
A: Theory

Will be done later

B: Algorithm

The algorithm for the weight vector update is given below:

Algorithm 1 Phrasal Chunking

Input: Tagset file *tagsetfile*Train data *train_data*,Set of tags *tagset*,Number of epochs of the algorithm *numepochs***Output:** Featured weight vector

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1: initialize feat_vector with zeroes
2: while epoch is less than numepoch do
3:   initialize mistakes and correct with zero
4:   for sentence_data in train_data do
5:     initialize words, postags and truetags as empty lists
6:     initialize label_list as sentence_data[0] and feat_list as sentence_data[1]
7:     for label in label_list do
8:       split label by spaces and assign it to a triple (word, postag, chunktag)
9:       append word to words list
10:      append postag to postags list
11:      append chunktag to truetags list
12:   initialize tagset with content of tagsetfile
13:   initialize default_tag as tagset[0]
14:   initialize argmaxtags as the result of perc_test passing feat_vec, label_list, feat_list, tagset
   and default_tag as params.
15:   initialize feat_index and i as zero
16:   for word in words do
17:     get feats c for word with params feat_index and feat_list
18:     initialize arg_max with argmaxtags[i] and tru with truetags[i]
19:     if argmax equal tru then
20:       increment i and go back to next loop iteration
21:     for f in feats_for_this_word do
22:       initialize wrongkey with tuple (f, argmax) and rightkey with tuple (f, tru)
23:       decrement value of feat_vec[wrongkey]
24:       increment value of feat_vec[rightkey]
25:       increment i
26:   set i to zero
27:   for word in words do
28:     initialize arg_max with argmaxtags[i] and tru with truetags[i]
29:     if argmax equal tru then
30:       increment correct
31:       increment i and go back to next loop iteration
32:     else
33:       increment mistakes
34:   initialize argmaxprev and truprev with "B:"
35:   if i equal zero then
36:     concatenate argmaxprev and truprev with "B -1"
37:   else
38:     concatenate argmaxprev with argmaxtags[i - 1] and truprev with truetags[i - 1]
39:   initialize wrongkey with tuple (f, argmax) and rightkey with tuple (f, tru)
40:   decrement value of feat_vec[wrongkey]
41:   increment value of feat_vec[rightkey]
42:   increment i
43:   increment epoch
44: return feat_vec

```