



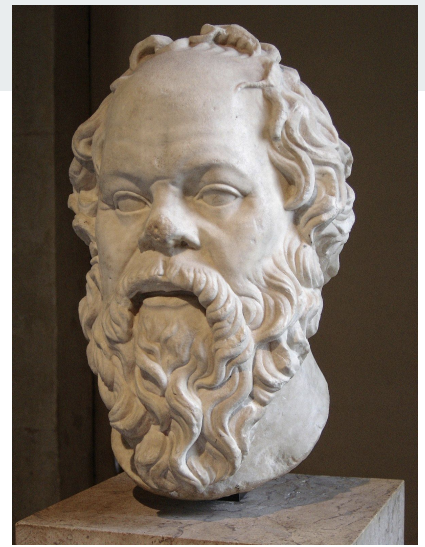
The Ethics of Robotics

What is Ethics?

Ethics describe one's morality.

Your ethics tell you how to make decisions and lead your life.

The word comes from the Greek 'ethos' which means custom or habit.





What is Ethics?

Ethics deals with the following:

- what is a correct and just way to live
- rights and responsibilities
- what is good and bad, morally?



Robotics and Ethics

- Robots raise new ethical questions because they create opportunities for:
 - Social change
 - New kinds of crime
 - Warfare



Ethical Ideas

There are a number of general ideas about Ethics that we can follow.

Here are 6 examples:



1. The Golden Rule

Do unto others as you would have them do unto you

THE GOLDEN RULE ACROSS RELIGIONS



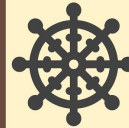
"And as ye would that men should do to you, do ye also to them likewise." - Luke 6:31



"None of you will believe until you love for your brother what you love for yourself." - 40 Hadith, n13



"Do naught unto others what you would not have them do unto you." - Mahabharata 5:15:17



"Hurt not others in ways that you yourself would find hurtful."
- Udanavarga 5:18



"What is hateful to you, do not do to your neighbour."
- Talmud, Shabbath 31a



1. The Golden Rule

This rule is present in many of the world's religions.

