Social Robotics

Robotics
Bridgewater State University

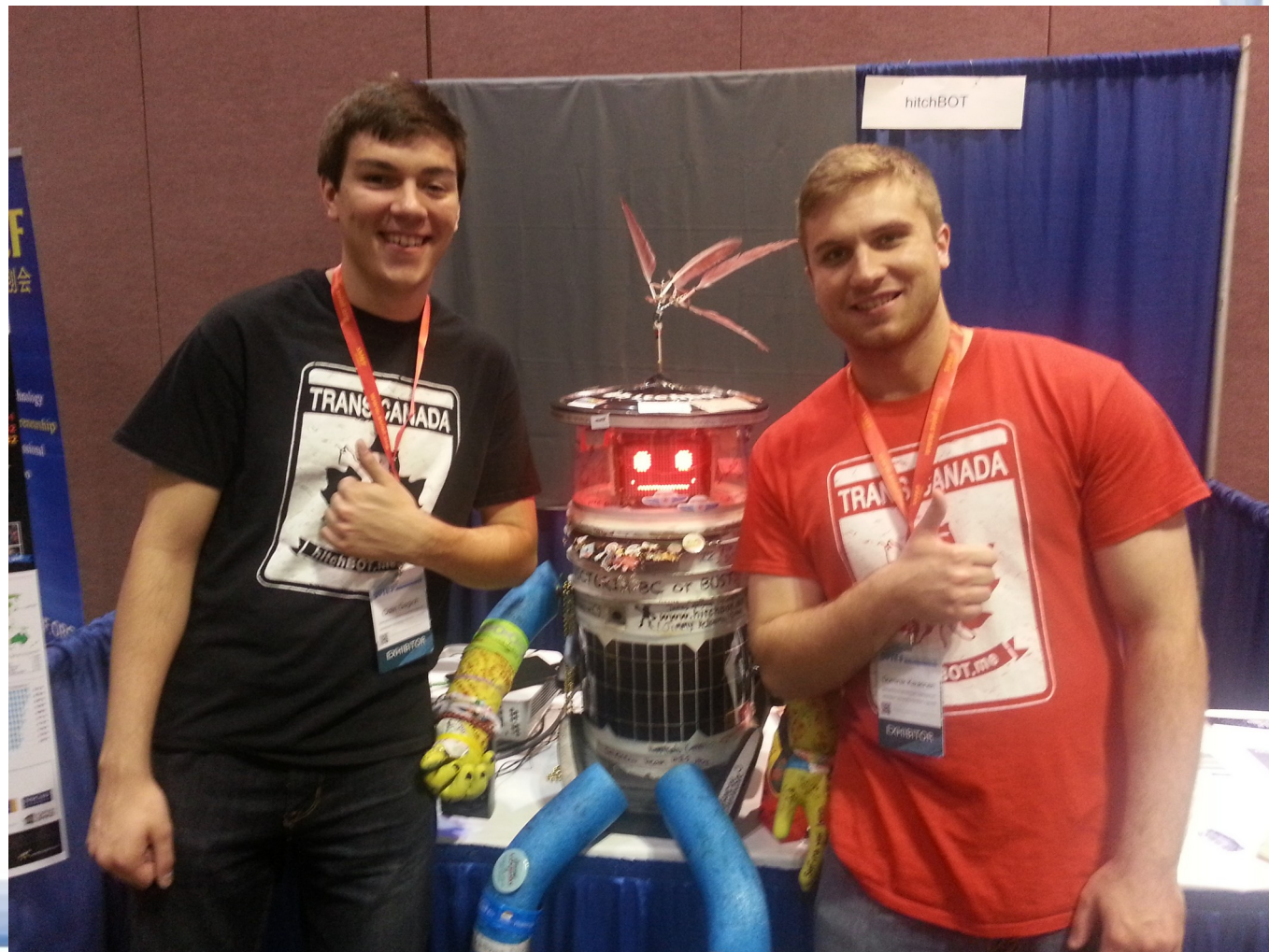# Admin

- Quiz
- Project?

Social Robots

- What are social robots?
  - robots working with people
  - not just tech people
  - need to be accepted by people
  - more than just these

Hitchbot

- Does anyone remember the story of hitchbot?

-

Hitchbot

- It all worked out great till it started in Boston and went down the US East Coast
- Philly:

Human Acceptance

- Humans more accepting of what they understand
  - ramifications for robotics?
  - approaches?

