

CSE6390 3.0 Special Topics in AI & Interactive Systems II
Introduction to Computational Linguistics
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Tuesdays,Thursdays 10:00-11:30 – South Ross 104
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Word sense disambiguation sketch

Consider a simple, informal, anything but robust knowledge-based approach to word sense disambiguation. We know that many English sentences can map onto a template that looks like the following:

<agent> <action> <actionable item>

which normally correspond to the subject, verb and object respectively. This simple observation leads to an intriguing method for disambiguating word senses. As an example consider the sentence “[The banker banks his plane over the river bank near the bank that he banks on for good banking service.](#)” – whew

What do we know about this somewhat contrived sentence? We know that “[...that he banks on for good banking service.](#)” is a relative clause and can be treated as a separate sentence. That’s good – and the same techniques we will now discuss for the “[The banker banks his plane over the river bank near the bank](#)” part will also serve well for the clause. We need to find the verb - <action>. Morphological analysis reveals that the content words [banker](#), [banks](#), [plane](#), [river](#), [bank](#) and [bank](#) can be as follows:

WORD	ROOT	MORPH-1	MORPH-2
Banker	Bank	Noun singular	Comparative adjective
Banks	Bank	Noun plural	Verb present tense
Plane	Plane	Noun singular	Verb present tense
River	River	Noun singular	
Bank	Bank	Noun singular	Verb present tense
Bank	Bank	Noun singular	Verb present tense

The function words also provide us with useful information, thus over and near are prepositions and hence their phrases [over the river bank](#) and [near the bank](#) will need to be attached to the sentence structure (remember grammar school English classes and diagramming?). So now we need to find the verb in the fragment The [banker banks his plane](#). Morphological analysis has revealed two candidates: [banks](#) and [plane](#). If we consider [banks](#) we find that [banker](#) is a compatible <agent> (a subject), that is banker has the right features (selectional restrictions) to be compatible with a verb <action> of [banks](#). Also [plane](#) is an acceptable <actionable item> (an object). Thus the sense of banks is determined by the constraints imposed (selectional restrictions) that [banker](#) and [plane](#) impose.

If we consider the alternative and choose the second candidate plane as the verb, we find that it does not work so well.