THE GOLDEN RULE ACROSS RELIGIONS



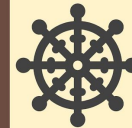
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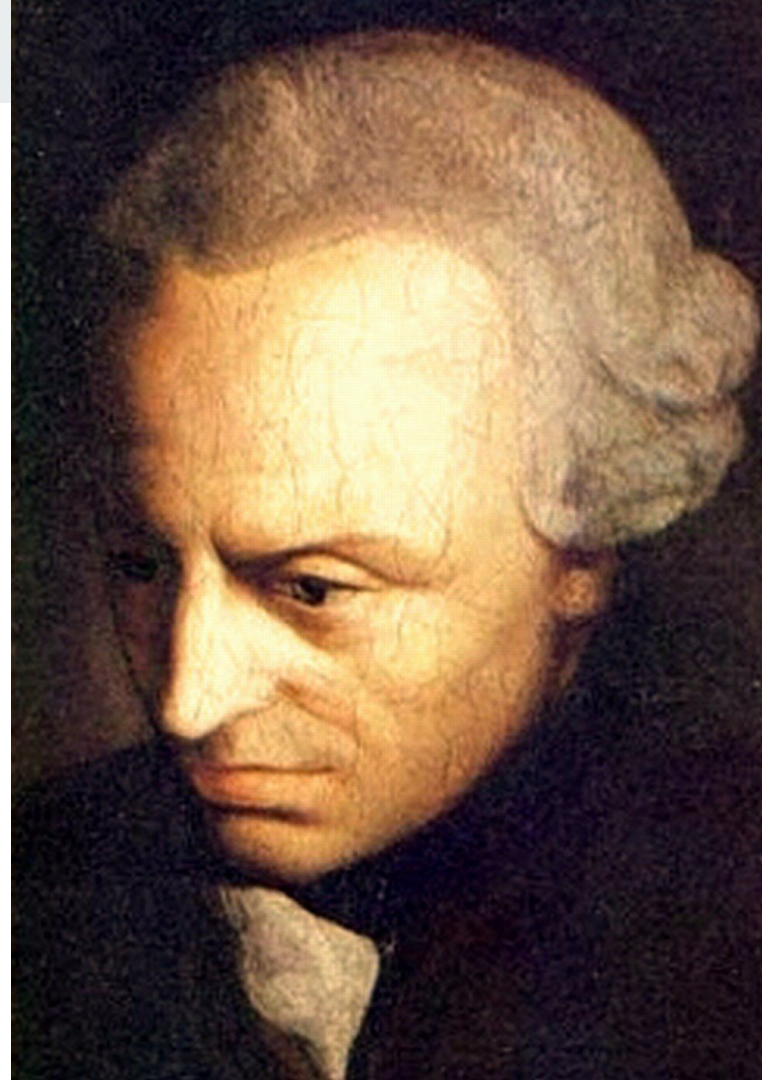
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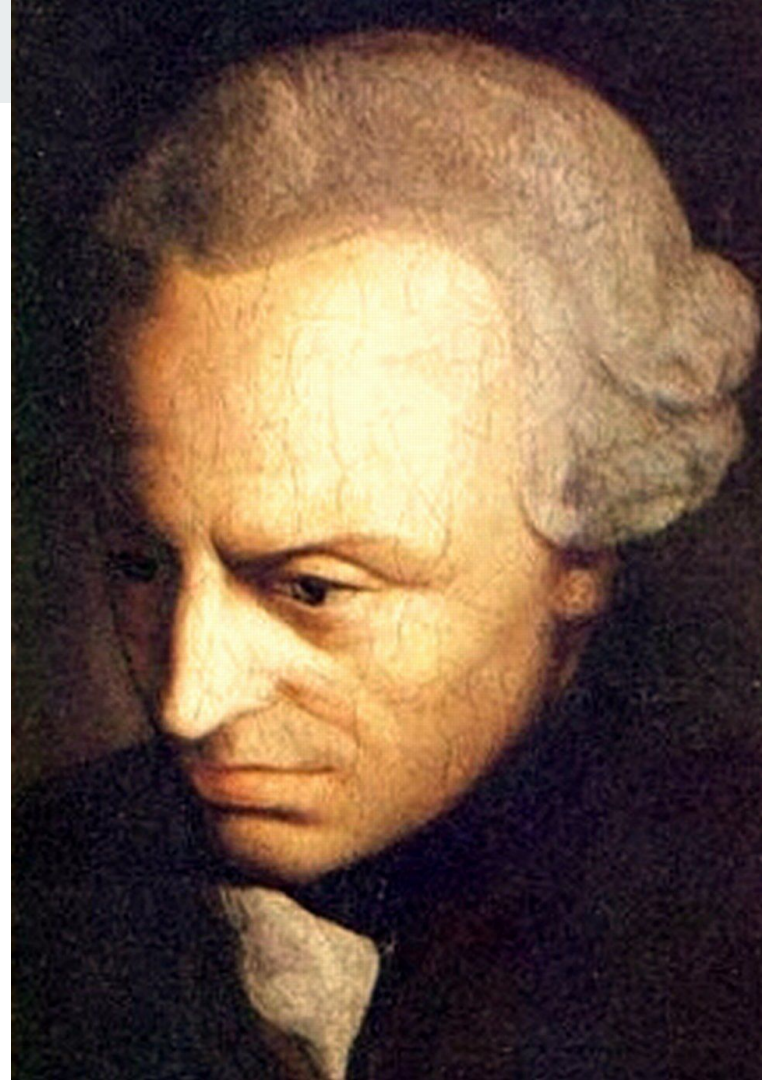
2. Kant's Categorical Imperative

“If an action is not right for everyone to take, it is not right for anyone”



2. Kant's Categorical Imperative

This was invented by Immanuel Kant, who was an influential German philosopher in the 18th century.



3. Descartes' Rule of Change

“If an action cannot be taken repeatedly, it is not right to take at all”



