PHIL 371
Week 6: Analogy + Recommenders

Please turn off and put away all electronics.

1

Do Non-Human Animals Teach?

1. Meerkats

2. Dogs

3. Chimp language

Alternative interpretations: innate rules, imitation, chance.

2

Why are humans different? Penn & Povinelli 2012

1. Possible answers: brain size, language, culture, theory of mind, innate modules, teaching

2. Relational: the capacity to represent structured relations in terms of the bindings between concrete, observable entities and functional, unobservable roles

3

Interdependent Minds

A depends on B if the emotions and behaviors of A are causally influenced by the behaviors of B

What is causality?
 Causal power
 Constant conjunction (Hume)
 Probabilty (effect/cause) > Probability (effect)
 Manipulation: changing cause changes effect
 Sensory-motor-sensory schema, e.g. infant
 Do 3-analysis

4

The Paradox of Analogy

1. Contributes to some of the most important human accomplishments: science, technology, painting, music, social innovation

2. Limits human thought by making people fall back on old ways

5

How Semantic Pointers Expand Analogy

1. Explain how neurons can represent complex relations, including ones involving non-observables (conceptual combination)

2. Handles multimodal analogies: sensation + emotion

3. Integrates constraints: syntax (structure), semantics (meaning), pragmatics (purpose)

4. Avoids syntax-first bias

6

Discussion Questions

1. Do human relational abilities provide the basis for creative analogies?

2. Can crows think analogically?

7

What Recommenders Do

Analogy: you like A, B is like A, so you might like B.

Netflix, Amazon, music ...

Compare: case-based reasoning

NETFLIX

8

How Do They Work?

Representations:

Cases: films, songs, books, etc.

Features: genre, etc.

Statistics: what you and other people liked

Procedures:

Content-based filtering: features

Collaborative filtering: statistics on you and others

Hybrid: Combine

9

Recommender Strengths

1. Use large data bases

2. Use sophisticated machine learning techniques

3. Combine multiple sources of information, e.g. BellKor's 107. Compare Watson.

4. Don't have to be perfect, just suggestive

5. Improvable, e.g. by Netflix prize competition

10

Recommender Limitations

1. No understanding of content

2. Shallow understanding of individuals

3. Too many suggestions

4. Limited feedback

11

Discussion Question

How do recommender systems compare with human use of analogy?

12

Recommender vs. Humans

1. Advantages of recommenders: huge data bases of cases and individuals, ability to combine multiple filtering methods

2. Advantages of humans: deeper understanding of cases, genres, individuals

13