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

Cory Andrew Henson  
*Wright State University - Main Campus*

Amit P. Sheth  
*Wright State University - Main Campus, amit.sheth@wright.edu*

Follow this and additional works at: [https://corescholar.libraries.wright.edu/knoesis](https://corescholar.libraries.wright.edu/knoesis)

Part of the Bioinformatics Commons, Communication Technology and New Media Commons, Databases and Information Systems Commons, OS and Networks Commons, and the Science and Technology Studies Commons

Repository Citation  
https://corescholar.libraries.wright.edu/knoesis/221

This Presentation is brought to you for free and open access by the The Ohio Center of Excellence in Knowledge-Enabled Computing (Kno.e.sis) at CORE Scholar. It has been accepted for inclusion in Kno.e.sis Publications by an authorized administrator of CORE Scholar. For more information, please contact corescholar@www.libraries.wright.edu, library-corescholar@wright.edu.
Semantics of Perception
Towards a Semantic Web Approach to Machine Perception

Cory Henson and Amit Sheth
Ohio Center of Excellence in Knowledge-enabled Computing (Kno.e.sis)
Wright State University, Dayton, Ohio, USA

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)
Semantic Sensor Network Ontology

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

Current Work on a Semantic Approach to Machine Perception

MobileMD Cardiology Application

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

Ontology of Perception

Thanks.

Semantics of Perception
Towards a Semantic Web Approach to Machine Perception

Cory Henson and Amit Sheth
Ohio Center of Excellence in Knowledge-enabled Computing (Kno.e.sis)
Wright State University, Dayton, Ohio, USA