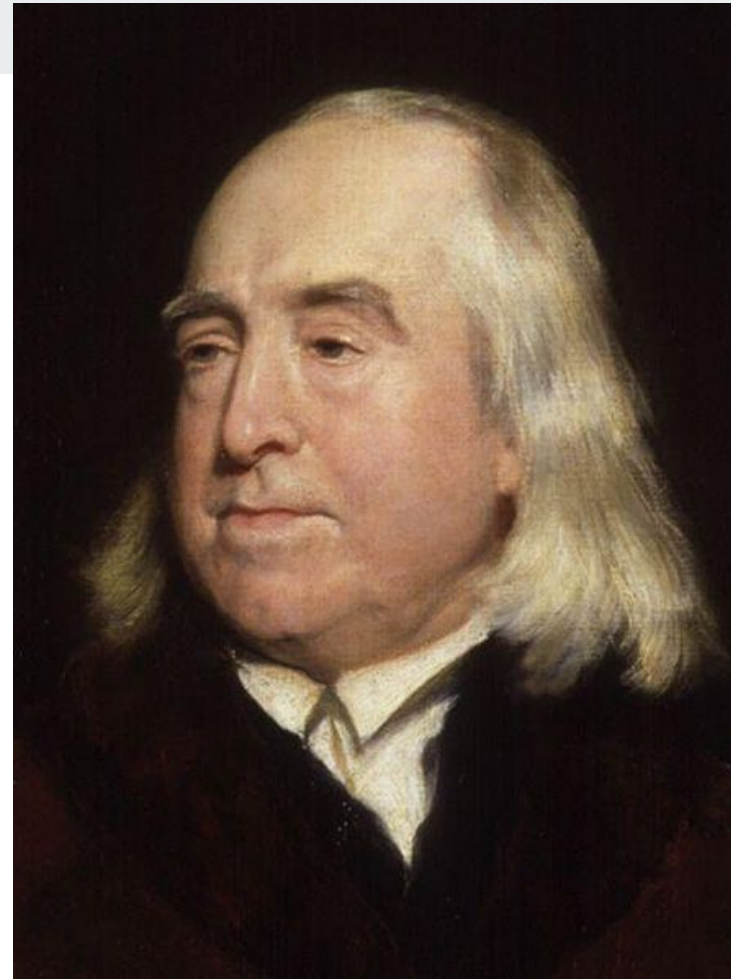
3. Descartes' Rule of Change

René Descartes was a great French philosopher, mathematician, and scientist in the 17th century.



4. Utilitarian Principle

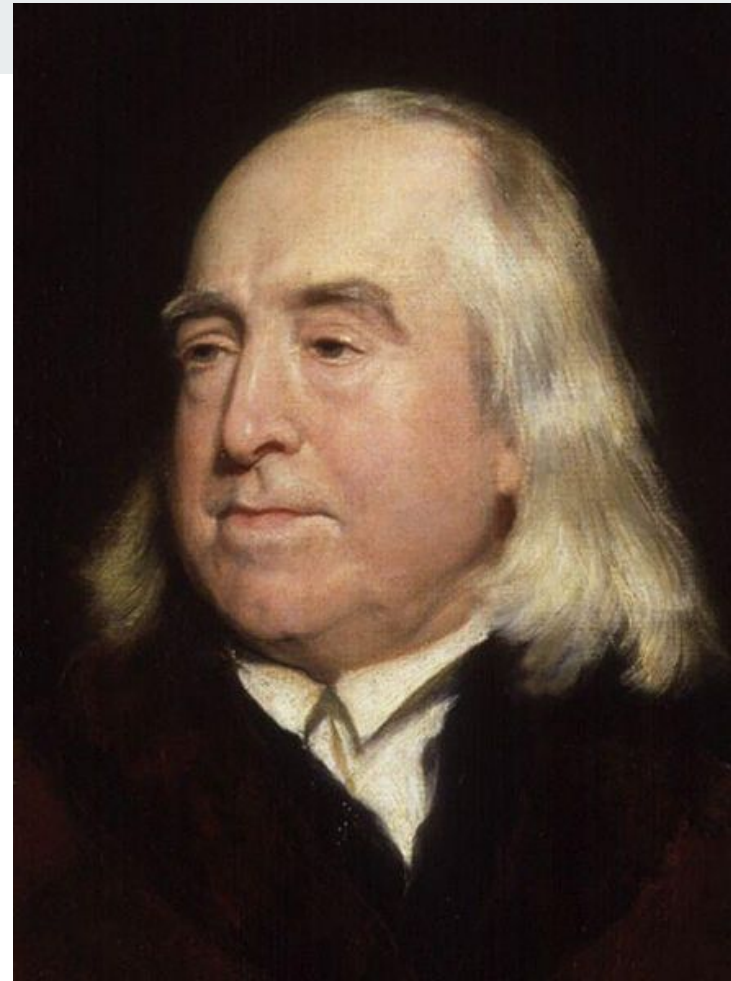
“Take the action that achieves the higher or greater value”



4. Utilitarian Principle

The founder of utilitarianism is Jeremy Bentham, an English philosopher.

Bentham defined it as: "It is the greatest happiness of the greatest number that is the measure of right and wrong."



