

Natural Language Processing

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Overview

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 - ▶ Natural Language Processing
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Topic Introductions



Inductive Logic

- ▶ An argument that, based on the premises, claims the conclusion has a probability of being true, though whether it is actually true or false is not important.
- ▶ An Inductive Logic argument is either ‘strong’ or ‘weak’ rather than ‘valid’ or ‘invalid.’
 - ▶ Strong: If the premises are true, the conclusion is **probably** true.
 - ▶ Weak: If the premises are true, the conclusion is still **probably not** true.
- ▶ An example of a strong argument ^[3]:
 - ▶ All observed crows are black.
 - ▶ Therefore, all crows are black.



Natural Language Processing (NLP)

- ▶ The process of translating human-understandable language into a machine-understandable language.
- ▶ NLP is a very difficult problem as it contains many sub-problems:
 - ▶ Ambiguous grammar rules and vocabulary meanings
 - ▶ Using sentence context to gain meaning
 - ▶ Understanding the tone and emphasis of the speaker
 - ▶ Etc.
- ▶ Example of confusing sentences [4]:
 - ▶ “Time flies like an arrow.”
 - ▶ “Fruit flies like a banana.”

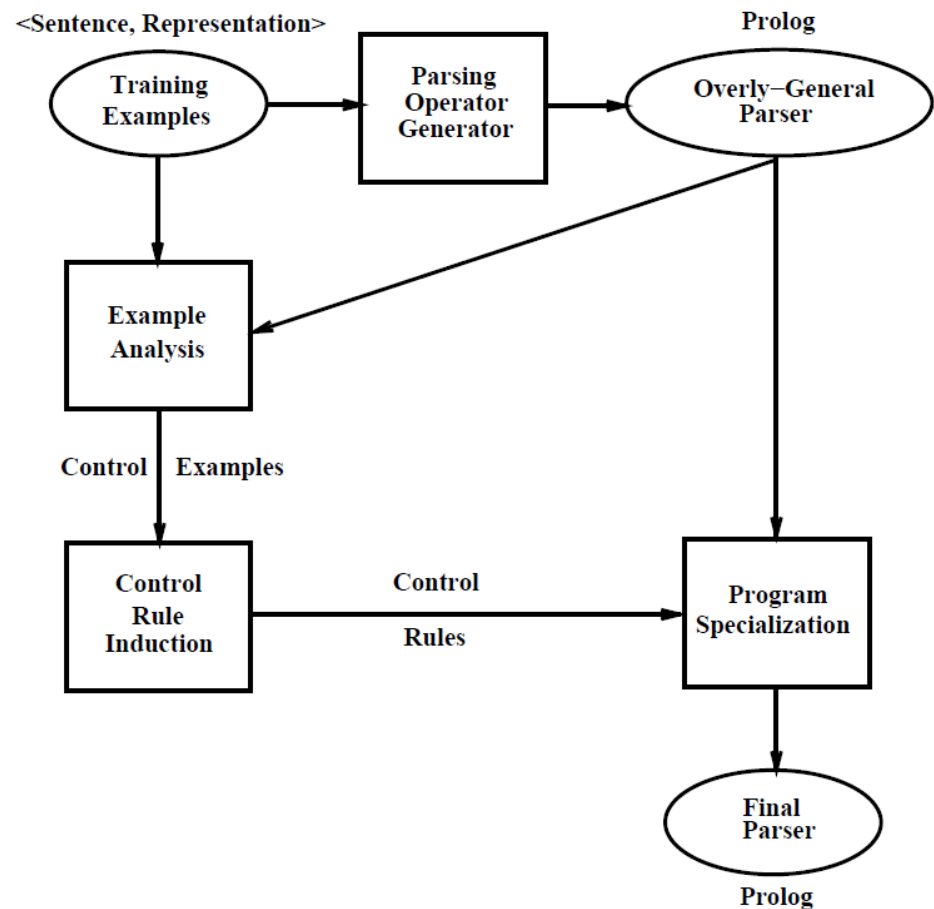


Topic Applications

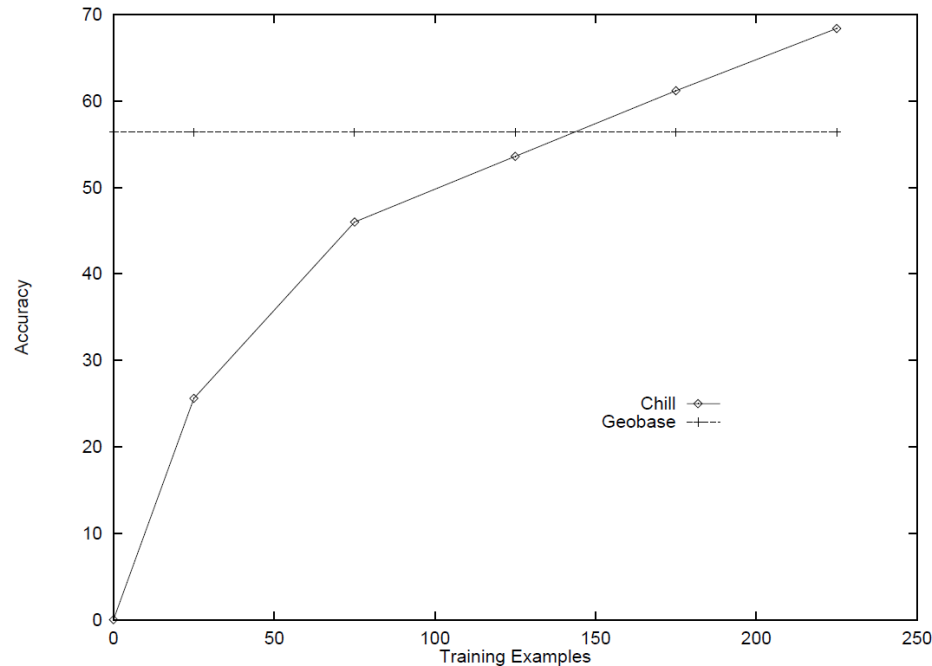


CHILL System: Description

- ▶ Takes a set of sentences with their associated correct parses as an input
- ▶ Uses induction logic in conjunction with the examples and a general parser to generate a specialized parser



CHILL System : Advantages

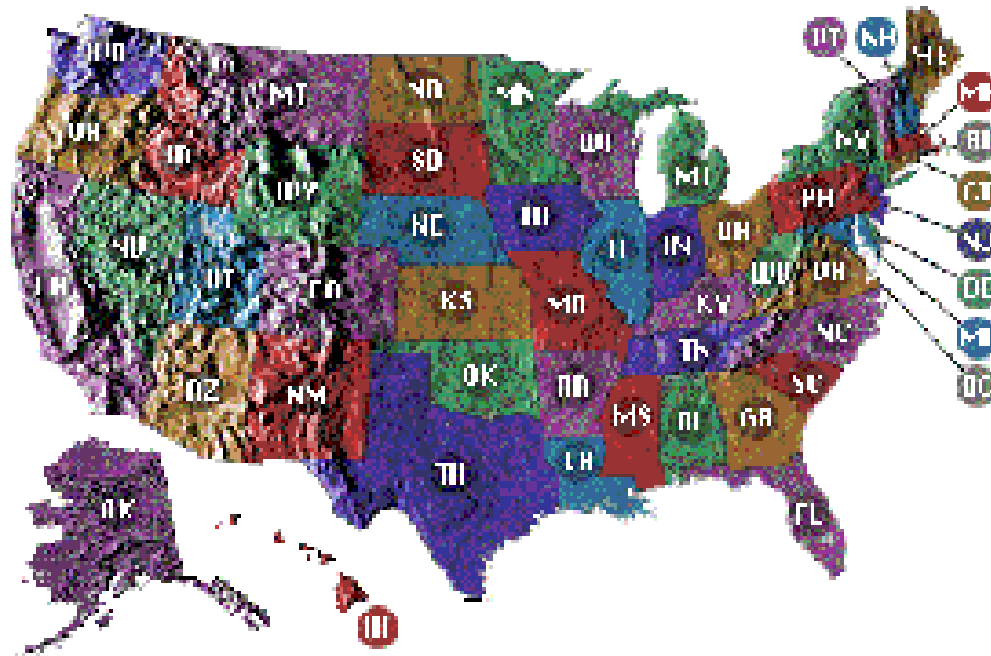


- ▶ As the number of training examples increases, the more accurate the parser becomes.
- ▶ It can generate a parser for a system as long as it meets certain criteria.



CHILL System: Demostration

- ▶ Demo of a CHILL-generated parser in GeoSystem



Closing

- ▶ Questions?
- ▶ Delta-Analysis



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