Entertainment Robotics

CS 4002 – Robots and Society

“A Headlong Rush

“Ethical or not, seeming sentient robots are proliferating”
(Boston Globe)

Ifbot robot
Yori-soi

Paro robot

Apri robot
Toshiba
What’s the Problem?

- Robots make people happy, right?
- We can’t do anything about labor shortages
- A robot is better than nothing
  - “A breakdown of family ties means a growing number of older Japanese are spending their golden years away from the care traditionally provided by children and grandchildren” (AP)
- It will lead to better mental and physical health

We don’t know!

- Untested hypotheses
- Arrogant assumptions (I know what you want)
- Does it promote detachment from reality?
- Should human social solutions be sought first prior to abandoning our elderly to robots?
- Who really benefits? The young or the old?
- Is robotics populated by scientists or is it still a bunch of cowboys/girls?
Robot Daycare

A companion?
Ron Arkin

Reuters

Robots turn off senior citizens in aging Japan
Thu Sep 20, 2007 6:26am EDT

By Emi Foulk

TOKYO (Reuters) - ibot, the resident robot at a Japanese nursing home, can converse, sing, express emotions and give trivia quizzes to seniors to help with their mental agility. Yet the pale-green gizmo has spent much of the past two years languishing in a corner alone.

"The residents liked ibot for about a month before they lost interest," said Yasuko Sagawa, director of the facility in Kyoto, western Japan, shaking her head as she contemplated the 495,000 yen ($4,300), 45-cm-tall (18-inch-tall) "communication robot".

"Stuffed animals are more popular," she remarked dryly.

"They just want simpler phones and tools," said Dr. Kanao Tsuji, a geriatrician with Life Care System, a home visit health care provider.

Robot and Frank

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Bonding: Robots perceived as Creatures

**Designer Intent:**
- For humans to perceive them as alive
- For humans to form emotional relationships
- To exploit human psychology to this end (not unlike movies, ads, cartoons).
- To entertain or titillate

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**The Media Equation [Reeves & Nass 96]**

“Equating mediated and real life is neither rare nor unreasonable. It is very common, it is easy to foster, it does not depend on fancy media equipment, and thinking will not make it go away. ... Media equal[s] real life applies to everyone, it applies often, and it is highly consequential. And this is surprising.”
Ethical Considerations for Robot Partners

- Should robots be allowed to manipulate the human mind or body?

- Should robots be allowed to replace people or pets in human relationships, and if so under what circumstances?

The illusion of companionship

- Can we create such a long-term and enduring illusion?
  - Yes, in time

- Should we?
  - Unclear
Living with Seal Robots (Wada and Shibata)

- Free interaction with PARO for 9 hours a day from June 2005
- 12 subjects (11 female, avg. age 77.5)
- “Paro encouraged them to communicate with each other and brought about psychological improvements. Physiologically, showed that reactions to stress also improved”

Aflac’s toy robot for kids facing cancer is the smartest toy of all
"This is awful": robot can keep children occupied for hours without supervision

A child-size robot designed to take on distinctly adult responsibilities takes the debate over the automation of human jobs to the next level.

Mattel Dropped Plans To Release A Toy That Would Make Babies Bond With A Robot

Mattel stops plans to sell an Amazon Echo–type device for kids after more than 20,000 people signed a petition arguing it would threaten children's privacy and development.
Toyota unveils robot baby to tug at maternal instinct in aging Japan

Is something missing from your life?

Think cellphones are bad? Just watch what robots can do to kids

“It’s a bit sinister, isn’t it? Children succumb to peer pressure from robots,” one researcher says.

Children ages 7 to 9 were more likely to give the same responses as the robot, even if they were obviously incorrect.
Prof. Noel Sharkey, Sheffield University (The Herald)

- “The robots are programmed to follow the elderly around and make sure they take their drugs. I find that highly concerning”

- “I’m 58 now and I fear that in my future I will be dumped in a home where I am cared for by machines. We need to have a public debate and we need to have it now, before the robots really bore into our society”
“The concern is that treating an ‘animal’ as a lesser being could bleed over to treating certain humans as lesser beings.”
- Dr. J. Hughes, Trinity College

“The truth of the matter is that people, given the choice, would prefer having the real dog.”
- Dr. A. Beck, Indiana U. on a study with AIBO