Human Acceptance

- Humans more accepting of what they understand
    - ramifications for robotics?
    - approaches?
        - make robots look more like what humans already know
            - humans
            - dogs
            - etc
        - make robot purpose easily understood.
        - situate robot in familiar surroundings

Interface

- Human Robot interface vs Human Computer Interface
  - similar goals
    - help people accomplish task/work with machines
  - classic UI guidelines still apply
    - feedback, mapping, affordance etc
  - but some differences
    - robots far more interactive
      - some difference roles (mentor, peer)

Social Robots

- Where are we now with this?

- Pepper:
    - https://www.youtube.com/watch?v=e3v4xsoYrP4

- And of course this Disney Stuff
    - https://www.youtube.com/watch?v=D8_VmWWRJgE

- Last year's stuff
    - https://www.youtube.com/watch?v=R3pH5tMKYxY

- This year?
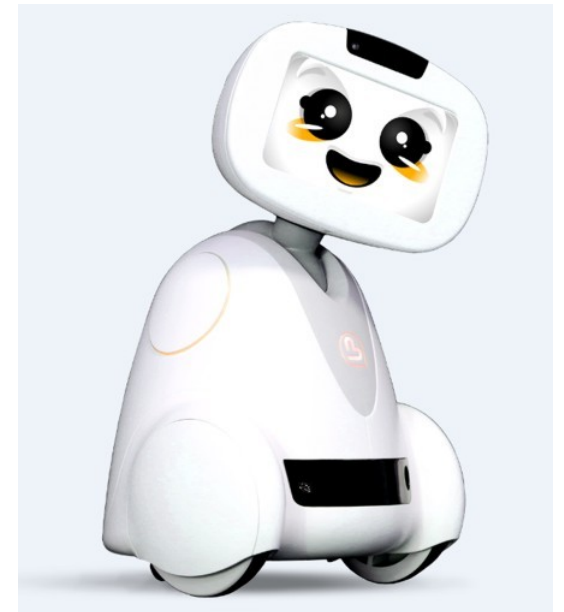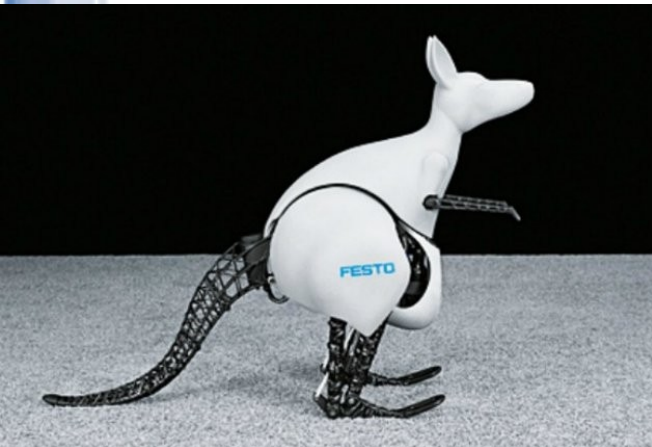   - https://www.youtube.com/watch?v=2HQ84TVcbMw

Appearance

- robots closer to appearances we know more accepted

  - a likable robot? What does it do?

  -

Appearance II

- Adding features to make the robot more familiar puts people at ease

Apearance III

- Up to a point –
  then unease sets in

-

Not to mention

Human looking robots, Why?

- There are some good reasons for human looking robots
  - Best example: dental training robots.
  - http://www.youtube.com/watch?v=WhzbFaNueKU
  -

Behavior

- Not just appearance, but behavior matters.

- Robots that exhibit the right social cues with their behavior are more accepted.

