

CCNM17-119: Semantics and Knowledge Representation Course Description

Aim of the course

Aim of the course: The topic of knowledge representation has strong connection with most fields of cognitive science, e.g. vision, sensory-motor integration, language, memory, reasoning, and imagery processes. The aim of this course is to present a new theoretical viewpoint on categorization and conceptual representation (the so called ‘concept empiricism’ approach of J. Prinz and a similar view of L.W. Barsalou). From this starting point we can discuss all important questions of knowledge representation with special focus on empirical questions, cognitive development, and the connection to other cognitive processes.

Learning outcome, competences

knowledge:

- Current methods and main objectives in the field of knowledge representation

attitude:

- Utilisation of knowledge in scientific communication, presentation

skills:

- Skills of applying main methods
- Skills of integrating knowledge from interdisciplinary approaches

Content of the course

Topics of the course

- Introduction: requirements for the modeling of conceptual representation.
- Static vs. dynamic knowledge.
- Categorization behavior 1: Prototype models.
- Categorization behavior 1: Exemplar models.
- Learning and understanding the meaning of concepts: theory-theory.
- Impossibility of learning concepts: informational atomism.
- Dynamic conceptual representation: concept empiricism.
- The importance and constraints of the embodiment approach.
- Conceptual representation as a multimodal integration.
- Processing and storing perceptual information: the problem of scope.
- Conceptual representation and meaning: the problem of intentional content.
- Anchoring knowledge: the problem of cognitive content.
- Reminding and the new concepts: the problem of compositionality.
- Category learning: models and the conceptual chaos

Learning activities, learning methods

Lectures and interactive discussions

Evaluation of outcomes

Learning requirements, mode of evaluation, criteria of evaluation:

requirements

- attendance
- presentation

mode of evaluation: examination and practical course mark

criteria of evaluation:

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Reading list

Compulsory reading list

- Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, 22, 577-660.
- Fodor, J. A. (1998). *Concepts*. Oxford: Clarendon Press.
- Murphy, G. L. (2002). *The big book of concepts*. Cambridge, MA: MIT Press.
- Prinz, J. J. (2002). *Furnishing the mind*. Cambridge, MA: The MIT Press.

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Recommended reading list

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