

Homework #6: CMPT-825

Due in class on Oct 17, 2003

Anoop Sarkar – anoop@cs.sfu.ca

- (1) (25 pts) **Wordnet:** The WordNet database is accessible online at:

<http://www.cogsci.princeton.edu/~wn/>. Follow the link to *Use WordNet Online* or go to:

<http://www.cogsci.princeton.edu/cgi-bin/webwn>

WordNet contains information about word *senses*, for example, the different senses of the word *plant* as a manufacturing plant or a flowering plant. For each sense, WordNet also has several class hierarchies based on various relations. One such relation is that of *hypernyms* also known as *this is a kind of* . . . relation. It is analogous to a object-oriented class hierarchy over the meanings of English nouns and verbs and is useful in providing varying types of word class information.

For example, the word *pentagon* has 3 senses. The sense of *pentagon* as five-sided polygon has the following hypernyms.

Sense3: pentagon

⇒ polygon, polygonal-shape

⇒ plane-figure, two-dimensional-figure

⇒ figure

⇒ shape, form

⇒ attribute

⇒ abstraction

The word *line* has 29 senses. The sense of *line* as trace of moving point in geometry has the following hypernyms.

Sense4: line

⇒ shape, form

⇒ attribute

⇒ abstraction

The *lowest common ancestor* for these two senses is the hypernym *shape, form*. A *hypernym path* goes up the hypernym hierarchy from the first word to a common ancestor and then down to the second word. Note that a hypernym path from a node other than the lowest common ancestor will always be equal to or longer than the hypernym path provided by the lowest common ancestor. For the above example, the hypernym path is *pentagon* ⇒ polygon, polygonal-shape ⇒ plane-figure, two-dimensional-figure ⇒ figure ⇒ shape, form ⇒ *line*.

Find the lowest common ancestor across all senses of each of the following pairs of words. Provide the hypernym path through the lowest common ancestor for each case.

- Canada* and *Vancouver*
- English* and *Tagalog*
- plant* and *email* (look for a partial match in this case, e.g. a sense *a*, *b*, *c* would match sense *d*, *b* since they have *b* in common.
- Find a path from *Canada* and *Vancouver* again, but now also consider the paths using *meronyms* which is the *parts of this* . . . relation. Consider only *regular meronyms*.