C SC 620
Advanced Topics in Natural Language Processing

Lecture 8
2/12/04
Adminstrivia

• Email me your slides for your presentation next week
  – Only one person has done that so far …
• Remember it should be a 15 minute presentation total (including questions)
Next Topic

- Next topic we’re going to look in depth at is Machine Translation
- Paper collection:
  - *Readings in Machine Translation*
  - Edited by Sergei Nirenburg, Harold Somers and Yorick Wilks
  - Published July 2003
  - MIT Press
Color and WordNet

argent blue-black charcoal gray hueless neutral white

achromatic

antonym

chromatic

amber azure blue brown dun green red ... yellow
Semantic Relation

• Natural objects sometimes have a canonical (or idealized) color
  – Examples:
    • grass color-of green
    • cucumber color-of green
    • banana color-of yellow
    • apple color-of red
    • apple color-of green
    • sky color-of blue
WordNet and Canonical Color

- WordNet is very inconsistent in its use of color
  - Relation: sky **color-of** blue
  - Concept:
    - *blue sky*
    - Synset: {blue, blue_sky, wild blue yonder, blue air}
      - (synset id: 107581577)
    - Gloss: *the sky as viewed during daylight: he shot an arrow into the blue*
  - Note:
    - *red sky* is not in WordNet
WordNet and Canonical Color

• *Blue* to *sky* (1 link)
  – blue/n is in [blue_sky,blue,blue_air,wild_blue_yonder]
  – [blue_sky,blue,blue_air,wild_blue_yonder] is an instance of [sky]

• Hyponyms of *sky*:
  – blue sky
  – mackerel sky
WordNet and Canonical Color

• *Red to sky* (6 links)
  – red/n is in [Bolshevik, Marxist, pinko, red, bolshie]
  – [Bolshevik, Marxist, pinko, red, bolshie] is an instance of [radical]
  – [radical] is an instance of [disputant, controversialist]
  – [disputant, controversialist] is an instance of
    [person, individual, someone, somebody, mortal, human, soul]
  – [person, individual, someone, somebody, mortal, human, soul] is an instance of [causal_agent, cause, causal_agency]
  – [causal_agent, cause, causal_agency] is an instance of [entity, physical_thing]
  – [sky] is an instance of [entity, physical_thing]
Examples

• Grass
  – Gloss: narrow-leaved green herbage: grown as lawns; used as pasture for grazing animals; cut and dried as hay

• Green to grass (4 links)
  – green/n is in [greens,green,leafy_vegetable]
  – [greens,green,leafy_vegetable] is an instance of [vegetable,veggie]
  – [vegetable,veggie] is a part holonym of [herb,herbaceous_plant]
  – [gramineous_plant,graminaceous_plant] is an instance of [herb,herbaceous_plant]
  – [grass] is an instance of [gramineous_plant,graminaceous_plant]
Examples

• **Cucumber**
  – Gloss: *a melon vine of the genus Cucumis; cultivated from earliest times for its cylindrical green fruit*

• **Green to cucumber (3 links)**
  – green/n is in [greens,green,leafy_vegetable]
  – [greens,green,leafy_vegetable] is an instance of [vegetable,veggie]
  – [cucumber,cuke] is an instance of [vegetable,veggie]
  – cucumber/n is in the synset [cucumber,cuke]
Examples

Apple

Gloss: *fruit with red or yellow or green skin* ...

• **Green to apple** (4 links)
  – green/n is in [greens, green, leafy_vegetable]
  – [greens, green, leafy_vegetable] is an instance of [vegetable, veggie]
  – [vegetable, veggie] is an instance of
    [produce, green_goods, green_groceries, garden_truck]
  – [edible_fruit] is an instance of
    [produce, green_goods, green_groceries, garden_truck]
  – [apple] is an instance of [edible_fruit]
Examples

• *Red to apple* (10 links)
  – red/n is in [red, redness]
  – [red, redness] is an instance of
    [chromatic_color, chromatic_colour, spectral_color, spectral_colour]
  – [blue, blueness] is an instance of
    [chromatic_color, chromatic_colour, spectral_color, spectral_colour]
  – [Payne's gray] is an instance of [blue, blueness]
  – [Payne's gray] is an instance of [pigment]
  – [pigment] is an instance of
    [coloring_material, colouring_material, color, colour]
  – [coloring_material, colouring_material, color, colour] is an instance of
    [material, stuff]
  – [rind] is an instance of [material, stuff]
  – [peel, skin] is an instance of [rind]
  – [peel, skin] is a part holonym of [edible_fruit]
  – [apple] is an instance of [edible_fruit]
Examples

- **Yellow to apple (12 links)**
  - yellow/n is in [yellow,yellowness]
  - [yellow,yellowness] is an instance of [chromatic_color,chromatic_colour,spectral_color,spectral_colour]
  - [blue,blueness] is an instance of [chromatic_color,chromatic_colour,spectral_color,spectral_colour]
  - [Payne's_gray] is an instance of [blue,blueness]
  - [Payne's_gray] is an instance of [pigment]
  - [pigment] is an instance of [coloring_material,colouring_material,color,colour]
  - [coloring_material,colouring_material,color,colour] is an instance of [material,stuff]
  - [material,stuff] is an instance of [substance,matter]
  - [solid] is an instance of [substance,matter]
  - [food] is an instance of [solid]
  - [produce,green_goods,green_groceries,garden_truck] is an instance of [food]
  - [edible_fruit] is an instance of [produce,green_goods,green_groceries,garden_truck]
  - [apple] is an instance of [edible_fruit]
Examples

• Purple to apple (12 links)
  – purple/n is in [purple,purpleness,empurpled]
  – [purple,purpleness,empurpled] is an instance of
    [chromatic_color,chromatic_colour,spectral_color,spectral_colour]
  – [blue,blueness] is an instance of
    [chromatic_color,chromatic_colour,spectral_color,spectral_colour]
  – [Payne's_gray] is an instance of [blue,blueness]
  – [Payne's_gray] is an instance of [pigment]
  – [pigment] is an instance of [coloring_material,colouring_material,color,colour]
  – [coloring_material,colouring_material,color,colour] is an instance of
    [material,stuff]
  – [material,stuff] is an instance of [substance,matter]
  – [solid] is an instance of [substance,matter]
  – [food] is an instance of [solid]
  – [produce,green_goods,green_groceries,garden_truck] is an instance of [food]
  – [edible_fruit] is an instance of
    [produce,green_goods,green_groceries,garden_truck]
  – [apple] is an instance of [edible_fruit]
Visual Information

Google Image Search

Advanced Image Search  Preferences  Image Search Help

apple  Google Search

SafeSearch is off

Web  Images  Groups  Directory  News

Results 1 - 20 of about 374,000. Search took 0.14 seconds.

Show:  All sizes - Large - Medium - Small

apple.jpg  205 x 295 pixels - 13k
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apple.jpg  450 x 450 pixels - 9k
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vs-apple-macintosh.jpg  265 x 331 pixels - 61k
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Visual Information
Visual Information