

CS 486 Introduction to Artificial Intelligence

Fall 2016

Assignment 4: A Natural Language Generation “Hackathon” – Part (d)

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Samples of the Texts Generated

Sample 1

Individual Selected: Harry Potter

Configuration: Default with graph distance set to 2. It covers first graph distance of Harry Potter, Hermione Granger, Ginny Weasley, Hedwig, Hogwarts, Gryffindor House and James Potter. Texts are generated until all facts are assimilated.

Generated Text: “Harry Potter is a good wizard and a student. A good wizard is a kind of wizard. Harry Potter’s classmate is Hermione Granger and Ronald Weasley. Hermione Granger is a good wizard and a student. Hers classmate is Harry Potter and Ronald Weasley. She is a student of Hogwarts. She is a house member of Gryffindor House. She is the wife of Ronald Weasley. She is 19 years old. She is interested in the history of the wizarding world. Harry Potter is the husband of Ginny Weasley. Ginny Weasley is a good wizard and a student. She is a daughter of Arthur Weasley and Molly Weasley. She is a student of Hogwarts. She is a house member of Gryffindor House. She is the wife of Harry Potter. She is 17 years old. Harry Potter owns Hedwig and the Cloak of Invisibility. Hedwig is an owl. She is owned by Harry Potter. Harry Potter is a student of Hogwarts. Hogwarts is a school of magic. It teaches courses such as Care Of Magical Creature 101, Charms 101 and Potions 101. Harry Potter is a house member of Gryffindor House. Gryffindor House is a house. Ginny Weasley, Harry Potter, Hermione Granger, and Ronald Weasley belongs to it. It is a house of Hogwarts. Harry Potter is a son of James Potter and Lily Potter. James Potter is a shapeshifter and a good wizard. He is the husband of Lily Potter. He is the father of Harry Potter. Harry Potter is 18 years old.”

Informal Evaluation of the Texts

Before we begin, we start by defining the definition of fluency and interestingness. **Fluency** is the ability to read a text *accurately, quickly, and with expression*. **Interestingness** is the ability to attract or hold one’s attention.

Sample 1

- Fluency
 - In terms of ability to read a text accurately and quickly, most of the sentences are grammatically correct and readers are able to understand the contexts and meaning properly. There are few exceptions: “*Hers* classmate is Harry Potter and Ronald Weasley.” The sentence plan ClassMateOf, connected to isClassMateOf, generates this result. The noun ‘classmate’ and verb ‘is’ agrees with slot 4, which is Property Fillers (in this case, Harry Potter and Ronald Weasley). These fillers are added as 2 separate properties of the individual Hermione Granger, and seems to be it doesn’t distinguish if it has multiple fillers (i.e. doesn’t consider as plural when it has more than one fillers), and it seems to be unavoidable in current version of NaturalOWL. If we set the Expression to demonstrative, instead of auto, it will generate “*This Hermione Granger’s* classmate is Harry Potter and Ronald Weasley,” which also seems as an awkward sentence. The same issue goes for the sentence “Gryffindor House is a house. Ginny Weasley, Harry Potter, Hermione Granger, and Ronald Weasley belongs to it.” 4 students are connected to GryffindorHouse by hasStudent property, but NaturalOWL doesn’t consider them as plural. It only evaluates the number of a property filler, which is singular.
 - In terms of expressiveness, it uses wide range of vocabulary and sentence structures such as “is a student of”, “one’s classmate is”, “is married to”, “is the wife of”, “is interested in”, “is 19 years old”, “is daughter of”, “is house member of”, “owns”, “is owned by”, “teaches course such as”, “is the father of”, etc.
- Interestingness
 - The contents of the text is interesting with a wide range of vocabulary and thus the text is able to attract or hold reader’s attention. As the text gets long generating different topics due to the level-2 graph distance, it may be a good idea to make sections or order to organize the text.

Sample 2

Individual Selected: VernonDursley

Configuration: Default with graph distance set to 2. It covers first graph distance of Vernon Dursley, muggle, Petunia Dursley, and Dudley Dursley. Texts are generated until all facts are assimilated.

Generated Text: "Vernon Dursley is a muggle. A muggle is a kind of non magical being. Vernon Dursley is married to Petunia Dursley. Petunia Dursley is a muggle. She is the mother of Dudley Dursley. She is married to Vernon Dursley. Vernon Dursley is the father of Dudley Dursley. Dudley Dursley is a muggle. He is a son of Petunia Dursley and Vernon Dursley. "

Sample 2

- Fluency
 - The text itself is grammatically correct. Since it doesn't have a passive verb involved in the sentence plan, it doesn't have similar errors as in Sample 1.
- Interestingness
 - There are lots of repetition of word and some sentence has same meaning in this text that lowers the interestingness. For example, "Vernon Dursley is married to Petunia Dursley." and "She (Petunia) is married to Vernon Dursley" has exactly same meaning (this happens because of the inverse property). It would be better to delete one of the sentence to avoid repetition of the same sentence. Also, it would be more interesting if the sentence with same meaning but different nouns combined together. For example, "Vernon Dursley is a muggle", "Petunia Dursley is a muggle", and "Dudley Dursley is a muggle" could be combined to "Vernon Dursley, Petunia Dursley, and Dudley Dursley is a muggle", but since they are different individual, it seems to be impossible to combine 3 different individuals with within same classes.