



# WordNet

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Week 3                      KAN Min-Yen  
(Self-study module)



# Thesauri and Lexical Relations

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- Polysemy: Same word, different senses of meaning
  - We say that *homographs* are *polysemous*
  - Slightly different concepts expressed similarly
- Synonyms: Different words, related senses of meanings
  - Different ways to express similar concepts



# WordNet

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- Can be downloaded for free:
  - [www.cogsci.princeton.edu/~wn/](http://www.cogsci.princeton.edu/~wn/)
  - Or try the online lookup at:  
[www.cogsci.princeton.edu/cgi-bin/webwn](http://www.cogsci.princeton.edu/cgi-bin/webwn)
  - We only cover up to version 1.7 here
- Emphasizes the (hierarchical) organization rather than its coverage
- Organizes hierarchy around a *synset*
  - i.e., synonym set -- a group of tokens that can express the same core concept
  - e.g., (synset #07754049) *spring, fountain, outflow, outpouring, natural spring*



# Hypernyms from WordNet

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spring, fountain, outflow, outpouring, natural spring

=> geological formation, geology, formation

=> natural object

=> object, physical object

=> entity, physical thing

mountain, mount

=> natural elevation, elevation

=> geological formation, geology, formation

=> natural object

=> object, physical object

=> entity, physical thing

# Structure of WordNet

Semantic relation	Description	Part of speech				Example
		N	V	Adj	Adv	
<b>Synonym</b>	A concept that means exactly or nearly the same as another. <i>WordNet</i> considers immediate hypernyms to be synonyms.	×	×	×	×	{ <i>sofa, couch, lounge</i> } are all synonyms of one another. { <i>seat</i> } is the immediate hypernym of the synset.
<b>Antonym</b>	A concept opposite in meaning to another.	×	×	×	×	{ <i>love</i> } is the antonym of { <i>hate, detest</i> }.
<b>Hypernym</b>	A concept whose meaning denotes a superordinate.	×	×			A { <i>feline, felid</i> } is a hypernym of { <i>cat, true cat</i> }.
<b>Hyponym</b>	A concept whose meaning denotes a subordinate.	×	×			A { <i>wildcat</i> } is a hyponym of { <i>cat, true cat</i> }.
<b>Substance meronym</b>	A concept that is a substance of another concept.	×				A { <i>snowflake, flake</i> } is substance of { <i>snow</i> }.

Used to build the hierarchy

# Structure of WordNet

Semantic relation	Description	Part of speech				Example
		N	V	Adj	Adv	
<b>Part meronym</b>	A concept that is a part of another concept.	×				A { <i>crystal, watch crystal, watch glass</i> } is a part of a { <i>watch, ticker</i> }.
<b>Member meronym</b>	A concept that is a member of another concept.	×				An { <i>associate</i> } is a member of an { <i>association</i> }.
<b>Substance of holonym</b>	A concept that has another concept as a substance.	×				A { <i>tear, teardrop</i> } has { <i>water, H2O</i> } as a substance.
<b>Part of holonym</b>	A concept that has another concept as a part.	×				A { <i>school system</i> } has a { <i>school, schoolhouse</i> } as a part.
<b>Member of holonym</b>	A concept that has another concept as a member.	×				{ <i>organized crime, gangland, gangdom</i> } has { <i>gang, pack, ring, mob</i> } as a member.
<b>Attribute</b>	An adjective that is the value of a noun.	×				{ <i>fast (vs. slow)</i> } is a value of { <i>speed, swiftness, fastness</i> }

# Structure of WordNet

Semantic relation	Description	Part of speech				Example
		N	V	Adj	Adv	
Cause to	A verb that is the cause of a result.		×			{ <i>give</i> } is the cause of the result { <i>have, have got, hold</i> }
Entailment	A verb that involves unavoidably a result.		×			To { <i>die, decease, perish, go, exit, pass away, expire</i> } involves unavoidably to { <i>leave, leave behind</i> }.
Troponym	A verb that is a particular way to do another.		×			To { <i>samba</i> } is a particular way to { <i>dance, trip the light fantastic</i> }.
Pertainym	An adjective or adverb that relates to a noun.			×	×	{ <i>criminal</i> } relates to { <i>crime</i> }.
Attribute	An adjective that is the value of a noun.	×				{ <i>fast (vs. slow)</i> } is a value of { <i>speed, swiftness, fastness</i> }
Value	A noun that has an adjective for a value.			×		{ <i>weight</i> } has { <i>light (vs. heavy)</i> } as a value.



## To think about:

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- Most IR research has primarily looked at *statistical* approaches to find “aboutness”

How has (or might) WordNet be used to provide more functionality in searching?