CS 486 Introduction to Artificial Intelligence

Fall 2016

Assignment 4: A Natural Language Generation "Hackathon" – Part (a)

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Experimental Plan

a) What issues you plan to research

   i. Knowledge Representation issues

   ii. Natural Language Resource issues

b) What your primary domain ontology will be about

   i. Our primary domain ontology will be about Harry Potter.

c) What existing ontologies or other resources you will use

   i. We will use the Harry Potter example ontology as a seed.

d) Planned extensions to the domain ontology or resources

   i. We plan to create some basic Lexicon entries, NL Names, and 10+ Sentence Plans

   ii. We also plan to add more specialized Classes and Properties and see how it affects the Natural Language Resource generation

e) What hypotheses you will test, e.g.,

   i. Creating additional sub-classes and properties for a given ontology will lead to more expressive text

   ii. Adding more sentence plans and other natural language resources will lead to more fluent text

Description of Parts of the Plan Actually Implemented

Lexicon Entries

Adjectives:

- dark, interested, magical, old, such

Nouns:

- albus-dumbledore, aurthur-weasley, being, classmate, cloak, course, deatheater, draco-malfoy, dudley-dursley, father, fawkes, ginny-weasley, headmaster, hedwig, hermione-granger, Hogwarts, house, housemember, husband, invisibility, james-potter, lily-potter, Lucius-malfoy, magic, molly-weasley, mother, muggle, nagini, non-magical-being, owl, parent, petunia-dursley, phoenix, professor, Ronald-weasley, school, shapeshifter, slytherin-house, snake, Vernon-dursley, wife, werewolf, year

Verbs:

- belongVerb, ownByVerb, teachVerb, marryVerb

NL Names

English NL Names:

- AlbusDumbledore, ArthusWeasley, DarkWizard, Deatheater, DracoMalfoy, Father, Fawkes, GinnyWeasley, Headmaster, Hedwig, HermioneGranger, Hogwarts, House, HouseMember, JamesPotter, LilyPoter, LuciusMalfoy, MagicalBeing, MollyWeasley, Mother, Muggle, Nagini, NonMagicalBeing, Owl, PetuniaDursley, Phoenix, Professor, RonaldWeasley, SchoolOfMagic, Snake, TheClockOfInvisibe, VernonDursley, Werewolf, Wizard

Sentence Plans

English Sentence Plans:

- ClassmateOf, DaughterOf, FatherOf, HouseOf, HouseMemberOf, HusbandOf, MotherOf, OwnedBy, ParentOf, hasStudent, isInterestedIn, isNYearsOld, teachesCourses, isMarriedTo, WifeOf

Specialized Classes

- Gender class, which has subclasses Male and Female.

- Mother and Father classes, which are subclasses of Parent

- Daughter and Son classes, which are subclasses of Child

- Wife and Husband classes, which are subclasses of MarriedCouple

Specialized Properties

- isFatherOf and isMotherOf properties, which are sub-properties of isParentOf

- isDaughterOf and isSonOf properties, which are sub-properties of isChildOf

- isWifeOf and isHusbandOf properties, which are sub-properties of isMarriedTo

- hasCourses property, which is used as assertion with a domain of SchoolOfMagic and range of Course

- isClassMateOf properties, which is used as assertion with a domain of Student and range of Student

- hasStudent properties, which is used as assertion with a domain of House and range of Student. It is inverse property of isHouseMemberOf