euCognition

The European Network for the Advancement of Artificial Cognitive Systems

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Towards a cognitive theory for

A Common Sense Approach to Learning Social Interaction

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Common Sense:
a fundamental hard problem for Cognitive Systems Science

Common sense: knowledge held "in common" by people;
what people in common would agree.

"Common sense is the collection of prejudices acquired by age eighteen."
- A. Einstein

Common sense = an ability to interact.

Domains of Common Sense

Physical Common Sense: Ability to interact about the physical world.

Social Common Sense: Ability to interact socially.

Other domains : language, navigation, music, sports, religion, law, medecine…

Two opposing views on Common Sense (from epistemology*)

methodism vs particularism (or phenomenolism)

Methodist epistemology requires consistency with a theory or model.

Particularist epistemology (phenomenological or experience-based) gathers a list of propositions by generalising from observation and experience.

*epistemology: theory of knowledge

The Methodist Bias in Cognitive IA

Research in cognitive systems has been blinded by a "methodist" bias towards logic.

Origins: Mathematics and physics, where human intuition often conflict with provably correct or experimentally verified results (“physics envy”).

Modern manifestations from AI: linguistics and first order logics as bases for cognitive common-sense.

Recommendation:

A particularist approach to cognitive systems science

Phenomenologicaly based Epistomology?

Systems that learn through interaction

Domains:

- Interaction with the physical world.
- Interaction with people (social interaction)
- Interaction with language (linguistic interaction).
- Interaction within specialised domains.

Common Sense for Social Interaction

Assertion: Social interaction is a form of common sense

Common Sense for Social Interaction

- Must be learned from experience,
- Requires continuous learning
- May be learned from a tutor.

Reason: Complexity and diversity of human social conventions defy a logical or theoretical foundation.

(Social interaction is fundamentally chaotic.)

Common Sense for Social Interaction

Assertion: Social interaction is a form of common sense

Learning social interaction requires abilities to:

- Determine interest of partner
- Discriminate pleasure/displeasure
- Learn to evoke interest and pleasure through interaction
- Develop abilities through interaction

Seeking to please the tutor motivates learning.

Research Roadmap

Objective (The destination)

Core research problems(Milestones)

Research Methods (Routes)

Impact, Application domains (Rewards)

Research Roadmap

Objective (The destination)

- A technology for human-level physical and social interaction

Core research problems(Milestones)

- Common sense social interaction
- Learning social common sense through interaction

Research Methods (Routes)

- Methodist approaches (logic, statistical learning theory…)
- Particularlist approaches

Impact, Application domains (Rewards)

- A new understanding of human intelligence
- A fundamental enabling technology

Some Background

McCarthy, John (1990). Formalizing Common Sense. Norwood, NJ.

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