Human-Robot Interaction

Module 7: Robots in Society

Lecture 1: Robots in popular media, ethics in HRI

David Vernon
Carnegie Mellon University Africa

www.vernon.eu

Topics

- Robots in popular media
  - Robots want to be humans
  - Robots as a threat to humanity
  - Superior robots being good
  - Similarity between humans and robots
  - Narratives of robotic science

- Ethics in HRI
  - Robots in research
  - Robots to fulfill emotional needs
 - Robots in the workplace

How popular culture – film and fiction – has impacted on how we imagine robotic technology in society

https://en.wikipedia.org/wiki/Yin_and_yang

How our values should shape human-robot interaction of the future

Robots in movies are fantastical

Robots in the Popular Media
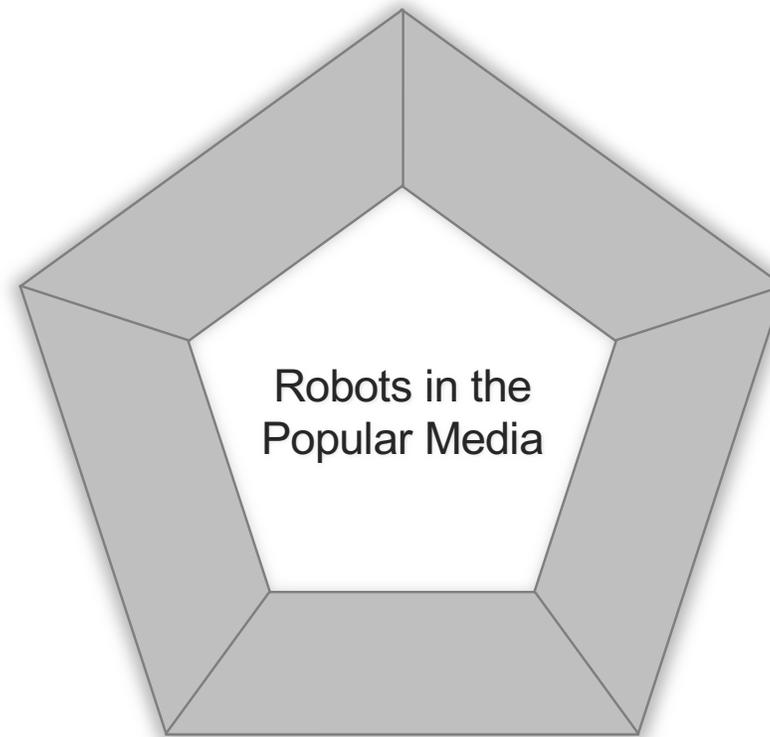
This biases our views of robots because it is the only experience most people have of robots

The gap between expected abilities created by science fiction and the actual abilities of robots today leads to disappointment

https://robotics.fandom.com/wiki/Johnny_5

Robots want to be human

Robots in the Popular Media
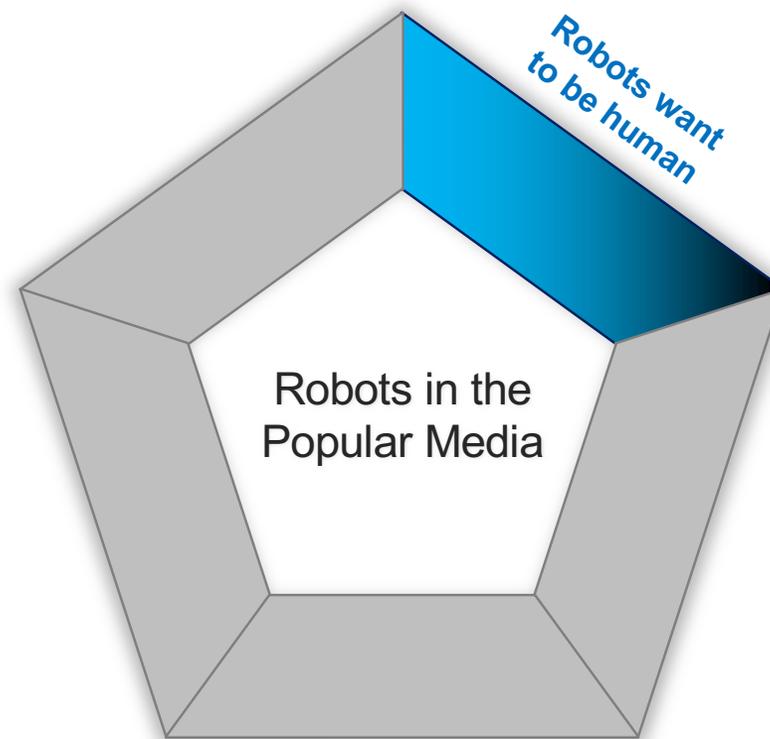
Robots are often portrayed as wanting to be human

Johnny 5 in Short Circuit
(seeks a capacity for humour)

https://robotics.fandom.com/wiki/Johnny_5

Robots want to be human

Robots in the Popular Media
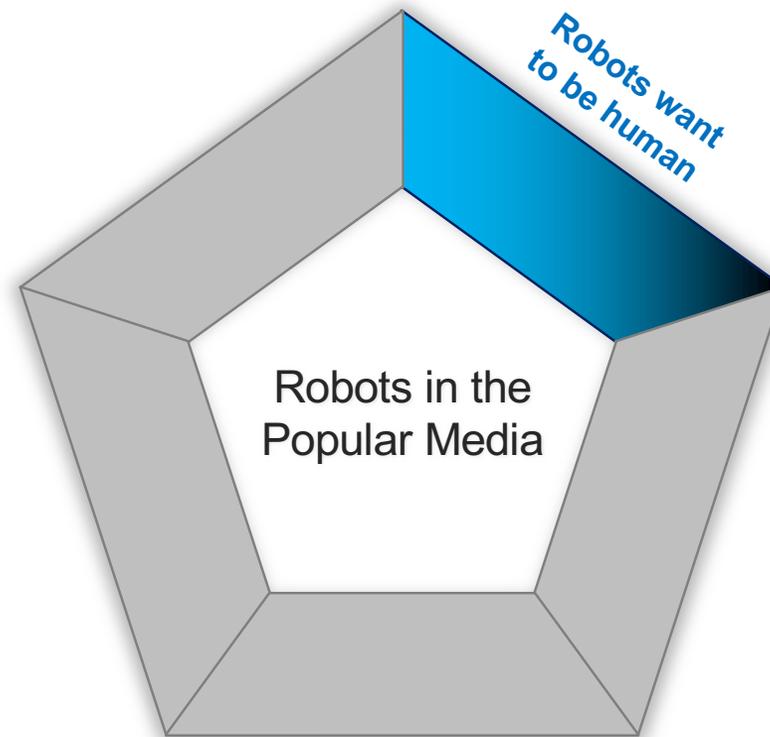
Robots are often portrayed as wanting to be human

