

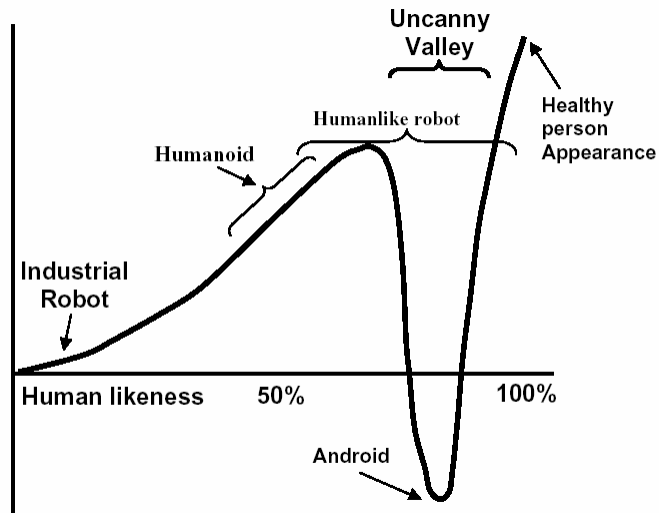
Asimov's Laws

CS 4002 – Robots and Society

Robot ethics

- Concept of robot originated in fiction
 - Attributed to Kapek, a Czech playwright
 - Means worker in Czech
- Isaac Asimov, Science fiction writer coined the word robotics
 - Series of short stories (I, robot)
 - Identified field as a scientific endeavor
 - Developed a code of conduct for robots

Uncanny Valley - Mori



Robots as Monsters?

- ?
- Frankenstein
- Golem
- Metropolis
- [Hal](#)
- [Ed 209 – Robocop](#)
- Terminator(s)
- Saturn 3 - [Hector](#)
- Most Western fictional robots

Robots as friends?

- ?
- [Robbie the robot](#)
- [R2D2/C3PO](#)
- Astroboy
- [Kitt – Knight rider](#)
- [Bicentennial Man](#)
- [Commander Data](#)

Robots as Creatures in their own right?

- Right to survive and compete, even with humans?
- Blade Runner
- [Cylons – Battlestar Galactica](#)
- Matrix – Sentinels
- [Short Circuit](#)
- [Sonny - iRobot](#)

Should robots have a code of conduct?

- Asimov thought so
- Formulated his laws of robotics
 1. A robot may not injure a human being, or through inaction, allow a human being to come to harm.
 2. A robot must obey the orders given it by human beings except where such orders would conflict with the first law.
 3. A robot must protect its own existence as long as such protection does not conflict with the first or second law.

Zeroth Law

- Added Later (Robots and Empire)

A robot may not injure humanity or, through inaction, allow humanity to come to harm.
- Requires modified first law:

A robot may not injure a human being, or through inaction, allow a human being to come to harm, except where that would conflict with the zeroth law

Are these laws well-posed?

- ?
- What issues can arise?
 - Various interpretations
 - Greater good of humanity
 - Led Asimov to postulate a Zeroth law
- Consistent with laws of nature?
 - Survival last?
- Appropriateness of slavery?
 - Relatively blind obedience

Class Discussion

- Break into subgroups (leader/recorder different than last time)
- Generate pro/con arguments on topic:
Should robots have a code of conduct engineered into them and if so what should it look like or be, or if not why not?
- Report out results and I'll compile

Class Summary - 2008

- Group 1 – Code yes
 - Basic rules, existing laws and codes
 - School robots for developing- cultural relativism
 - Might not develop compatibly –and responsible
- Group 2 – Code yes
 - Robots should honor human laws
 - Vary from place to place
 - Imperfect laws but robots should obey the same as people
- Group 3 – code of conduct yes
 - But what? Hard to write – moral wrongs known
 - How? Traumatize – clockworks orange

Class Summary - 2008

- Group 4
 - 2 theories
 - No code of conduct – ethical guidelines, let it evolve
 - Hard coded – laws of society + cultural sensitivity
- Group 5
 - No hard coding laws (complexity issues)
 - General codes, with human influence
 - Religion-based idea of morality with humans as deities, weekly meetings, books, fiath based