

Word Sense Disambiguation

homonyms: two different words with the same spelling

What is it?

- "George played bass in the orchestra."
- "Fred caught bass in the river."

strings ↔ meanings is a many-to-many mapping!

these two sentences have the same part of speech structure

they also have the same type of name entities

so there's no tools that we've been given up to this point that indicate to us that

bass and bass should be different things

parts of speech that not growing or changing
English doesn't really gain new conjunctions

closed-set vs. open-set words

closed: conjunctions, pronouns, prepositions, ...

open: nouns, verbs, adjectives, adverbs, ...

For example:

- Google: v. to search using Google
- drone: n. unmanned aerial vehicle

How will it work?

word context

- "George *played* bass in the *orchestra*."
- "Fred *caught* bass in the *river*."

Word relationships

- homonym - same spelling, different meanings
- synonym - different spellings, same meaning
- antonym - opposite meaning
- hypernym - a containing category (fish is a hypernym of bass)
- hyponym - a special case (bass is a hyponym of fish)
- holonym - the whole of which something is a part (hand is a holonym of finger)
- meronym - a part (finger is a meronym of hand)
 - member - faculty>professor
 - part - body>arm
 - substance - water>oxygen
- troponym - a manner of doing something (flounce is a troponym of walk)

WordNet

<http://wordnetweb.princeton.edu/perl/webwn>

Approaches

- token classification
- sequence-to-sequence

Token classification

we are not classifying each token independently
we are inferring the entire sequence of tokens

Like NER, based on collocation features.

- supervised
 - bootstrapping
- unsupervised

if we can understand things like orchestra and river, then
there's information there in nearby terms that can tell you something about the word

Sequence-to-sequence

Like machine translation, except instead of mapping e.g. English to Spanish, map English to *meaning* (senses).

**if you've got some structure for representing these word senses/the meaning
then you could try to mapping from english to the meaning**

Related: coreference resolution

"George walked into a bar. He sat down."