“Who are social robots for, all or some?”
- Prof. S. Restivo, RPI

“Who is responsible if things go wrong?”
- A. Matthias, University of Kassel

“We believe that by better understanding elders’ current relations to people, products, and activities, we can begin to ask appropriate questions about how future robotic products might fit within the home.”
- J. Forlizzi et al, CMU

More commentary
- Turkle et al (MIT)
  - “We attach to what we nurture”
  - Notes that robots can become intimate machines for seniors
  - “We’re setting up a situation that’s based upon a fundamental deception.”
The March of the Robot Dogs

“Robot companions, shaped like familiar household pets, could comfort and entertain lonely older people. This goal is misguided and unethical”

- Dr. R. Sparrow, Monash University

Why unethical? (according to Sparrow)

- Requires sentimentality of a morally deplorable sort
- It violates a duty we have to apprehend the world accurately.
- The design and manufacture of robots that presuppose or encourage this delusion is unethical
- Robot companions are incapable of any real emotions (loyalty, affection, etc.)
- Sophisticated robot pets may make such delusion likely even when this is not the intention of the designer
People for the Ethical Treatment of Animals

“The turn toward having robotic animals in place of real animals is a step in the right direction... Practically speaking from PETA’s perspective, it really doesn’t matter what you do to a tin object”  
(L. Lange, CSM)

Researchers teach robots to 'feel pain'

Researchers from Germany are developing an artificial nervous system aimed at teaching robots how to feel pain.

Researcher Johannes Kuehn told IEEE Spectrum: "Pain is a system that protects us. When we move away from the source of pain, it helps us not get hurt."
Robot Abused by Children

Shelly, a Robot Capable of Restraining Children's...
A few weeks ago, a drunk man in Japan was arrested for kicking a humanoid robot that was stationed as a greeter at a SoftBank, Corp., store, which develops the robots. According to the police report, the man said he was angry at the attitude of one of the store clerks. The "Pepper robot" now moves more slowly, and its internal computer system may have been damaged.

Under current Japanese law, the man can be charged with damage to property, but not injury, since injury is a charge reserved for humans. Dr. Yueh-Hsuan Weng, who is

Hitchhiking robot's cross-country trip in US ends in Philly

Associated Press  |  August 2, 2016

PHILADELPHIA (AP) — A hitchhiking robot that captured the hearts of fans worldwide met its demise in the U.S.
Early Robot Pets/Companions: Nothing New

Decosta’s Robot Pet (1979)
- Watchdog and bark routines

Petster (late 1980s)
- Artificial tonal language
t-barked for recharge
speech synthesis and interpretation

What have I done? What have I done!
Project Goals

- Powerful attachment by human user to robotic artifact (QRIO/AIBO)

- Provision of routine daily, useful, natural, non-boring interaction with user, i.e., life-long partnerships

- Individualized development, learning, and adaptation patterns for each robot

MUTANT – An AIBO Precursor
Postural Displays

Dog Behavior → Ethological Controller

- Ethologically Inspired Design
- Starting Point: Scott/Fuller ethogram
- Timberlake-Lucas systems modeling approach
12 Behavioral Subsystems for Dog Model

- Investigative
- Epimeletic
- Et-epimeletic
- Allelomimetic
- Agonistic
- Sexual
- Eliminative
- Ingestive
- Comfort-seeking
- Miscellaneous
- Play
- Maladaptive

Role of Drives in Behavior Selection

External Stimuli

Environment

Behavior

Internal Variables

The selected Action causes the change of the internal variables

Regulation range
AIBO First Litter
Dog-Robot Interaction
Why Cognitive Models for Humanoids?

- Humanoid robots will function among people
  - They need to behave naturally (human-like)
  - They need to understand human behavior

- Such models have proven useful in the past (e.g., ethological models for AIBO)

QRIO Emotional Expression

Associates different emotional state with different people (Attitudes)
Basic Behavior
without Non-verbal communication

Proxemics + NVC:
An old friend comes to talk
Further questions for the ethical treatment of humans by robotic systems

- What are the appropriate relationships between humans and robots?
- Is inducing a slavery mentality acceptable?
- How intimate should a relationship be with an intelligent artifact?
- Should a robot be able to mislead or manipulate human intelligence?
- What, if any, level of force is acceptable in physically managing humans by robotic systems?
- What should these agents look like and what is appropriate behavior for them?
- What are acceptable modalities for interaction between robot and human?