Commander Data in Start Trek
(seeks a capacity for emotion)

https://spacequotations.com/interstellar-quotes/

Robots in the
Popular Media

Robots want
to be human
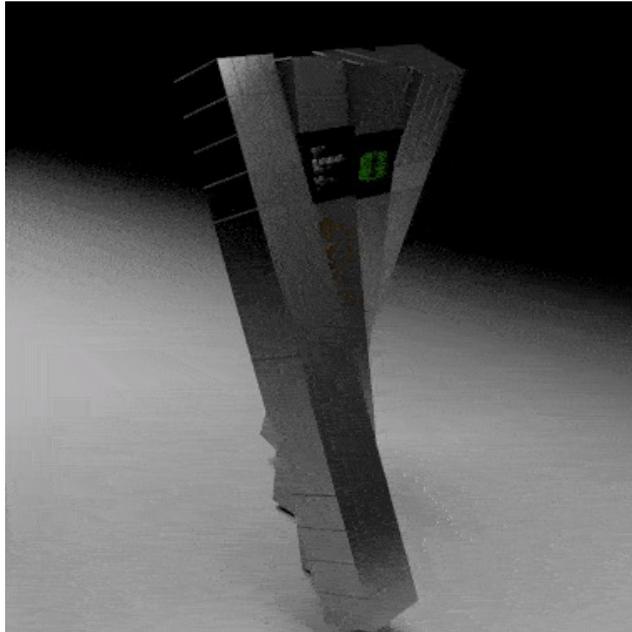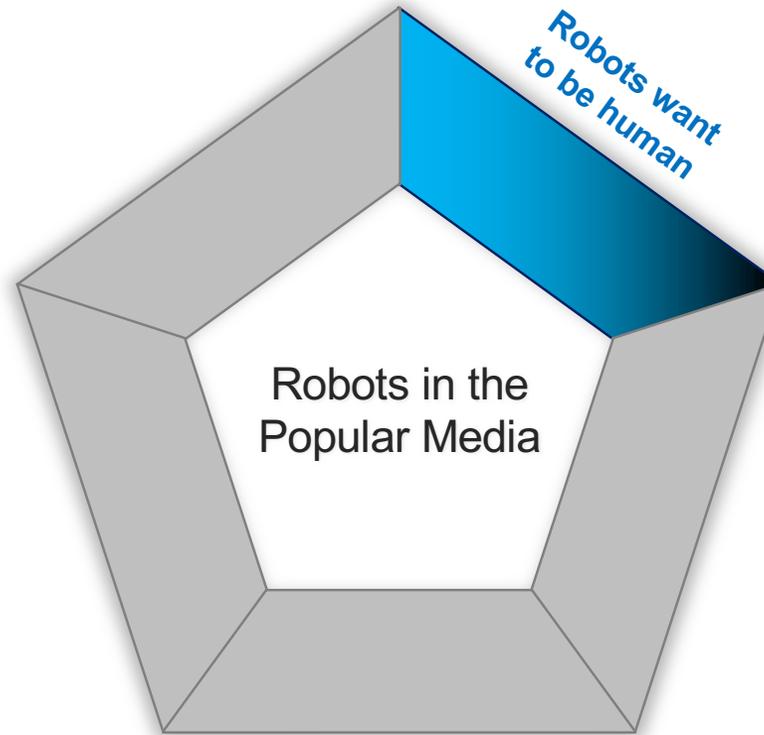
Robots are often portrayed as wanting to be human

TARS in Interstellar
(has a variable setting for honesty)

Cooper: Hey, TARS, what's your honesty parameter?

TARS: Ninety percent.

Cooper: Ninety percent?

TARS: Absolute honesty isn't always the most diplomatic nor the safest form of communication with emotional beings.

Cooper: Okay, ninety percent it is.

Robots want to be human

Robots in the Popular Media
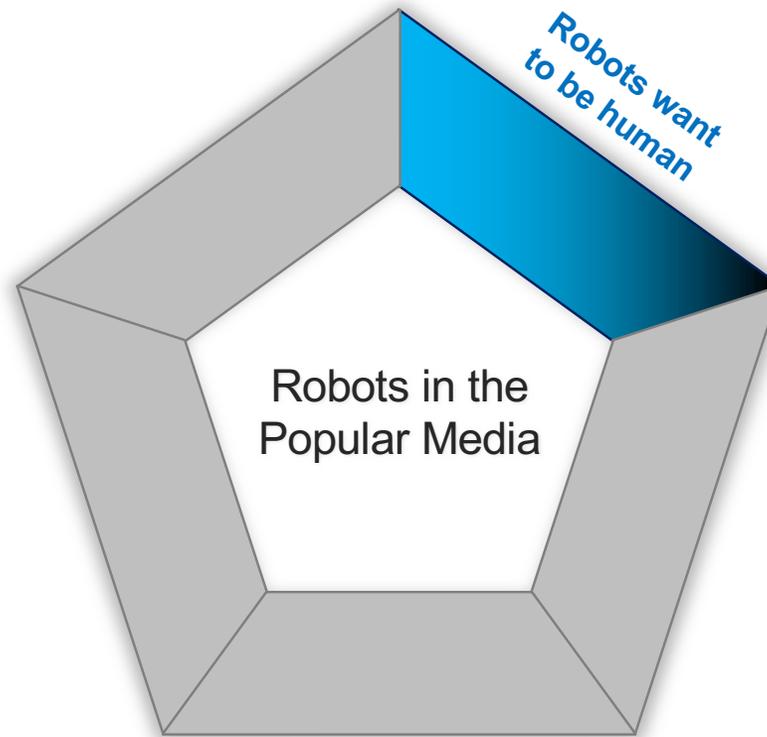
"Although robots might not have emotions themselves, they will be required to interact with humans that do have emotions, and hence it will be necessary for them to process emotions and even adjust their rational behavior accordingly"

https://en.wikipedia.org/wiki/R.U.R.

Robots in the
Popular Media

Robots want to be human

Robots as a threat to humanity
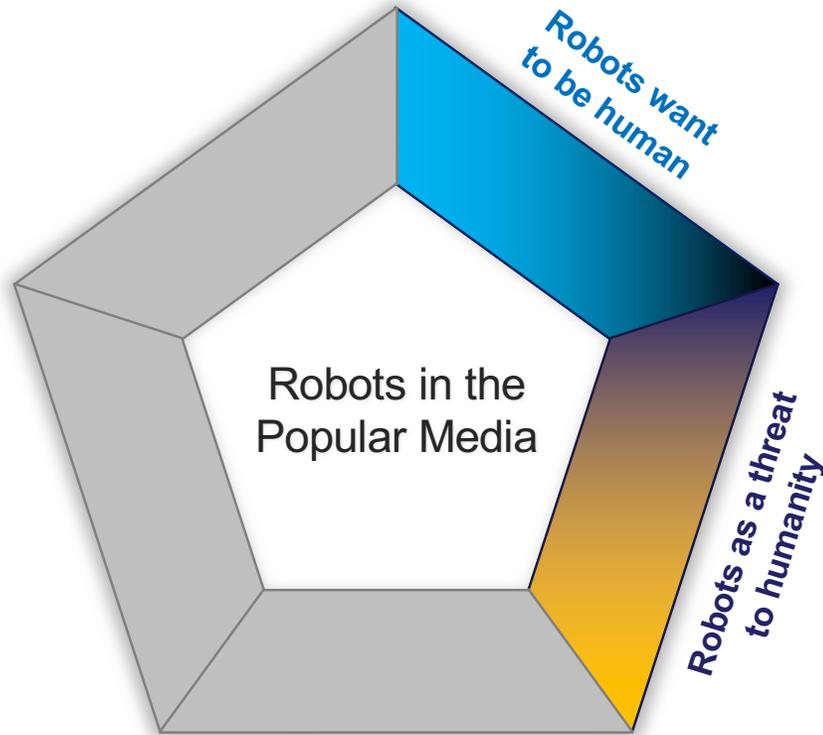
Robots are portrayed as conquerors of the world and enslavers of humanity

