Unit 8 - Week 6

Course outline

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- Lecture 27: Dependency Grammars and Parsing - Introduction
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Assignment 6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-11, 23:59 IST.

1) With respect to a Dependency Structure, which of the following is not a valid criterion for a syntactic relation between a head H and a dependent D in a construction C? 1 point

1. The form of D depends on H.
2. The form of H depends on D.
3. H selects D and determines whether D is obligatory.
4. H specifies D.

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.
4.

2) Consider the sentence: "Every man heard a mysterious sound." 1 point

The following constructions:
a) heard -> man
b) sound -> mysterious
are respectively:

1. Both Endocentric
2. Both Exocentric
3. Exocentric, Endocentric
4. Endocentric, Exocentric

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
3.

3) Consider the following dependency graph G: 1 point

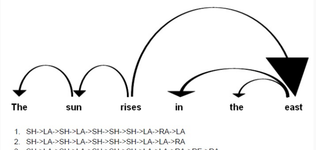
Which of the following is not true?

1. G is connected.
2. G obeys the single head constraint.
3. G is projective.
4. G is acyclic.

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
3.

4) Correct sequence of actions that generates the following parse tree of the sentence "The sun rises in east" using Arc-Eager Parsing is: 1 point



1. SH->LA->SH->LA->SH->SH->SH->LA->RA->LA
2. SH->LA->SH->LA->SH->SH->SH->LA->LA->RA
3. SH->LA->SH->LA->SH->SH->SH->LA->LA->RA->RE->RA
4. SH->LA->SH->LA->SH->SH->LA->SH->LA->RA->RE->RA

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.

5) Stanford parser gives the following Universal dependencies upon parsing the sentence "She went to the hospital" 1 point

nsubj(went-2, She-1)
root(ROOT-0, went-2)
case(hospital-5, to-3)
det(hospital-5, the-4)
nmod(went-2, hospital-5)

where, nsubj(went-2, She-1) represents "nsubj" relation between dependent "She" and head word "went".

How many words are dependent on the word "computers" in the following sentence: "NLP deals with the interaction between computers and humans using the natural language" ?

Note: You can access stanford parser at: http://nlp.stanford.edu:8080/parser

1. 4
2. 3
3. 2
4. 1

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.

6) While learning a classifier for the data-driven deterministic parsing, the size of the feature vector for any configuration depends on: 1 point

1. Length of the sentence being parsed.
2. No. of distinct POS tags appearing in the sentence.
3. No. of conditions (features) defined.
4. No. of conditions (features) defined and no. of possible oracle transitions.

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
4.

7) Assume that you are learning a classifier for the data-driven deterministic parsing and the sentence 'Soldiers killed the terrorist' is a gold-standard parse in your training data. You are also given that 'Soldiers' and 'terrorist' are 'Nouns', 'the' is a 'Determiner' while the POS tag of 'killed' is 'Verb'. Obtain the dependency graph for this sentence on your own. Assume that your features correspond to the following conditions: 1 point

1. The stack is empty.
2. Top of stack is Noun and Top of buffer is Verb.
3. Top of stack is Verb and Top of buffer is Noun.
4. Top of stack is Verb and Top of buffer is Determiner.
5. Top of stack is Determiner and Top of buffer is Noun.

Initialize the weights of all your features to 5.0, except that in all of the above cases, you give a weight of 5.5 to Right-Arc. Use this gold standard parse during online learning. The sequence of predicted transitions and the final weights after completing one full iteration of Arc-Eager parsing over this sentence are:

1. RA->RA->SH->RA->RA->RA : [6.5,5.6,5. | 4.5,4.5,5.5,4.5,4.5, |5,6,5.5,6. | 5.5,5.5,5]
2. RA->RA->SH->RA->RA->RA : [5.6,5.5,6. | 4.5,4.5,5.5,4.5,4.5, | 6.5,5.6,5. | 5.5,5.5,5]
3. SH->LA->SH->SH->LA->RA : [5.6,5.5,6. | 4.5,4.5,5.5,4.5,4.5, | 6.5,5.6,5. | 5.5,5.5,5]
4. LA->LA->RA->SH->RA->RA : [6.5,5.6,5. | 4.5,4.5,5.5,4.5,4.5, |5,6,5.5,6. | 5.5,5.5,5]

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.

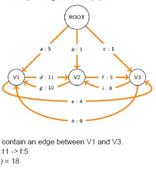
8) Let V be the set of nodes and E be the set of directed edges. The running time of Chu-Liu-Edmonds Algorithm is: 1 point

1. O(E²)
2. O(VlogE)
3. O(E²V)
4. O(logVE)

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
3.

9) For the below weighted directed graph G, which of the following are true with respect to the maximum spanning tree, MST(G) ? 1 point



1. MST(G) does not contain an edge between V1 and V3.
2. MST(G): a:5 -> d:11 -> e:5
3. Weight of MST(G) = 18
4. g ∈ MST(G)

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.
2.

10) Suppose you are training MST Parser for dependency and the sentence, "John saw Mary" occurs in the training set. Also, for simplicity, assume that there is only one dependency relation, "rel". Thus, for every arc from word w_i to w_j, your features may be simplified to depend only on words w_i and w_j and not on the relation label. 1 point

Below is the set of features:

- f 1 : POS(w_i) = Noun and POS(w_j) = Noun
- f 2 : POS(w_i) = Verb and POS(w_j) = Noun
- f 3 : w_i = Root and POS(w_j) = Verb
- f 4 : w_i = Root and POS(w_j) = Noun
- f 5 : w_i = Root and w_j occurs at the end of sentence
- f 6 : w_i occurs before w_j in the sentence
- f 7 : POS(w_i) = Noun and POS(w_j) = Verb

The feature weights before the start of the iteration are: {10, 15, 8, 20, 12, 4, 20}.
Determine the weights after an iteration over this example.
Note: For the gold-standard MST, please follow the lectures.

1. [10, 17, 9, 18, 11, 4, 19]
2. [11, 16, 8, 18, 11, 4, 19]
3. [10, 17, 9, 19, 12, 3, 19]
4. [10, 17, 9, 18, 13, 3, 18]

1.
2.
3.
4.

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.