- Both by people and dogs

Dog Study

- Study published in *Animal Cognition* (summer 2013)
  - Basic finding: dog were able to identify more social robots and interacted with them better.
  - Details of experiments
    - Two groups of interactions, social and non-social
    - In all cases dogs interacted with human better than with robots.
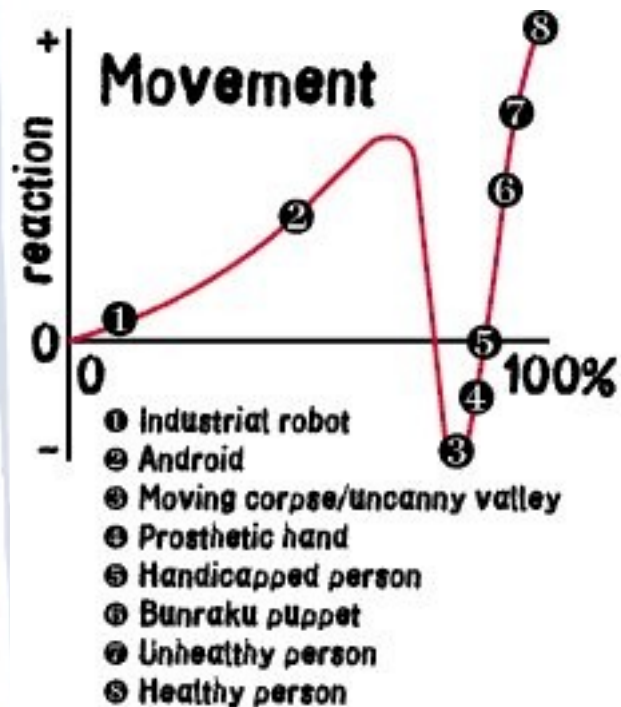   - But interacted with social robots better than asocial robots.

Ethics digression

- prediction that Massachusetts will be first place in world with robot marriage laws in 2050

  - http://www.livescience.com/1951-forecast-sex-marriage-robots-2050.html

- gives a bit of time to work out troubles with the systems.

  - Issues?

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    - Issues?

- What about this:

    - https://english.elpais.com/technology/2025-02-23/desi gned-by-men-for-men-why-sex-with-robots-does-not-h ave-appeal-among-women.html

    - https://www.youtube.com/watch?v=x3MpHQ8xcIk

Uncanny Valley.

- Masahiro Mori, 1970

Movement

reaction

⓪ 0
8
7
6
2
5
100%
4
1
3
-

① Industrial robot
② Android
③ Moving corpse/uncanny valley
④ Prosthetic hand
⑤ Handicapped person
⑥ Bunraku puppet
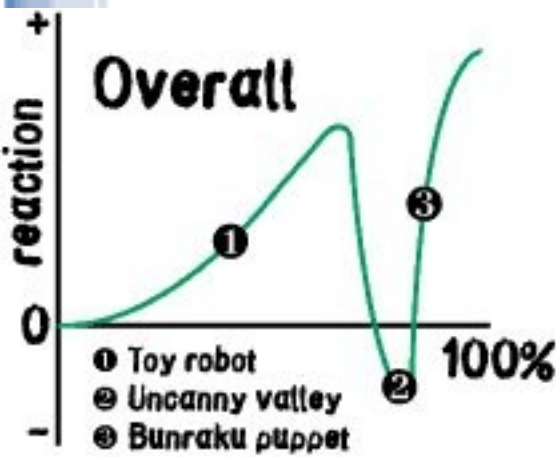⑦ Unhealthy person
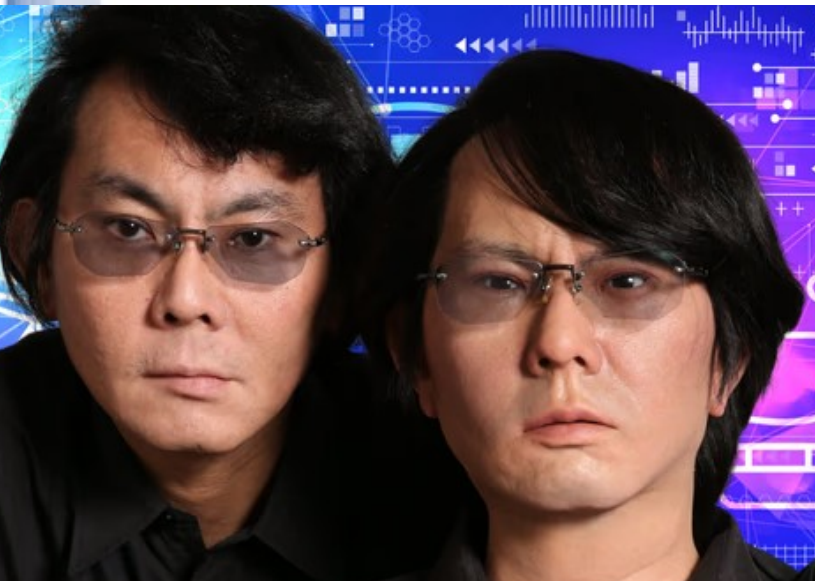⑧ Healthy person
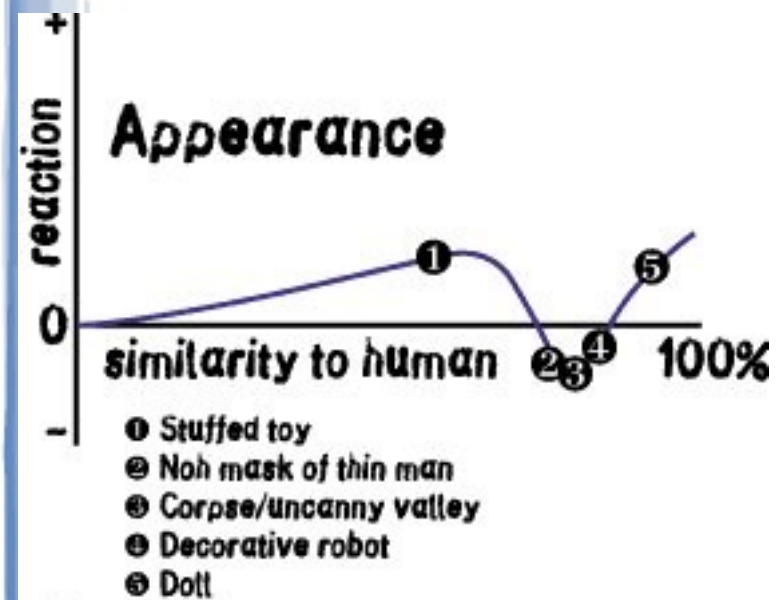
Uncanny Valley II
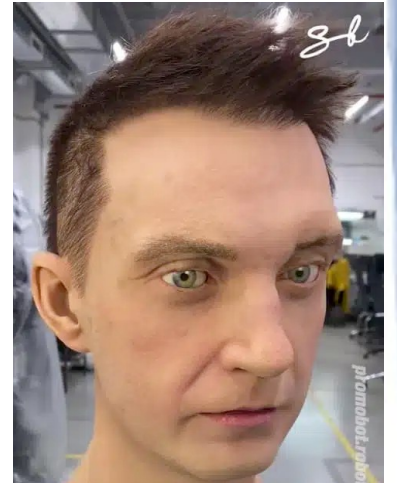
Uncanny Valley III