Karel Čapek's R.U.R. – Rossum's Universal Robots (1921)

https://memory-alpha.fandom.com/wiki/Lore

Robots in the Popular Media

Robots want to be human

Robots as a threat to humanity
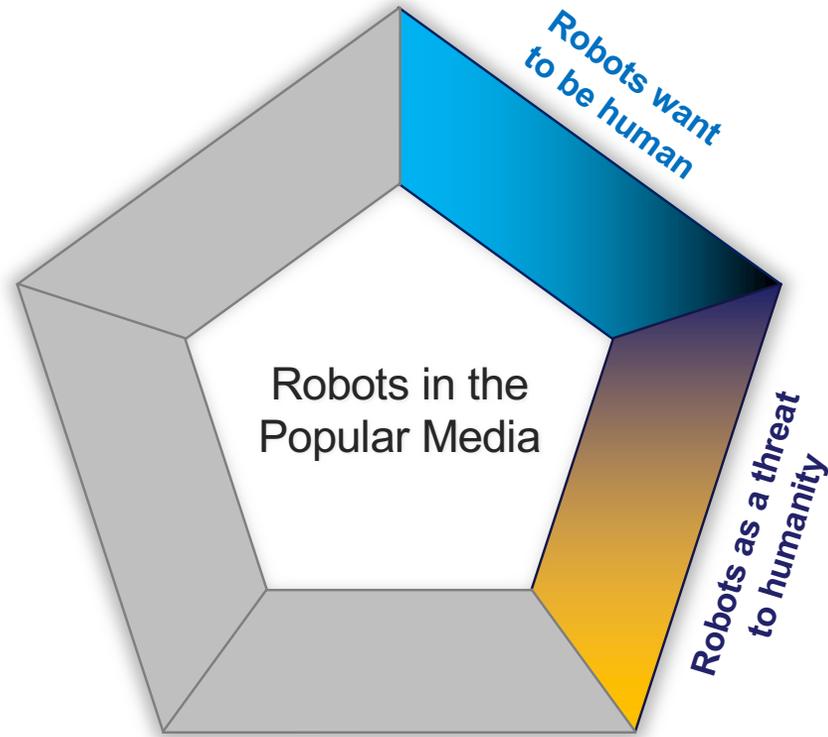
Robots are portrayed as conquerors of the world and enslavers of humanity

Lore, brother of Commander Data, in Star Trek

https://bloody-disgusting.com/movie/3744512/james-cameron-on-the-direction-hed-like-to-see-a-future-terminator-movie-take/

Robots want to be human

Robots as a threat to humanity

Robots in the Popular Media
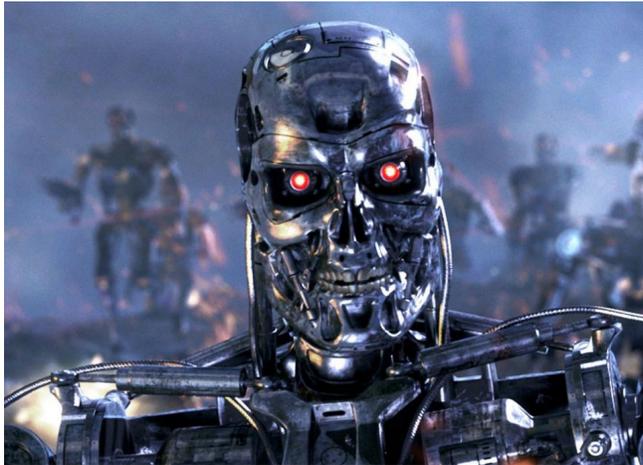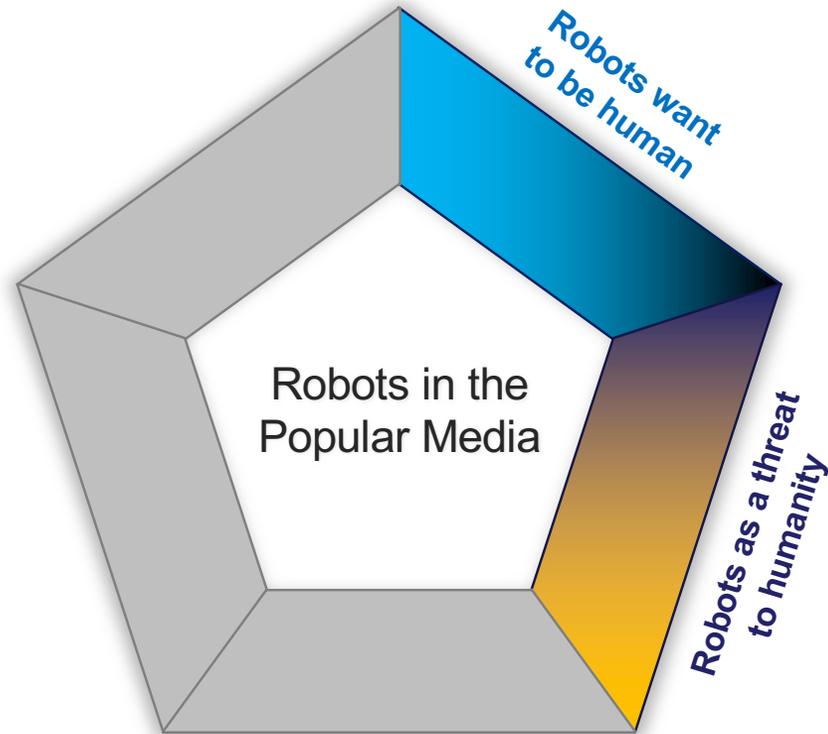
Robots are portrayed as conquerors of the world and enslavers of humanity

Terminator
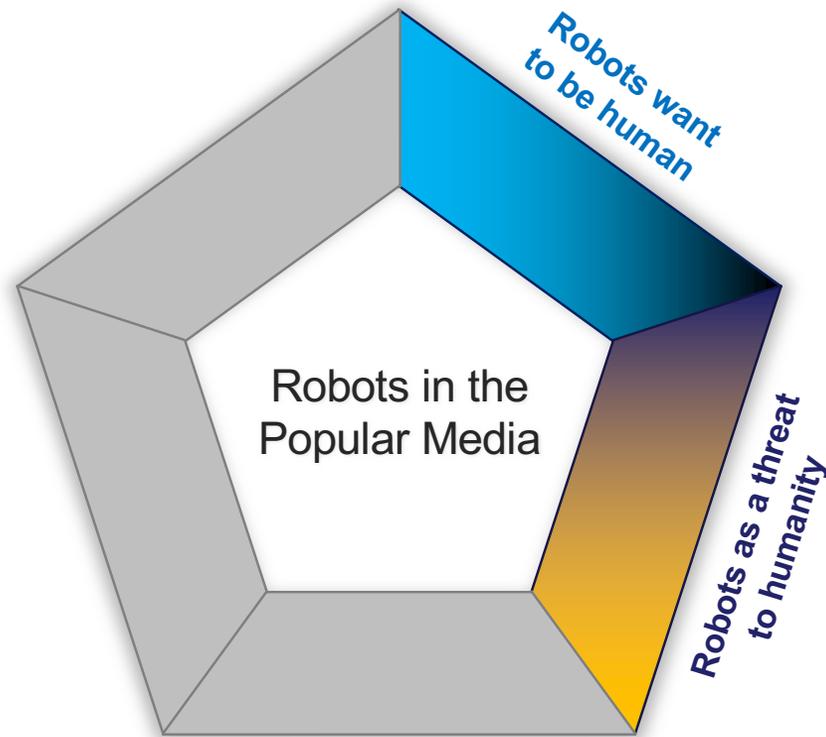
Robots want to be human

Robots as a threat to humanity

Robots in the Popular Media

Two assumptions:

1. Robots resemble humans, but exceed humans in intelligence and power

2. Robots dehumanize their (human) subordinates

Resonances here with colonial powers: "Many colonial powers declared indigenous populations as nonhumans in an attempt to vindicate the atrocities committed toward them."

