

For Wednesday

- No reading
- No homework

Program 5

- Any questions?

Approaches to Discourse

- Hand-built systems that work with semantic representations
- Hand-built systems that work with text (or recognized speech) or parsed text
- Learning systems that work with text (or recognized speech) or parsed text

Issues

- Agreement on representation
- Annotating corpora
- How much do we use the modular model of processing?

Pronoun Resolution Demo

- <http://www.clg.wlv.ac.uk/demos/MARS/index.php>

Summarization

- Short summaries of a single text or summaries of multiple texts.
- Approaches:
 - Select sentences
 - Create new sentences (much harder)
 - Learning has been used some but not extensively

Machine Translation

- Best systems must use all levels of NLP
- Semantics must deal with the overlapping senses of different languages
- Both understanding and generation
- Advantage in learning: bilingual corpora exist--but we often want some tagging of intermediate relationships
- Additional issue: alignment of corpora

Approaches to MT

- Lots of hand-built systems
- Some learning used
- Probably most use a fair bit of syntactic and semantic analysis
- Some operate fairly directly between texts

Generation

- Producing a syntactically “good” sentence
- Interesting issues are largely in choices
 - What vocabulary to use
 - What level of detail is appropriate
 - Determining how much information to include

Strong vs. Weak AI

- “Weak” AI
 - Claims that the digital computer is a useful **tool** for studying intelligence and developing useful technology.
 - A running AI program is **at most** a simulation of a cognitive process but is not itself a cognitive process.
 - Analogously, a meteorological computer simulation of a hurricane is not a hurricane.
- “Strong” AI
 - Claims that a digital computer can in principle be programmed to actually **BE** a mind, to be intelligent, to understand, perceive, have beliefs, and exhibit other cognitive states normally ascribed to human beings.

Ethical issues in AI

- What are the benefits and risks in attempting to develop AI programs?

Can Machines Act Intelligently?

- The Turing test

Argument from informality

- Human behavior is far too complex to be captured by any simple set of rules, and computer can only follow sets of rules, so computer cannot generate behavior as intelligent as that of humans.

Issues Raised

- Need for background knowledge to achieve good generalization from examples
- Learning should be possible without a teacher.
- Learning should be possible in the face of a multitude of features.
- Intelligent agents should be able to look for relevant information.

Could machines ever really think?

- The mind-body problem
 - Dualist
 - Monist or materialist

Problems with dualism

- Are you willing to accept the existence of an immaterial soul?
- Note that the concept of the brain as hardware and the mind as software is a dualist concept.

Problems with materialism

- Free will.
- Consciousness

Thought Experiments

- Brain in a vat
- Brain prosthesis
- The Chinese room

Argument from disability

- What is this?
- What responses can we make?

Gödel's Incompleteness Theorem

- Not necessarily applicable to computers, which aren't **really** Turing machines.
- Being able to establish mathematical truth may not be the same as acting intelligently.
- Humans are inconsistent in their thinking.