Semantics of Perception: Towards a Semantic Web Approach to Machine Perception

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fundamental questions

What is perception, and how can we design machines to perceive?

What can we learn from cognitive models of perception?

Is the Semantic Web up to the task of modeling perception?
What is Perception?

The act of

- Abstracting
- Explaining
- Discriminating
- Choosing
What can we learn from cognitive models of perception?

A-priori background knowledge is a **KEY ENABLER** of perception

Ulric Neisser (1976)

Richard Gregory (1997)
Is the Semantic Web up to the task of modeling perception?

**Representation**
- Heterogeneous sensors, sensing, and observation records
- Background knowledge (observable properties, objects/events, etc.)

**Inference**
- Explain observations (hypothesis building)
- Focus attention by seeking additional stimuli (that discriminate between explanations)

**Difficult Issues to Overcome**
- Perception is an *inference to the best explanation*
- Handle streaming data
- Real-time processing (or nearly)
Current Work on a Semantic Approach to Machine Perception

Semantic Sensor Network Ontology

http://www.w3.org/2005/Incubator/ssn/XGR-ssn

Ontology of Perception


MobileMD Cardiology Application

http://www.knoesis.org/library/resource.php?id=1682
Thanks.

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