Robots want to be human

Robots as a threat to humanity

Robots in the Popular Media
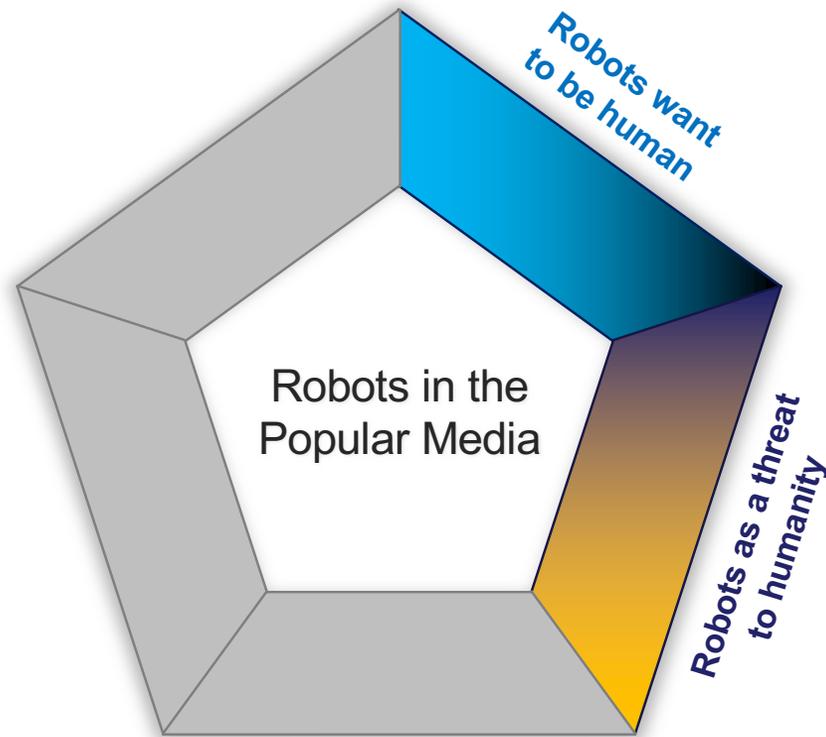
Two assumptions:

1. Robots resemble humans, but exceed humans in intelligence and power

2. Robots dehumanize their (human) subordinates
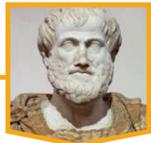
"Tools may be animate as well as inanimate; for instance, a ship's captain uses a lifeless rudder, but a living man for watch; for a servant is, from the point of view of his craft, categorized as one of its tools. So any piece of property can be regarded as a tool enabling a man to live, and his property is an assemblage of such tools; a slave is a sort of living piece of property; and like any other servant is a tool in charge of other tools."

Aristotle

Robots want to be human

Robots in the Popular Media

Robots as a threat to humanity
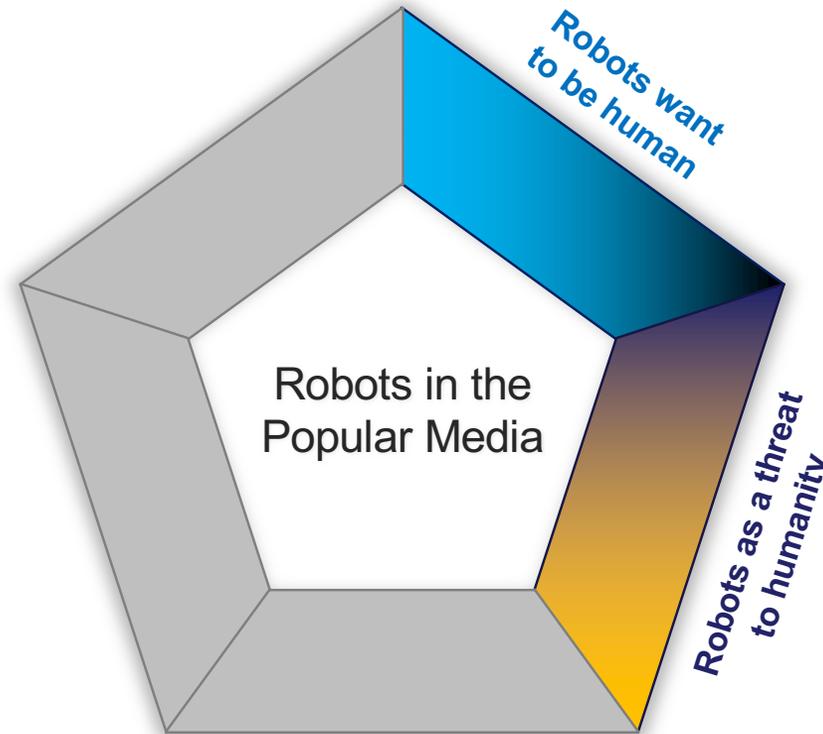
Resonances here with colonialism:

"Many colonial powers declared indigenous populations as nonhumans in an attempt to vindicate the atrocities committed toward them."

See Kathleen Richardson's TEDx talk on "Robots and ethics: the future of sex"

https://www.youtube.com/watch?v=YaMiH93-iPE&t=7s

Robots want to be human

Robots as a threat to humanity

Superior robots being good

Robots in the Popular Media
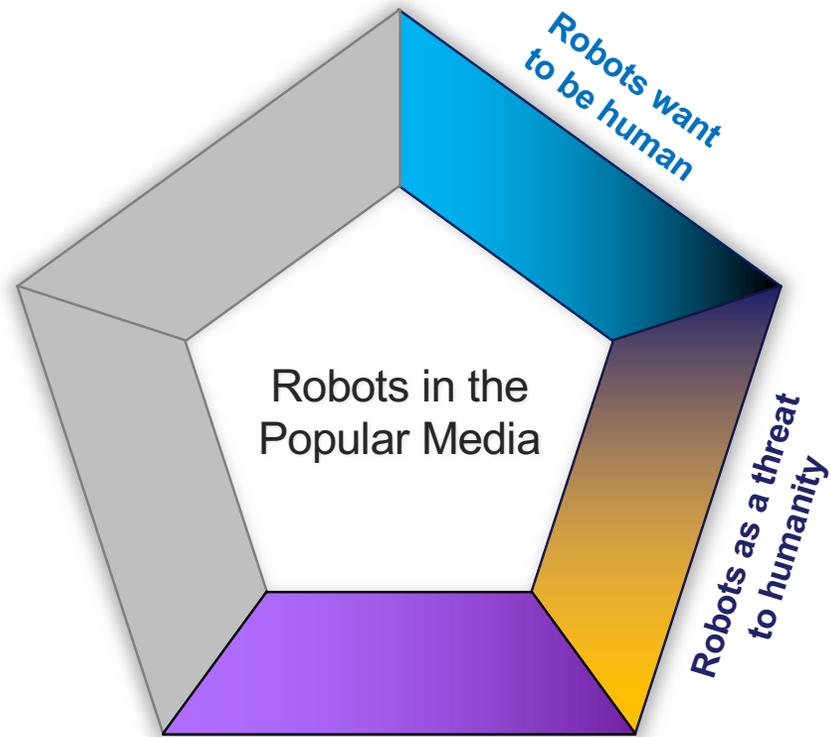
Western culture: robots are evil and humans are good
Japanese culture: robots are good-natured and help people

The similarity or differences in mind or body
between humans and robots drive many of these narratives, resulting in two themes:

