CS 315 – Intro to Human Computer Interaction (HCI)
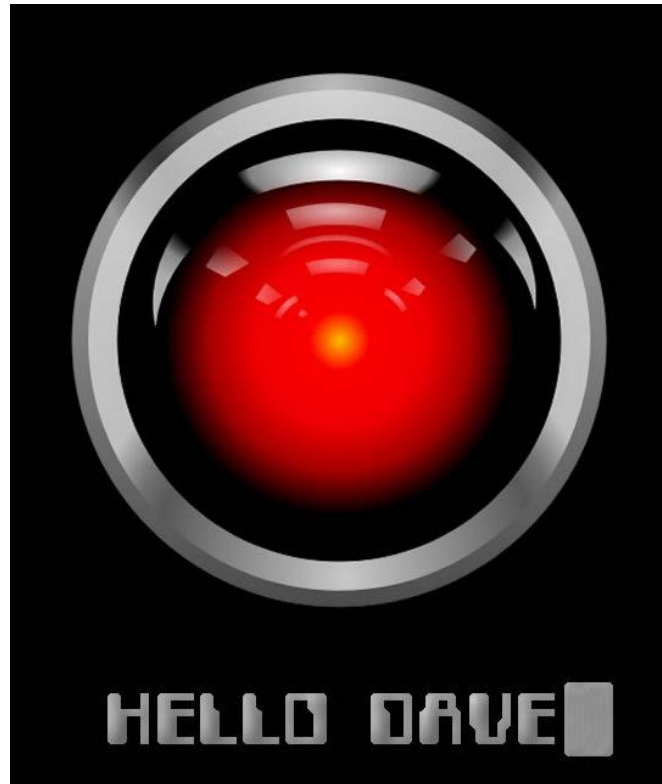
Natural Language in Computing

Natural Language in Computing

- Natural-language interaction (NLI)
- Natural-language queries and question answering (NLQ)
- Text-database searching
- Natural-language text generation (NLTG)
- Adventure games and instructional systems

The Dream

- https://www.youtube.com/watch?v=HwBmPiOmEG Q

The Reality

- Language is subtle

- There are many special cases

- Emotional relationships have a powerful and pervasive effect in human-human communication

- Most effective systems require constrained or preprocessed input, or post-processing of output

Natural Language Interaction (NLI)

NLI

- The operation of computers by people using a familiar natural language to give instructions and receive responses

Loebner Prize

- Instantiation of the Turing Test

- http://www.loebner.net/Prizef/loebner-prize.html
- 2007 winner: http://www.zabaware.com/assistant/

- Critics
  - "has no clear purpose, that its design prevents any useful outcome"

NLI

- Key impediment to NLI is the ***habitability*** of the user interface
  - How easy is it for users to determine what objects and actions are appropriate

SIRI

- Despite many functions still requiring the use of the touchscreen, the National Federation of the Blind describes the iPhone as "the only fully accessible handset that a blind person can buy"

Google Voice Search

- http://www.google.com/mobile/voice-search/

Natural Language Queries and Question Answering (NLQ)

NLQ

- More limited goal of natural-language queries against relational databases

- http://en.wikipedia.org/wiki/Powerset_(company)

Text Database Searching

Text Database Searching

- Using filters and parsers for queries

- Parsers eliminate noise words:
  - The, of, in, etc.

- Provide stemming
  - Beginning -> begin
  - Doggedly -> dog

- Google uses this technique

Natural Language Text Generation (NLTG)

NLTG

- Examples:
  - Preparation of structured weather reports
  - Generation of full-length stories with character development
  - Reports of medical lab tests

- http://www.abdn.ac.uk/ncs/computing/research/nlg/demonstrations/joking/

Adventure Games & Instructional Systems

Games


```
You are in an open field west of a big white house with a boarded
front door.
There is a small mailbox here.

> open mail

I don't understand that.

> open my mail

I don't understand that.

> open mailbox

Opening the mailbox reveals:
A leaflet.
```

Watson

- http://www.youtube.com/watch?v=YLR1byL0U8M