Human-Robot Interaction

Intelligent User Interfaces

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Readings

- Morency et al, Head Gestures for Perceptual Interfaces: The Role of Context in Improving Recognition, AIJ 2007 [long paper]

Basic Concepts

- Physical Layer
- Software Layer
- Interaction Layer
Physical Layer

- **Sensors**
  - camera (stereo)
  - microphones (array)
  - sonar, laser, infrared
  - touch (pressure)

- **Actuators**
  - motors (electric, pneumatic, hydraulic)
  - skin, eyes, tongue, etc.
  - locomotion (legged, wheel, ...)
Software Layer

- Image processing
- Speech recognition and generation
- Dialogue management
- Navigation
- Emotion modeling
- Multi-modal integration
- Tasks, goals, planning
- ...

CS 525U (S 08)
Interaction Layer

- Engagement
- Collaboration
- Social Understanding
- Empathy
- ...

[ NB: Teleoperation is an important part of field we are not focusing on. ]
Spectrum of Human-likeness
Readings

- Morency et al, Head Gestures for Perceptual Interfaces: The Role of Context in Improving Recognition, AIJ 2007
  - visual recognition by robot of human gestures
  - both robot and other UI applications
  - machine learning

  - complete interacting robot
  - focus on social/emotional interaction
  - machine learning