Humanization of machines
Dehumanization of humans

Robots in the Popular Media

Robots want to be human

Robots as a threat to humanity

Superior robots being good

Similarity between humans and robots
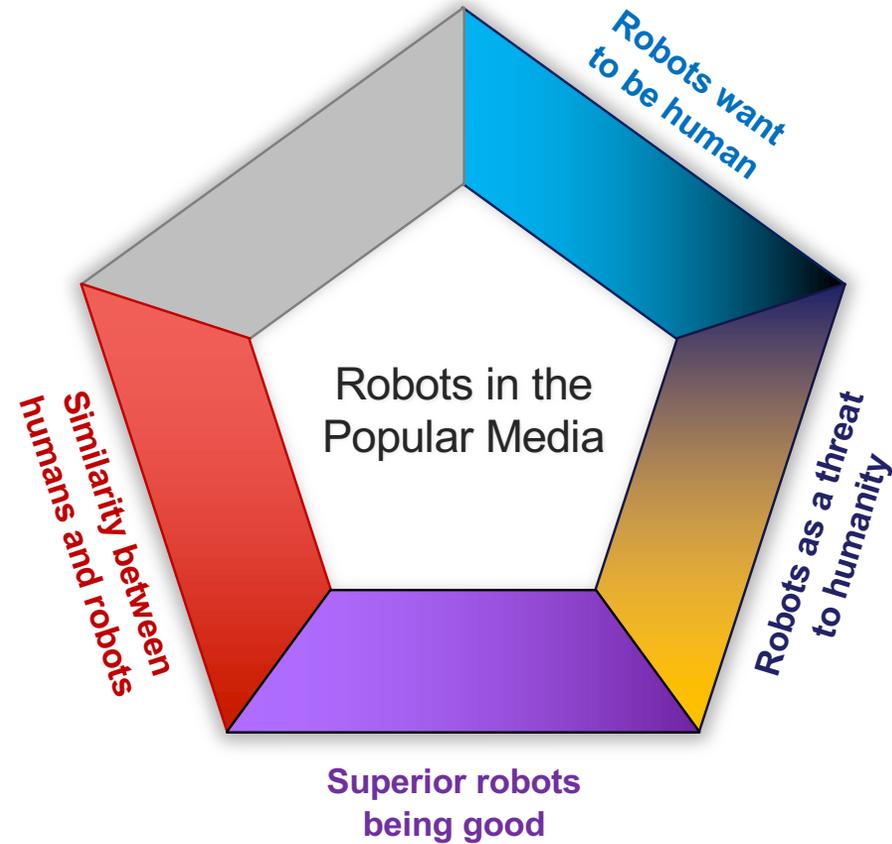
		Mind	
		Similar	Different
Body	Similar	Type I	Type II
	Different	Type III	Type IV

The media promotes the misunderstanding of science by the public

Science-scare stories
Wacky science stories

Autonomous vehicles actually have a better safety record that people

"One question that almost all reporters ask when interviewing HRI researchers is when robots will take over the world. The goal, then, is to write a story that scares the public and hence attracts attention.

A story entitled "Robots are harmless and almost useless" is very unlikely to get published. But that is what most HRI projects come down to at this point in time."

Robots in the Popular Media

Narratives of robotic science

Robots want to be human

Robots as a threat to humanity

Superior robots being good

Similarity between humans and robots
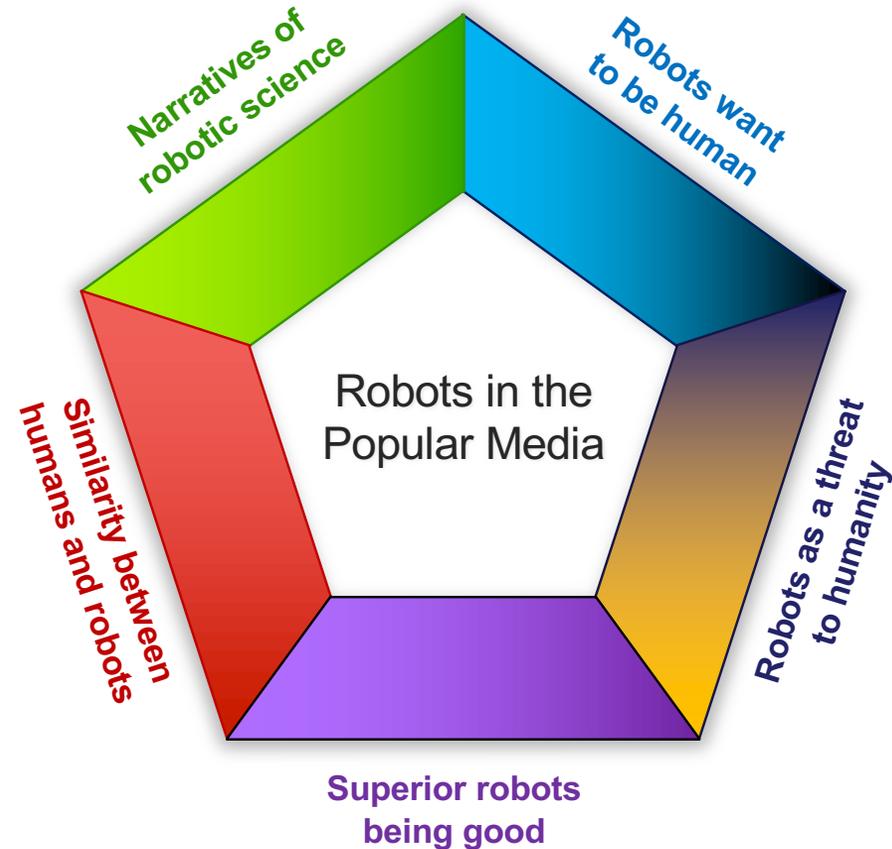
Be wary of journalists ...

When talking to the media, stick to the research that was actually performed

Don't engage in wild speculation about topics not covered in the study

Narratives of robotic science

Robots want to be human

Robots as a threat to humanity

Superior robots being good

Similarity between humans and robots

Robots in the Popular Media
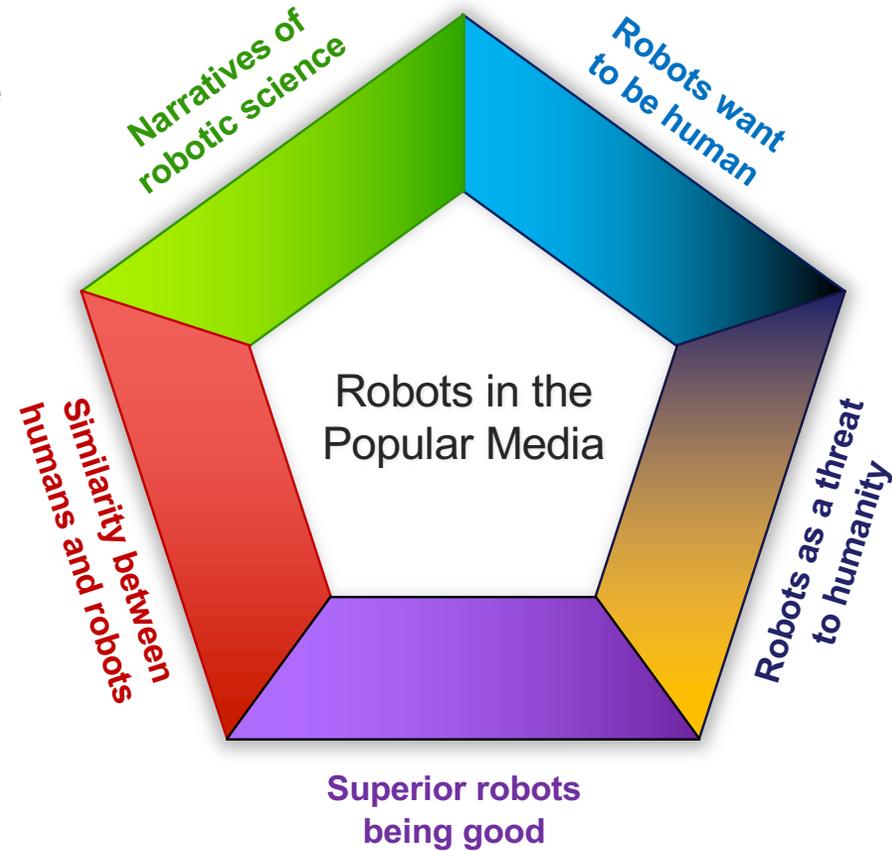
Ethics in HRI

Asimov's three 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 to 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 protec- tion does not conflict with the First or Second Laws.

Ethics in HRI

Asimov added a zeroth law

0. A robot may not harm humanity or, by inaction, allow humanity to come to harm.

	FUNDING	RESEARCH	INNOVATION	SKILLS	NEWS, EVENTS AND PUBLICATIONS	ABOUT US

Research →

Our portfolio →

Themes →

Engineering →

Activities →

Engineering Academic Community Webinars

Global Grand Challenges

Portfolio Manager Perspectives

Year of Engineering

Engineering Research Infrastructure Roadmap

Lead agency agreement with the NSF

Engineering for a Prosperous Nation

Systems Engineering Workshop

Principles of robotics

Related links

Five roboethical principles – for humans

Regulating robots in the real world

In September 2010, experts drawn from the worlds of technology, industry, the arts, law and social sciences met at the joint EPSRC and AHRC Robotics Retreat to discuss robotics, its applications in the real world and the huge amount of promise it offers to benefit society.