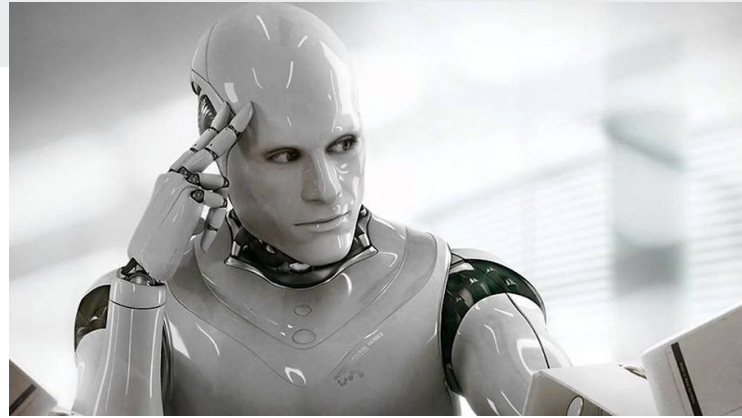
5. Risk-Aversion Principle

“Take the action that produces the least harm or least potential cost”



Robot Ethics

Robot Ethics



Humans are very close to creating truly intelligent and independent robots

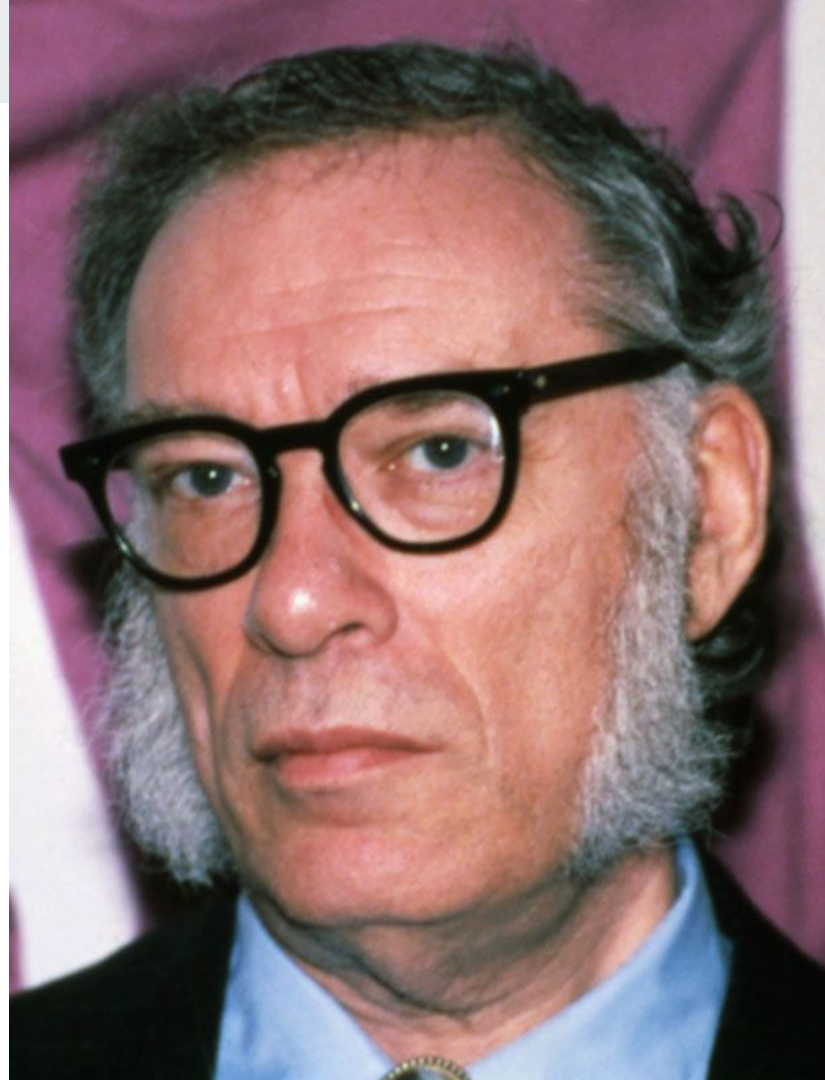
However, we have to realise that complicated ideas, such as consciousness, feelings, etc. may not mean the same thing for people and robots

Isaac Asimov

Asimov was a great writer and biochemistry professor.

