START OF QUIZ
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I agree that all answers provided are in my own words, and that I will not discuss the contents of this quiz with any of my fellow students until after the exam period has completed for everyone. Furthermore, any response that used generative AI tools has been rephrased into my own interpretation, and has been appropriately cited.

Signature: _____

Question 1

Topic: Lecture 6
Source: Lecture 6

What does it mean for an Earley item to be "complete," and what happens when it is? (1)

Question 2

The CYK parser only applies those rules that apply to its tokens, but the Earley parser expands its rules to every viable rule, which seems inefficient. Explain why this doesn't lead to a lot of bad parses. Which functionality of the parser shuts those down quickly? (1)

Question 3

Topic: Lecture 5
Source: Lecture 5

Which operation dominates the complexity of CYK? Why? (1)

Question 4

Describe the difference between top-down and bottom-up parsing, including one advantage to each. (1)

Question 5

Why do we create a dummy variable for the root of the sentence? (1)

Question 6

Topic: Lecture 8
Source: Lecture 8

In class, we discussed creating a feature vector as input to a classification model. What benefits (or disadvantages) might we see by replacing binary features with word embeddings, instead? (2)

Question 7

A deque is a data structure that mimics the operations of both a stack and a queue (ie, items can be added or removed to either end). Do you think this data structure would be sufficient to replace the stack and buffer from SR parsing? Justify your answer. (2)

Question 8

Topic: Lecture 8
Source: Lecture 8

Imagine that we have a dependency parser that has a very good UAS (90+), but a very bad LAS (50-). Do you think that we could use the output of this parser as input to a neural translation model as is, or do you think that we should first re-train the labeling part of the algorithm to increase LAS? Doing both is probably the best solution, but I'm asking if you think that we could use the output of the existing model, even as we try to improve the quality of the labels. Explain. (2)

Question 9

Topic: Long
Source: Lecture 8

Let's say you have a friend who is developing a constructed language (conlang) for the epic fantasy novel she is writing, but the only language she knows is English, and she is just doing a word-for-word translation of English into this constructed language. She has no real knowledge of syntax, and has only ever thought that "some words come after other words" (she's thinking like a language model). How would you use treebanks and dependency parsers to demonstrate to her that there is a whole "hidden" structure that language must follow, and how would you help her develop a realistic grammar for her conlang? Do you think it would make more sense to build the grammar for a "modified English", and then do word-for-word translation, or to translate the words from English, and then build the grammar in the conlang? (3)

END OF QUIZ