Robots have left the research lab and are now in use all over the globe, in homes and in industry. We expect robots in the short, medium and long term to impact our lives at home, our experience in institutions, our national and our global economy, and possibly our global security.

However, the realities of robotics are still relatively little known to the public where science fiction and media images of robots have dominated. One of the aims of the meeting was to explore what steps should be taken to ensure that robotics research engages with the public to ensure this technology is integrated into our society to the maximum benefit of all of its citizens. As with all technological innovation, we need to try to ensure that robots are introduced from the beginning in a way that is likely to engage public trust and confidence; maximise the gains for the public and commerce; and proactively head off any potential unintended consequences.

Given their prominence it is impossible to address the governance of robotics without considering Asimov's famous three laws of robotics. (Asimov's laws stated that a robot was not allowed to do anything that would harm a human being; that a robot should always obey a human; and that a robot should defend itself so long as this did not interfere with the first two rules.)

Although they provide a useful departure point for discussion Asimov's rules are fictional devices. They were not written to be used in real life and it would not be practical to do so, not least because they simply don't work in practice. (For example, how can a robot know all the possible ways a human might come to harm? How can a robot understand and obey all human orders, when even people get confused about what instructions mean?)

Asimov's stories also showed that even in a world of intelligent robots, his laws could always be evaded and loopholes found. But finally, and most importantly, Asimov's laws are inappropriate because they try to insist that robots behave in certain ways, as if they were people, when in real life, it is the humans who design and use the robots who must be the actual subjects of any law.

https://webarchive.nationalarchives.gov.uk/ukgwa/20210701125353/https://epsrc.ukri.org/research/ourportfolio/themes/engineering/activities/principlesofrobotics/

Engineering and Physical Sciences Research Council

| 🏠 | FUNDING | RESEARCH | INNOVATION | SKILLS | NEWS, EVENTS AND PUBLICATIONS | ABOUT US |

- Research
- Our portfolio
- Themes
- Engineering
- Activities
  - Engineering Academic Community Webinars
  - Global Grand Challenges
  - Portfolio Manager Perspectives
  - Year of Engineering
  - Engineering Research Infrastructure Roadmap
  - Lead agency agreement with the NSF
  - Engineering for a Prosperous Nation
  - Systems Engineering Workshop

Related links

Five roboethical principles – for humans ⧉

Principles of robotics

Regulating robots in the real world

In September 2010, experts drawn from the worlds of technology, industry, the arts, law and social sciences met at the joint EPSRC and AHRC Robotics Retreat to discuss robotics, its applications in the real world and the huge amount of promise it offers to benefit society.

Robots have left the research lab and are now in use all over the globe, in homes and in industry. We expect robots in the short, medium and long term to impact our lives at home, our experience in institutions, our national and our global economy, and possibly our global security.

However, the realities of robotics are still relatively little known to the public where science fiction and media images of robots have dominated. One of the aims of the meeting was to explore what steps should be taken to ensure that robotics research engages with the public to ensure this technology is integrated into our society to the maximum benefit of all of its citizens. As with all technological innovation, we need to try to ensure that robots are introduced from the beginning in a way that is likely to engage public trust and confidence; maximise the gains for the public and commerce; and proactively head off any potential unintended consequences.

Given their prominence it is impossible to address the governance of robotics without considering Asimov's famous three laws of robotics. (Asimov's laws stated that a robot was not allowed to do anything that would harm a human being; that a robot should always obey a human; and that a robot should defend itself so long as this did not interfere with the first two rules.)

Although they provide a useful departure point for discussion Asimov's rules are fictional devices. They were not written to be used in real life and it would not be practical to do so, not least because they simply don't work in practice. (For example, how can a robot know all the possible ways a human might come to harm? How can a robot understand and obey all human orders, when even people get confused about what instructions mean?)

Asimov's stories also showed that even in a world of intelligent robots, his laws could always be evaded and loopholes found. But finally, and most importantly, Asimov's laws are inappropriate because they try to insist that robots behave in certain ways, as if they were people, when in real life, it is the humans who design and use the robots who must be the actual subjects of any law.

Ethics in HRI

Robots in Research

Robots in the workplace

**Robots to fulfill emotional needs**

Ethics in HRI

The Wizard-of-Oz approach may deceive people:

Raising invalid expectations about the true capabilities of robots

Biasing user hopes

Research has shown that robots can be used to manipulate people and change their attitudes and behaviors

Using social robots in this manner ti influence the use without the user's knowledge and consent poses ethical concerns

Robots in Research

Robots in the Workplace

Robots to Fulfil Emotional Needs

Ethics in HRI

Robots in Research

**Robots in the Workplace**

Robots to fulfill emotional needs
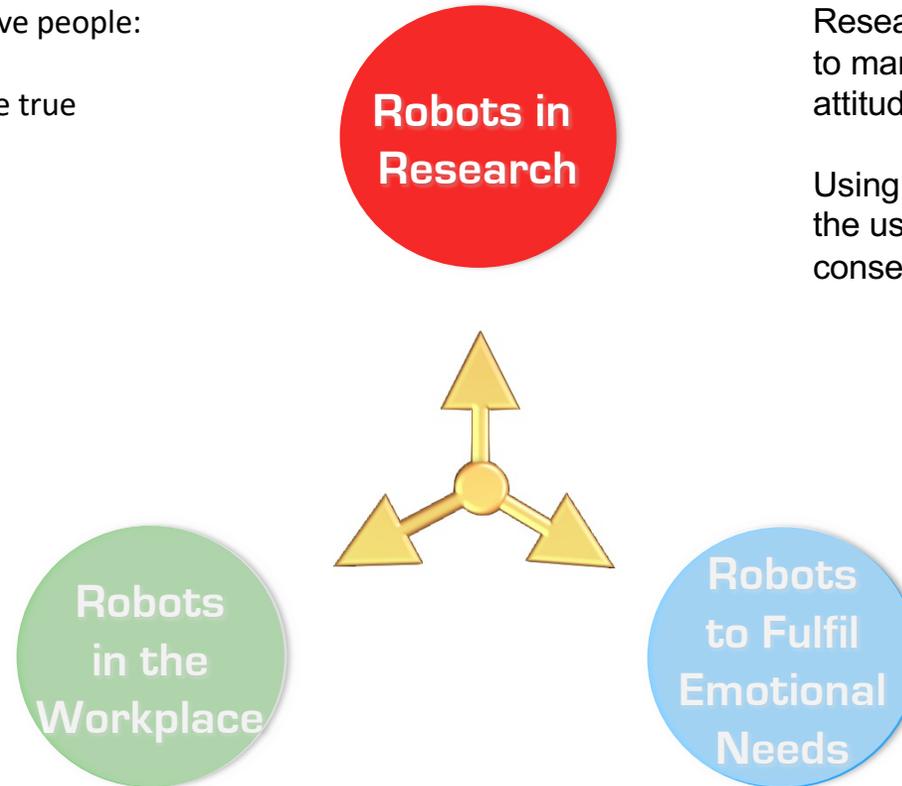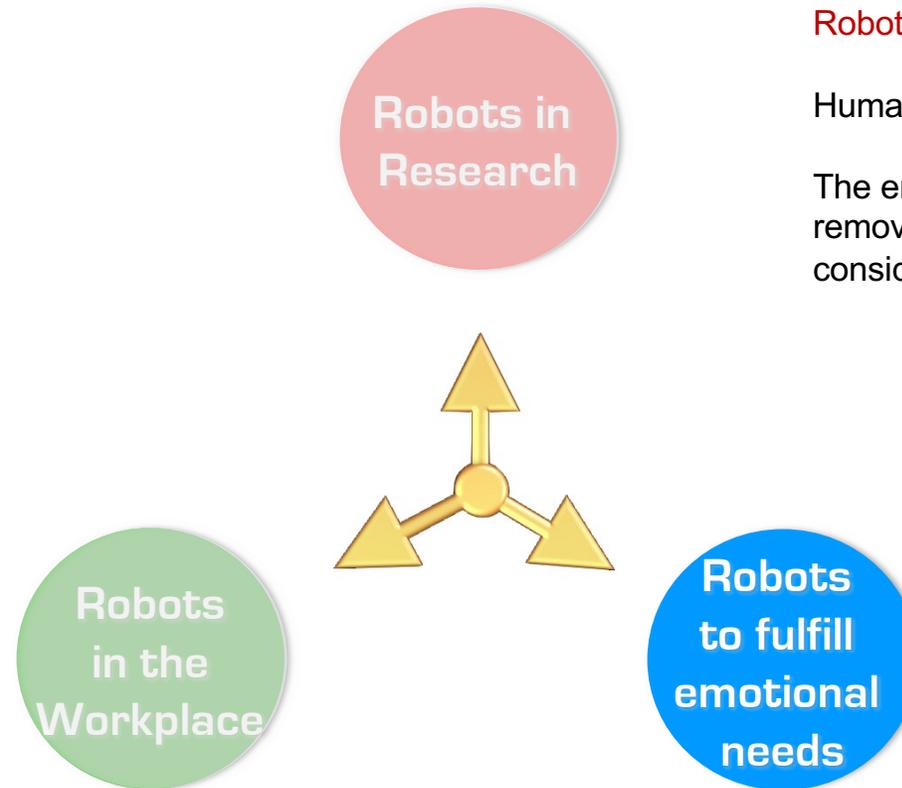
Robot care