- more acceptance up to point
  - then close to real but *wrong* causes revulsion for a bit till at ideal
  - not just humans
    -

Overall

reaction

0   100%

❶ Toy robot
❷ Uncanny valley
❸ Bunraku puppet

Uncanny valley - people

Humanoid Android Robots

- Have we crossed the uncanny valley?
    - Where are robots going
    - We've looked a bunch of recent articles, anyone else have one

Humanoid Android Robots

- Have we crossed the uncanny valley?

  – Where are robots going

  – https://www.youtube.com/watch?v=lfHt2fbLszo

- Longer video, but a good summary of where robots are now and where they might go soon

- What I find odd is the huge disparity in 'gender' appearance.

  – Though one of our articles did cover this.

Human Acceptance

- Human acceptance increases
  - not just for appearance
  - but for ease of classification
  - this robot is intended to X and I can work with that
  - 3 classification metrics humans use
    - Type classification
    - role classification
    - behavioral classification

Type classification

- Based on humans ability to figure out what the robot is supposed to do

    - situate robot in environment that lends itself to robot's function

    - give robot essential features of the item that currently does the job

Role Classification

- What is the robot's role
  - Mentor?
  - Servant
  - Peer?
  - If the human can easily classify the robot's role
  - and robot can stay in that role
  - Will be more accepted.

Behavior classification

- If it is clear to the human how the robot will behave
  - Will be better accepted.
  - Same with people
  - Not good:
    - "What the $%^& are you doing?"
  - Better:
    - I think I know what it is trying to do.
  - Best:
    - Doing just what I expected with an occasional nice (helpful) surprise

Human Acceptance

- It turns out we aren't doing that well on human acceptance.

- https://ece.gatech.edu/news/2023/12/people-think-robots-are-pretty-incompetent-and-not-funny-new-study-says

- https://www.cnrs.fr/en/press/less-human-robots-are-more-readily-accepted

Why should we care?

- Why do **we** care about social robots?
  - We aren't doing that research after all

The Future?

- What do you see as the future in this area?

Affective Robotics

- New-ish field
  - Emotional robotics
  - To be Continued.