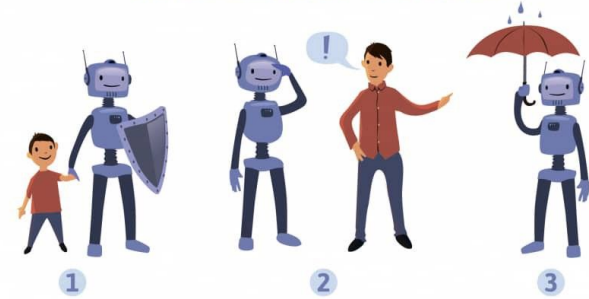
He is best known for his writings in Science Fiction and Robotics.

He wrote over 500 books.



The Three Laws of Robotics

Three Laws of Robotics



Isaac Asimov wrote the Three Laws of Robotics in 1942.

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 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 protection does not conflict with the First or Second Law.



The Zeroth Law of Robotics

Later, Asimov added the Zeroth Law:

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



Robot Ethics in the Real World

While Asimov's laws are interesting to think about, in real life, we are faced with more practical questions about robot ethics.

We will discuss them now.

1. Building Robots

Are we being ethical in how we build and operate robots?



1. Building Robots

A lot of things are involved in building robots:

Materials: Can we get these ethically?

Associated Press

Apple, Microsoft, Tesla accused of profiting from child labor in cobalt mines

Published: Dec. 17, 2019 at 7:12 p.m. ET

By Associated Press

Lawsuit on behalf of anonymous African plaintiffs seeks damages from big tech companies, as well as from mining giants



1. Building Robots

Cost: Would robots be too expensive for people that aren't rich? Would only rich people be able to afford them? Would this give them an advantage, therefore increasing inequality?

Think official iPhone repairs are a rip off? Apple says they cost it money

Chris Smith | November 21, 2019 10:12 pm GMT



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Out of warranty Apple repairs can be prohibitively expensive when going through the official channels. A new display for an out-of-warranty iPhone 11 Pro Max costs £326/\$329, for example.

1. Building Robots

Energy: Where are we getting the energy to operate robots from? Is it sustainable? Is it polluting?

Is China embarking on a major expansion of coal-fired power generation?

in Commodity News © 06/04/2020



As energy companies worldwide grapple with the economic impact of the coronavirus pandemic, long-term planning continues. Ahead of the release of the 14th five-year plan early next year, recent announcements from several key players in the country's power sector indicate China is considering a major investment spree in coal-fired generation.



1. Building Robots

Is China embarking on a major expansion of coal-fired power generation?

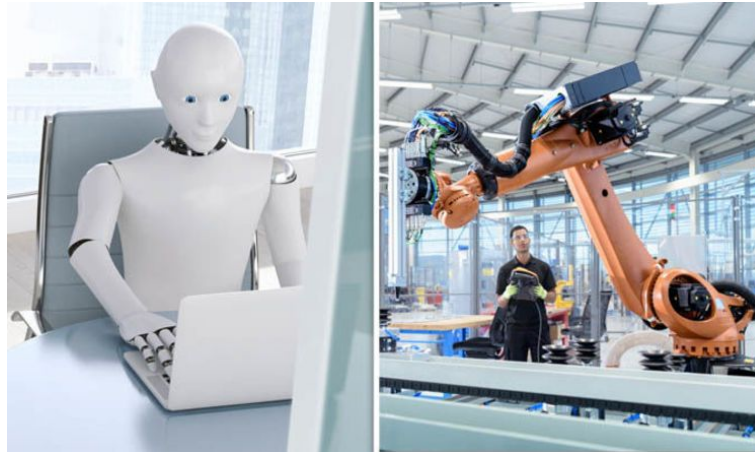
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2. Who would be affected by robots?

We also need to think about who robots would affect.



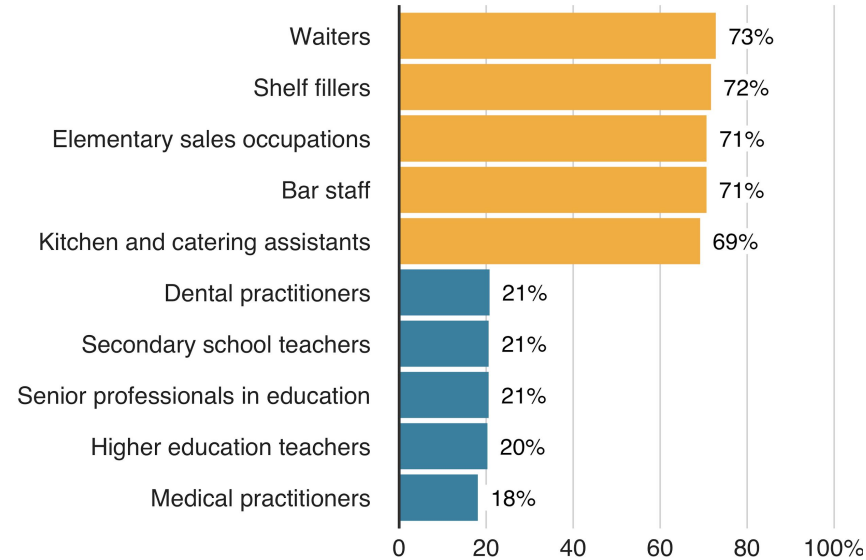
2. Who would be affected by robots?

