Computational
Logics, Semantics and Pragmatics:
Semantic Interpretation

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eman ta zabal zazu

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Motivation

Sbdm ip im vdu yonrckblms.
Abf ip im vdu bhhigu.
Sbdm yigaus ly vdu hbbvfnoo.
Abf zumv vb vdu aivgdum.
Mduku ip vdu hbbvfnoo? A:yonrckblms
Mduku znp Abf fuhbku vdu aivgdum? A:bhhigu

Motivation

John is in the playground.
Bob is in the office.
John picked up the football.
Bob went to the kitchen.
Where is the football? A:playground
Where was Bob before the kitchen? A:office

Motivation

派對

Motivation

दावत

Motivation

ವಿನೋದ ಕೂಟ

Motivation

party

Motivation

party

- Which sense of "party"?
- How many senses have "party"?
- How a computer should represent these senses?
- How these senses combine to form phrases?
- How phrases combine?

Motivation

- For example:
  - The lexical-semantic knowledge allows us to better **characterize** the different meanings of the words

  - *In 1992 Perot tried to organize a third **party** at the national level*
  - *She joined the **party** after dinner*
  - *They organized a **party** to search for food*
  - *He planned a **party** to celebrate Bastille Day*
  - *The **party** of the first part*

Motivation

- This better characterization may consist of:

- Add domain tags to each word sense

  - $party^1_n$: politics
  - $party^4_n$: free-time

- Distinguish the semantic relations that apply to each concept

  - $party^1_n$: member of: $political\_system^1_n$
  - $party^4_n$: hyponym: $wedding^1_n$

- Lexical Knowledge Bases, Ontologies, word embeddings, pre-trained language models?

Motivation

DeepSeek-V3.1

As an expert English lexicographer, write ten grammatically distinct sentence examples to illustrate the correct usage of the dictionary headword "party" with the definition "a person involved in legal proceedings". For example, "the party of the first part".

1. **Simple Declarative (Subject):** The **party** claiming damages must provide sufficient evidence.
2. **Passive Voice:** The aggrieved **party** was awarded significant compensation by the court.
3. **Object of a Preposition:** The judge issued a restraining order against the offending **party**.
4. **Indirect Object:** The court granted the prevailing **party** their full legal costs.
5. **Possessive Modifier:** The defendant, as the losing **party's** attorney, filed an immediate appeal.
6. **Appositive Phrase:** The plaintiff, the **party** who initiated the lawsuit, decided to settle out of court.
7. **With a Past Participle Phrase:** The **party** named in the injunction is prohibited from contacting the victim.
8. **Using a Relative Clause:** It is the responsibility of the **party** that breaches the contract to make the other whole.
9. **Plural Subject with a Collective Verb:** Both **parties** to the dispute have agreed to binding arbitration.
10. **In a Conditional Clause:** If any **party** fails to appear, the judge may issue a bench warrant.

Content

1) Introduction & motivation
- German Rigau @ HiTZ <german.rigau@ehu.eus>
- ~~25/11~~, 2/12

2) Introduction to logical formalisms and logic programming
- Javier Alvez @ LOREA <javier.alvez@ehu.eus>
- 10/12, 11/12, 09/01, 14/01, 28/01

3) Computational Semantics: Semantic Interpretation
- German Rigau @ HiTZ <german.rigau@ehu.eus>
- 30/01, 4/02, 6/02, 10/02

4) Computational Pragmatics and Discourse
- Mikel Iruskieta @ HiTZ <mikel.iruskieta@ehu.eus>
- 11/02, 16/02, 18/02

Bibliography

- Blackburn, Patrick, and Johan Bos. Representation and inference for natural language. A first course in computational semantics. CSLI (2005).

- Blackburn, Patrick, and Johan Bos. Working with Discourse Representation Theory. An Advanced Course in Computational Semantics . CSLI (2005).

- Patrick Blackburn, Johan Bos, Kristina Striegnitz Learn Prolog Now!

Evaluation

1) Introduction to logical formalisms and logic programming
- Javier Alvez @ LOREA
- Teacher exercises 30%

2) Computational Semantics: Semantic Interpretation
- German Rigau @ HiTZ
- Teacher exercises 40%

3) Computational Pragmatics and Discourse
- Mikel Iruskieta @ HiTZ
- Teacher exercises 30%

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