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1. Named Entity Recognition is a challenge if we compare languages already. If we take in English language rules and German common-proper naming conventions, we would mix up named entities over common nouns. Even saying sorry in German (Entschuldigung) can pass off as an English Named Entity within our English’s normal rules. Therefore, Named Entity Recognition is a difficult task because of this.
2. Context-Free Grammar is basically where we can prove or disprove a grammar based on its rules given a production. Context-Sensitive Grammar is where we prove or disprove a grammar based on rules AND gathered experiences. In video games for example, if we say war is fun because it is visually and emotionally stimulating for the gamer. However, in a real-world sense war is not an enjoyable matter.
3. For me, I would like the text recognition field in NLP because it is the most reasonably useful tool for us humans. Since we don’t need to create languages anymore in our time and proving stuff all over again is only for educational purposes exclusively. However, if we recognize almost all text out of all types of handwritings and give a standardized meaning system. We could overcome language barriers almost immediately.
4. Information retrieval is when we simply go into a library and search for a specific topic or subject then learn from these so that we can apply it to our daily lives. Information extraction is when we read a book then interpret for ourselves what it means. Therefore, information extraction is dependent on information retrieval.
5. Coreference resolution is finding all expressions that refer to the same entity in a slab of text. Word-sense disambiguation is finding the correct and appropriate meaning or sense to be used in a sentence, especially when the word has multiple meanings. Say for a novel, we encounter the Smith family, with Mr. Smith working at finance and Mrs. Smith working at a hospital. We use coreference resolution if we say “One Smith went to the bank” because we need to know if it’s the Mr. or the Mrs. then we use word-sense-disambiguation to know if it’s a bank for blood or the bank for money.
6. PoS tagging is one of the essential tools used to analyze natural languages. This is because it is part of an internationally agreed upon construct that is the standard already. Since we can assume that there will be almost little-to-no changes when it comes to forming sentences with patterns syntactically then PoS tagging is essential as of now. However, maybe once we reach the era wherein parts of speech are deemed unnecessary and obsolete already even then we can’t do away with it fully but modify it so that it fits the current standard.
7. Semantics deal with the correctness in meanings of words and sentences. Pragmatics deal with the correctness of words and sentences given a context. In the example, “Dale looked at the tear and screamed” which is syntactically correct however, once we look at the pragmatics we often inherently assume cases as we have already experienced. If we have a sentence before the former like, “Dale was a tailor for good suits but he was out of his comfort zone then Dale looked at the tear and screamed”.
8. We prefer the statistical approach for speech processing since this gives the flow of speech room to grow and we already have deductive historical experiences that let us conclude which words or patterns come next statistically given a sentence. However, in machine translation this is no easy task as given a language compared with another, we cannot follow the patterns statistically since we cannot pinpoint what goes where in the first place. Most especially given an unfamiliar comparatively unstructured language of Bisaya translated to the reverse syntactics of Japanese then we can’t translate it immediately without translating from Bisaya to English then to Japanese which would almost always result in loss of integrity.