How will workers be affected by robots?

Will it be a positive effect or a negative one?

Jobs at risk from automation

Highest and lowest probability



Source: Office for National Statistics

Robots 'to replace up to 20 million factory jobs' by 2030

🕒 26 June 2019 | 📄



🔗 Share



Up to 20 million manufacturing jobs around the world could be replaced by robots by 2030, according to analysis firm Oxford Economics.

Sep 18, 2018, 08:05am EDT

Artificial Intelligence To Create 58 Million New Jobs By 2022, Says Report



Amit Chowdhry Contributor ⓘ

[Consumer Tech](#)

Tech enthusiast, born in Ann Arbor and educated at Michigan State

Machines and algorithms in the workplace are expected to create 133 million new roles, but cause 75 million jobs to be displaced by 2022 according to a new report from the World Economic Forum (WEF) called “[The Future of Jobs 2018](#).” This means that the growth of artificial intelligence could create 58 million net new jobs in the next few years.

2. Who would be affected by robots?

We must also think about the people making the robots in the factories.

How will they be impacted?

WORLD • CHINA

U.S. Report Finds Widespread Forced Uighur Labor in China



China Uighurs 'moved into factory forced labour' for foreign brands

2 March 2020

f      Share



According to the report, the factories claim to be part of the supply chain for 83 well-known global brands, including Nike, Apple and Dell.

The report said it was "extremely difficult" for Uighurs to refuse or escape the work assignments, with the threat of "arbitrary detention" hanging over them.

It added that there was evidence of local governments and private brokers being "paid a price per head" by the Xinjiang government to organise the assignments, which ASPI describes as "a new phase of the Chinese government's ongoing repression" of Uighurs.

3. What about the environment?

How will robots impact the world around us?



3. What about the environment?

The urban environment?

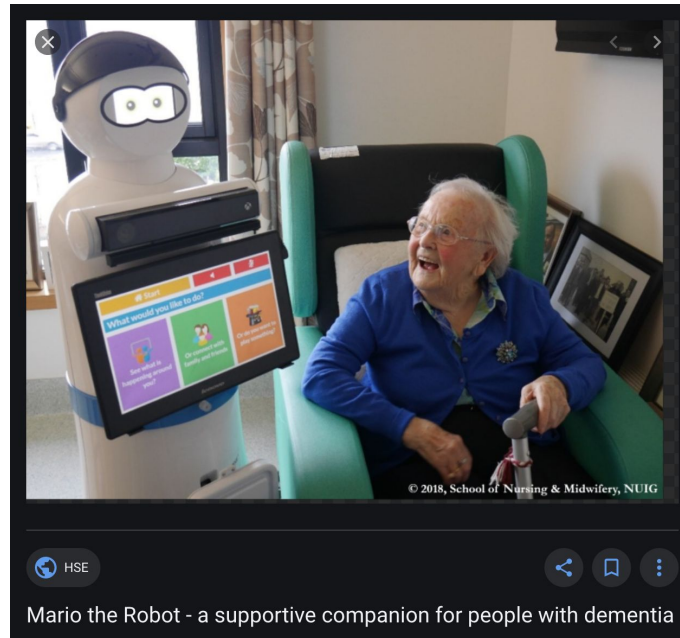
Police in Tunisia are using robots to patrol the streets to enforce a coronavirus lockdown — here's what they look like

Mary Meisenzahl Apr 9, 2020, 1:40 PM



3. What about the environment?

Hospitals, nursing homes, assisted living facilities?



3. What about the environment?

Animals around us?







For Homework:

Read this short story by Isaac Asimov:

“Evidence”

http://ekldata.com/-Byix64G_NtE0xI4A6PA1--o1Hc/Asimov-Isaac-I-Robot.pdf



For Homework:

This story is about a politician that might or might not be a robot.

The main question is: 'Does it matter if someone's a robot or not if they do things well?'