep Biaffine Attention for Neural Dependency Parsing" is an important contribution to the field of dependency parsing, and has helped to establish the biaffine attention mechanism as a key building block for many subsequent state-of-the-art dependency parsing models.

We have decided the dataset also on which we will be working.

As through paper we got to know there is one more algorithm apart from standard transition based algorithm i.e. graph based algorithm which is better than transition based due to :

- Better accuracy
- It can also work with non-projective dependencies also which was not in the case of standard transition one.

This algorithm aims at going through **all possible parse trees for a sentence & choosing the best depending on some sort score.**

We have to preprocess the data and filter out all the words with their tags so that that can be used to find the dependencies and work according to the graph based method as it has advantages over standard one.

Final Deliverable:
Dependency parser using graph based algorithm.