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3. NLP - Parsing
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Syntactic Parsing

1 point possible (graded)
Which among the following tasks is harder to perform accurately for current NLP approaches? Select the option that applies from below.

- Assigning parts of speech for words in a sentence
- Understanding complete syntactic structure of the sentence ✔

Solution:

There has been several decades of research in parts of speech tagging for words in a sentence from natural language. As a result, it is considered mostly to be a solved task in the NLP area.

Whereas, as mentioned in the lecture, deciphering full syntactic structure with all the dependencies is something that current NLP based solutions still struggle with.

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Machine Translation

1 point possible (graded)
Which of the following statement is true about Machine Translation? Select the option that applies.

- Machine Translation is largely solved task since it can be achieved by simple substitution of words in one language for words in another
- Machine Translation has improved significantly recently because the current approaches have completely mastered the challenge of learning to translate with very few training examples
- Machine Translation has improved significantly recently in part due to the availability of large training datasets ✔
- A Large training dataset of sentences from english and their corresponding translation to french is sufficient to do a perfect job in translating english sentences to Finnish

Solution:

Machine translation is not a largely solved task and simple substitution of words in one language for words in another would lead to a very poor solution. Solutions require developing a good way of understanding the meaning of the source sentence and finding a good counterpart for the whole phrase in target sentence.

Machine Translation under low-resource setting (low amount of training data) results in significantly worse quality than under high-resource setting and this is still a challenging open problem for NLP community to solve.

Most recent state of the art approaches to machine translation including Neural Machine Translation (NMT) based approach achieve excellent accuracy values by training on datasets consisting of millions of examples which were not available a decade or two ago.

As mentioned in the lecture, the difficulty of a machine translation task should be judged in the context of the training data available for that task. This is why machine translation produces poor translation for the Finnish recipe in the example from the lecture.

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Question Answering

1 point possible (graded)

Which of the following statement(s) is/are true about natural language Question Answering problem? Select all options that apply from below.

- [ ] Question Answering task is challenging because computer systems today lack the ability to search through a large body of knowledge quickly and efficiently
- [x] Question Answering task is easy if the answers for all the questions that can be asked is readily available in an efficient and fast database ✔ ✔
- [ ] Question Answering task is easy when the answer is not readily available but can be deduced through logical reasoning
- [x] Question Answering task is hard when the answer is not readily available but requires some logical reasoning to connect the dots ✔ ✔

Solution:

Computer systems today are very good at extracting information from large bodies of texts since they can very efficiently perform big searches (Think of google or your favourite search engine performing a search over billions of documents to find a match in a fraction of second).

Most of the challenge in Question Answering comes because giving a meaningful response to a question not only requires having access to a pool of information but also the ability to logically reason about the collected information to connect the dots and find a pattern that is not immediately apparent.

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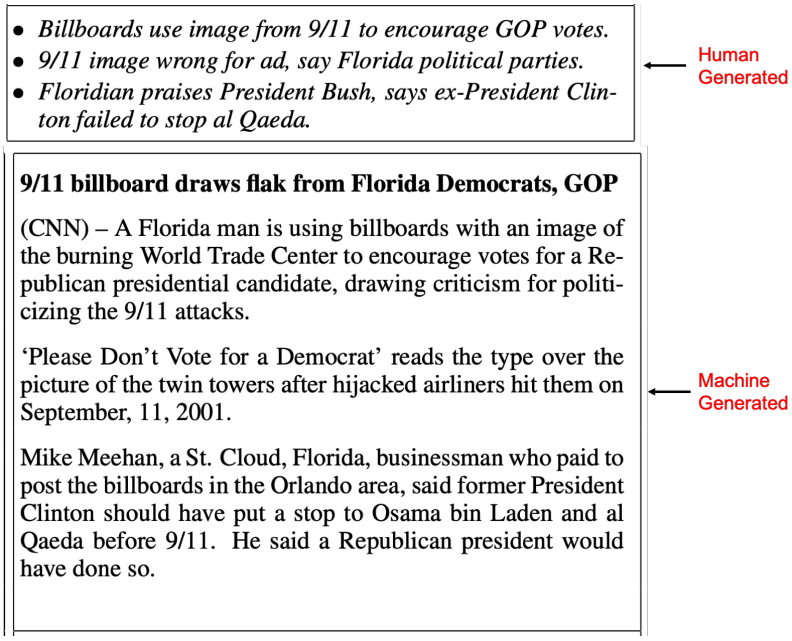
Summarization

1 point possible (graded)

Consider the following example from the Natural Language Summarization task presented in the lecture:



Which of the following option is correct about the NLP system that generated the summarization in the above example?

- The machine based summarization system that generated the above example passes the Turing test for Artificial Intelligence
- The machine based summarization system that generated the above example does not pass the Turing test for Artificial Intelligence ✔

Solution:

The Turing test (as discussed in the first half of the lecture) is a test for an AI agent's ability to exhibit intelligent behavior indistinguishable from a human expert.

In the above example, it is very easy to tell apart the not so perfect output generated by machine, making it fail the turing test for this particular example.

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