Humans can become attached to social robots

The emotional and social consequences of removing a robot after a study needs to be considered

Ethics in HRI

Robots in Research

Robots in the Workplace

Robots to fulfill emotional needs
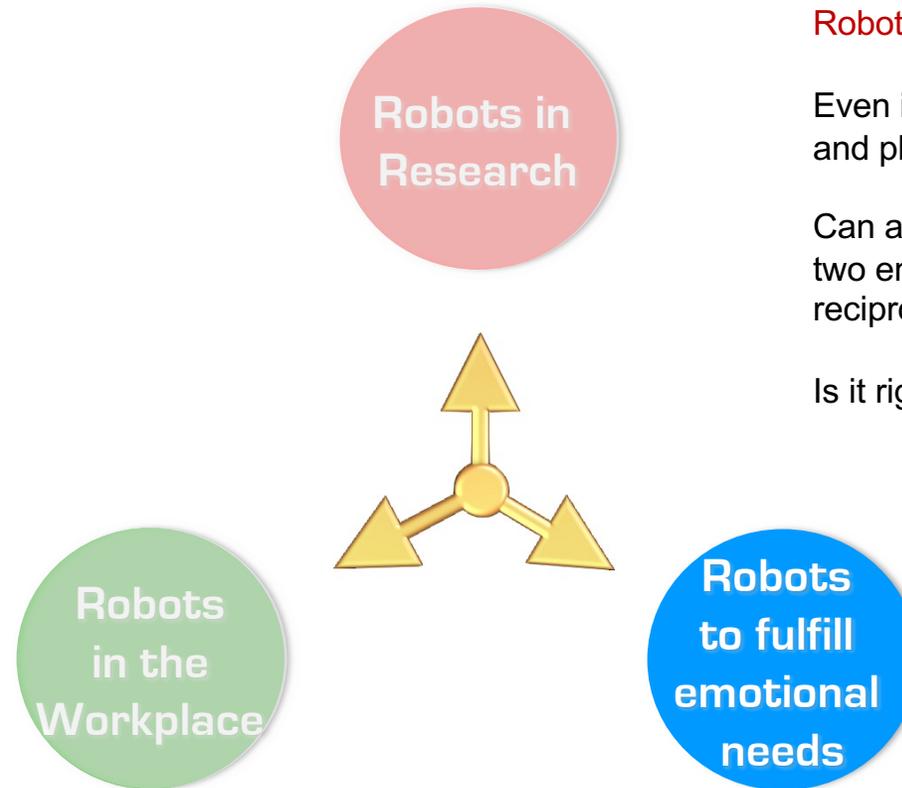
Robot care

Even if a robotic caregiver can provide emotional and physical care, is it ethical to do so?

Can a relationship only be meaningful between two entitities "that are capable of experiencing reciprocal affect and concern"?

Is it right to imitate caring?

Ethics in HRI

Robots in Research

Robots in the Workplace

**Robots to fulfill emotional needs**
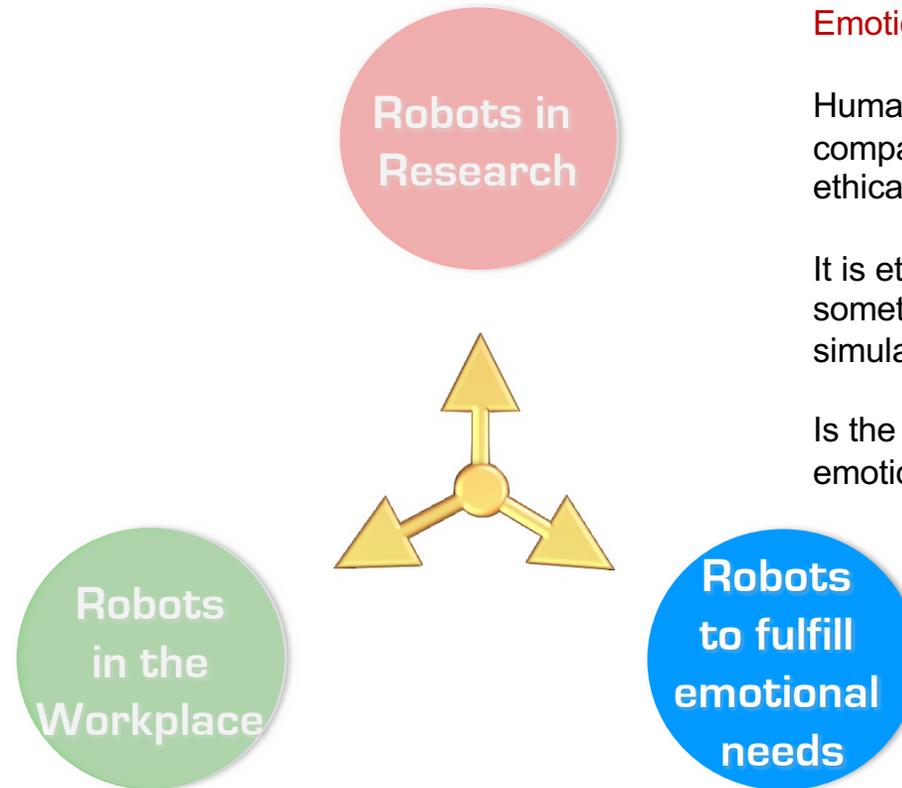
Emotional attachment to robots

Humans may start to prefer (compliant) robot companions to human companions. Is this ethical?

It is ethical to allow an emotional attachment to something that exhibits traits that are mere simulations and therefore inauthentic?

Is the promotion of (asymmetrical) human-robot emotional bonds ethical?

