Coreference Resolution

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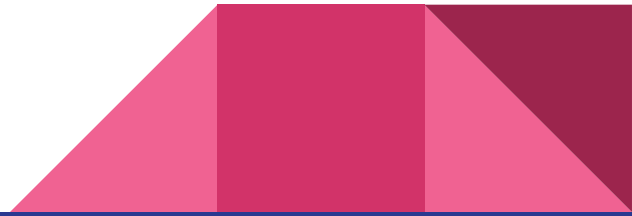
Existing Methods

Method	Description	Dataset	Evaluation Metric	Performance
Hobbs Algorithm(1997)	Defines a set of steps to follow in order to resolve anaphoric pronouns.	CoNLL 2012	MUC	54.6%
Soon et Al (2001)	Using Decision Tree with 12 features(lexical, syntactic, semantic and positional)	MUC-6	MUC	62.6%
Haghighi and Klein (2007)	Deterministic system driven entirely by syntactic and semantic compatibility as learned from a large, unlabeled corpus.	ACE 04 nwire	MUC	64.2%
Clark and Manning	coreference resolution that trains an entity-centric system using the scores produced by mention pair models as features	CoNLL 2012	Avg of MUC, B3, CEAF	63.02% (MUC 72.59%)
Kevin Clark	Neural networks with imitation learning.	CoNLL 2012	Avg of MUC, B3, CEAF	60.15% (MUC 70.22%)

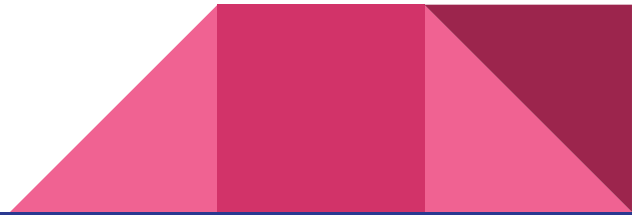
Methods to be used in this project.

- We are going to use various different methods to extract co-references.
- These include **Decision Trees, SVM, Recurrent Neural Networks and LSTM**.
- We will first implement decision trees and SVM and test their performances with respect to the older non-machine learning based methods like Hobbs' Algorithm.
- Then considering them as the baseline, we will implement Neural network based approaches.

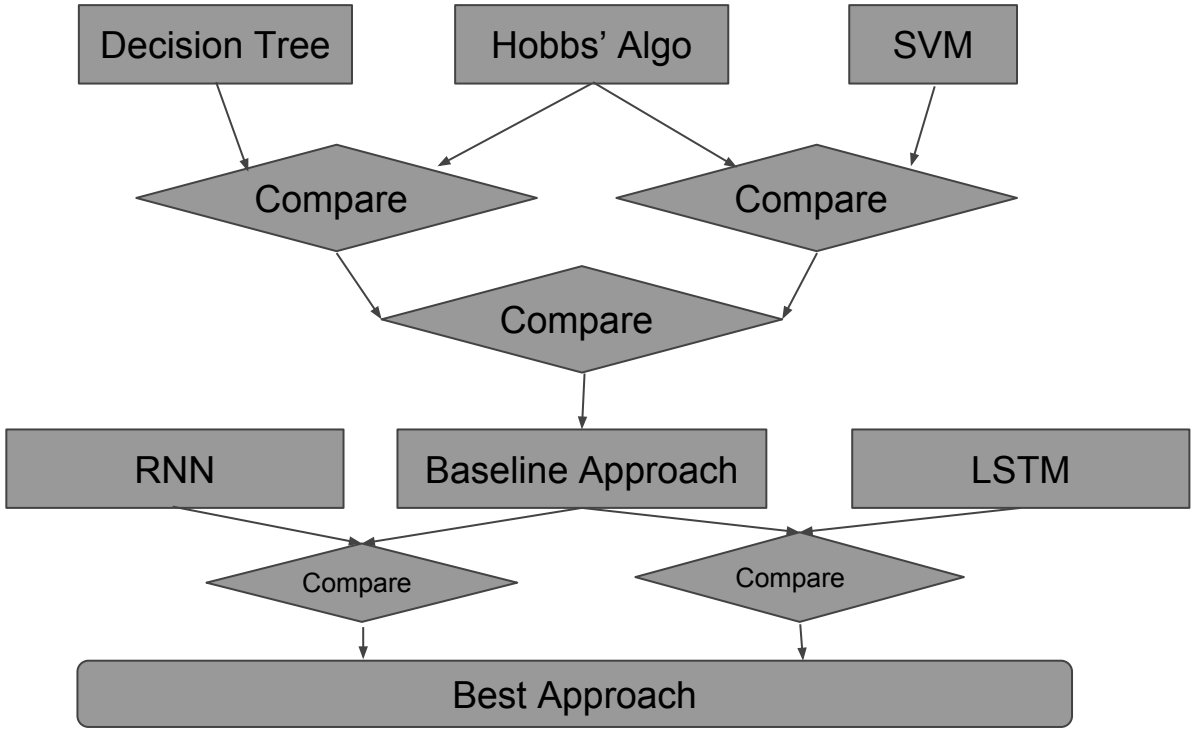


Dataset & its Description

- We will use **CoNLL 2012** dataset for our project.
- The English language portion comprises roughly one million words from newswire, magazine articles, broadcast news, broadcast conversations, web data and conversational speech. The English corpus also contains a further 200k of the English translation of the New Testament.
- The Dataset contains **Word, Part-of-speech, Word Sense, Named entities, Speaker/Author etc.**
- Gold standard coreference chains are provided for each text article.



Roadmap



The group is divided into 5 sub-groups, each of the group will take up one of these tasks :-

- Decision Tree
- Hobbs' Algo
- SVM
- RNN
- LSTM

The deadlines of the non MLP tasks can be till 8th October. Till then, we could study more about LSTMs and RNNs and finally, the task would be completed around end semesters.