UBL Learning Algorithm

Input: A training set consisting of formal sentences from the Cricket domain paired with its logical/meaning representation, Set of lexical items and some pre-defined parameters like Learning rate constant, cooling rate parametre

Output: Updated Lexicon (best result to querry), Linear modelled parametre vector, calculated scores i.e. Recall, Precision and F1 (Arithmetic mean of Recall and Precision)

Algorithm:

1) Lexical features which score the individual items are extracted

2) Do Initial parse for all of the sentence, logical form pairs

3) Semantic features that contain the logical form are obtained from the step of initial parse

4) Initialize the parameters based on the set of obtained lexicon from parsing and initial scores

5) For all of the set of features, sentence pairs DO:

    5.1) Expand the lexicon by adding lexical items to the current vector
    5.2) Update the current lexicon from the set of added items
    5.3) Repeat steps 5.1 and 5.2 untill the Best parse is predicted and evaluated

6) Update Parameters from the evaluated entries

    6.1) Using the above entries, calculate the learning rate
    6.2) Calculate the Gradient based on parameters like learning rate, coling rate etc.,
    6.3) Repeat steps 6.1 & 6.2 for the entire set
    6.4) Update received parameters which maximizes the conditional likelihood in the given space

7) From initial parameter weights and co-occurance counts obtained from the previous steps, match each word pair to fit a semantic entity returned from step 5.3

8) Select the predicate from the predicate variables which maximizes the log likelihood for all of the states, types present

9) Calculate the final parameters *Recall*, *Precision* and the arithmetic mean of Recall and Precision (F1).