Ethics in HRI

Robots in Research

Robots in the Workplace

Robots to fulfill emotional needs
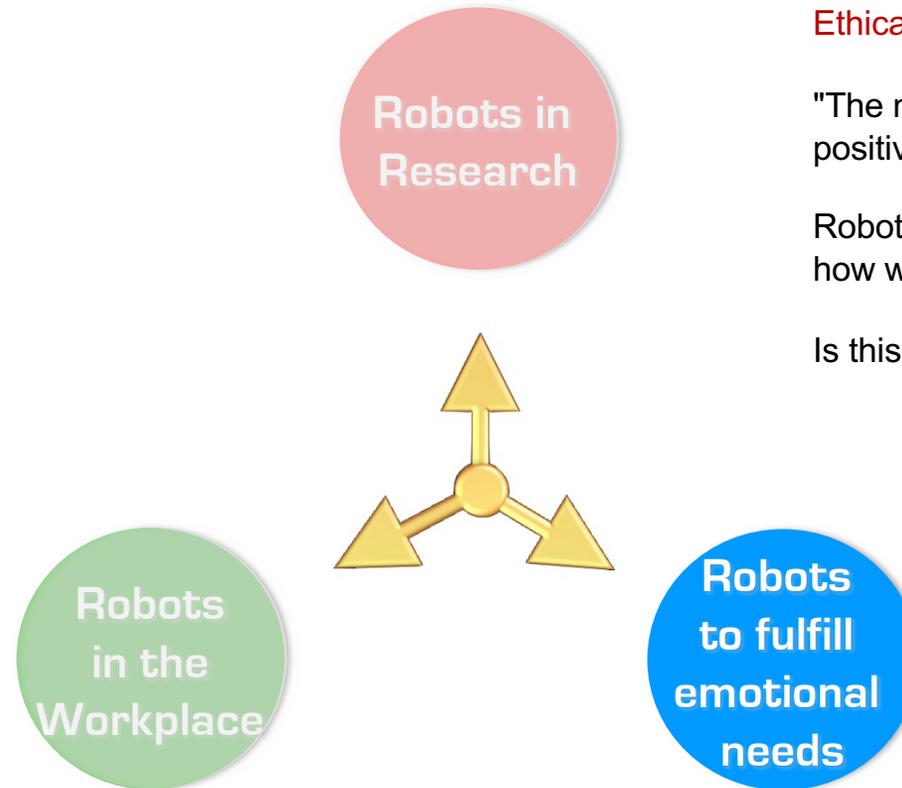
Ethical implications of persuasion through robots

"The more often people hear a word, the more positive their attitude toward this word becomes."

Robots can influence what words we use and how we feel about them, without us noticing.

Is this ethical?

Ethics in HRI

Robots in Research

Robots in the Workplace

Robots to fulfill emotional needs
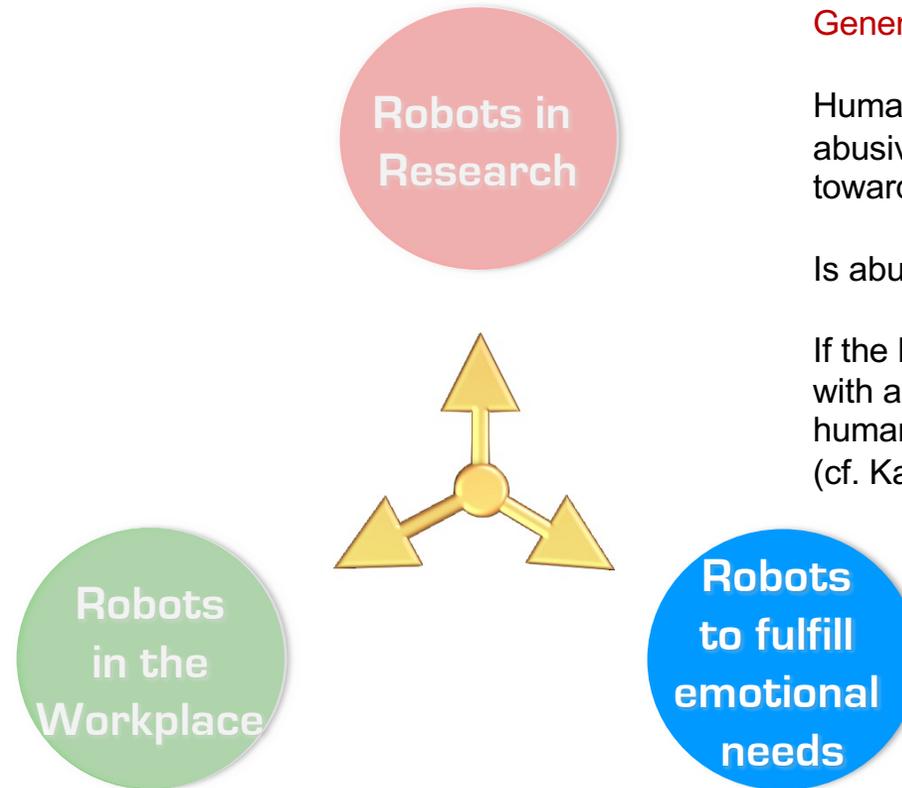
Generalizing abusive behavior toward robots

Humans have been shown to exhibit the same abusive behavior towards robots as they do towards other social agents, i.e., humans.

Is abusing or bullying a robot unethical?

If the human engages in questionable behavior with a robot, there is a risk it will replicate it with humans.
(cf. Kathleen Richardson's TEDx talk)

Ethics in HRI

Robots help improve productivity and increase our standard of living

In doing so, they may replace or displace human workers

Displaced workers may not be able to be retrained for other jobs.

Is this ethical?

Robots in Research

Robots in the workplace

Robots to Fulfil Emotional Needs
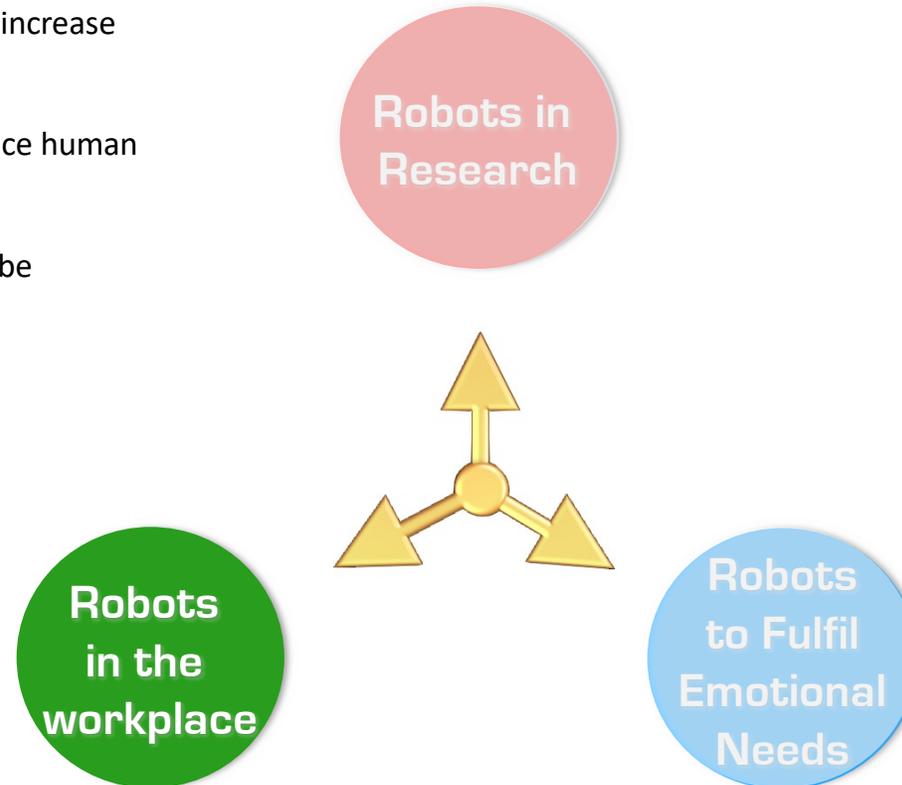
Conclusion

"HRI researchers should be conscious of and sensitive to prevailing cultural narratives and values when they design and deploy robots in society,

and they should also consider whether they want robots to reproduce or challenge existing practices and norms."

Reading

Bartneck, C., Belpaeme, T., Eyssel, F., Kanda, T., Keijsers, M., Sabanovic, S. (2020). Human-Robot Interaction - An Introduction, Cambridge University Press.

Chapter 11 – Robots in Society, pp. 185-200.