

# Computational Logics, Semantics and Pragmatics: Semantic Interpretation

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## HiTZ

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# Motivation

Sbdu ip im vdu yonrckblms.

Abf ip im vdu bhhigu.

Sbdu 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

ವಿನ್ಯೋದ 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<sub>n</sub><sup>1</sup>: politics
  - party<sub>n</sub><sup>4</sup>: free-time
- Distinguish the semantic relations that apply to each concept
  - party<sub>n</sub><sup>1</sup>: member of: political\_system<sub>n</sub><sup>1</sup>
  - party<sub>n</sub><sup>4</sup>: hyponym: wedding<sub>n</sub><sup>1</sup>
- Lexical Knowledge Bases, Ontologies, word embeddings, pre-trained language models?

# Content

- 1) Introduction to semantics and computational pragmatics
  - German Rigau @ HiTZ <german.rigau@ehu.eus>
  - 8/03, 15/03
  
- 2) Introduction to logical formalisms and logic programming
  - Javier Alvez @ LOREA <javier.alvez@ehu.eus>
  - 16/03, 22/03, 23/03, 29/03
  
- 3) Computational Semantics: Semantic Interpretation
  - German Rigau @ HiTZ <german.rigau@ehu.eus>
  - 30/03, 19/04, 24/04, 25/04
  
- 4) Computational Pragmatics and Discourse
  - Mikel Iruskieta @ HiTZ <mikel.iruskieta@ehu.eus>
  - 26/04, 02/05, 03/05

# 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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