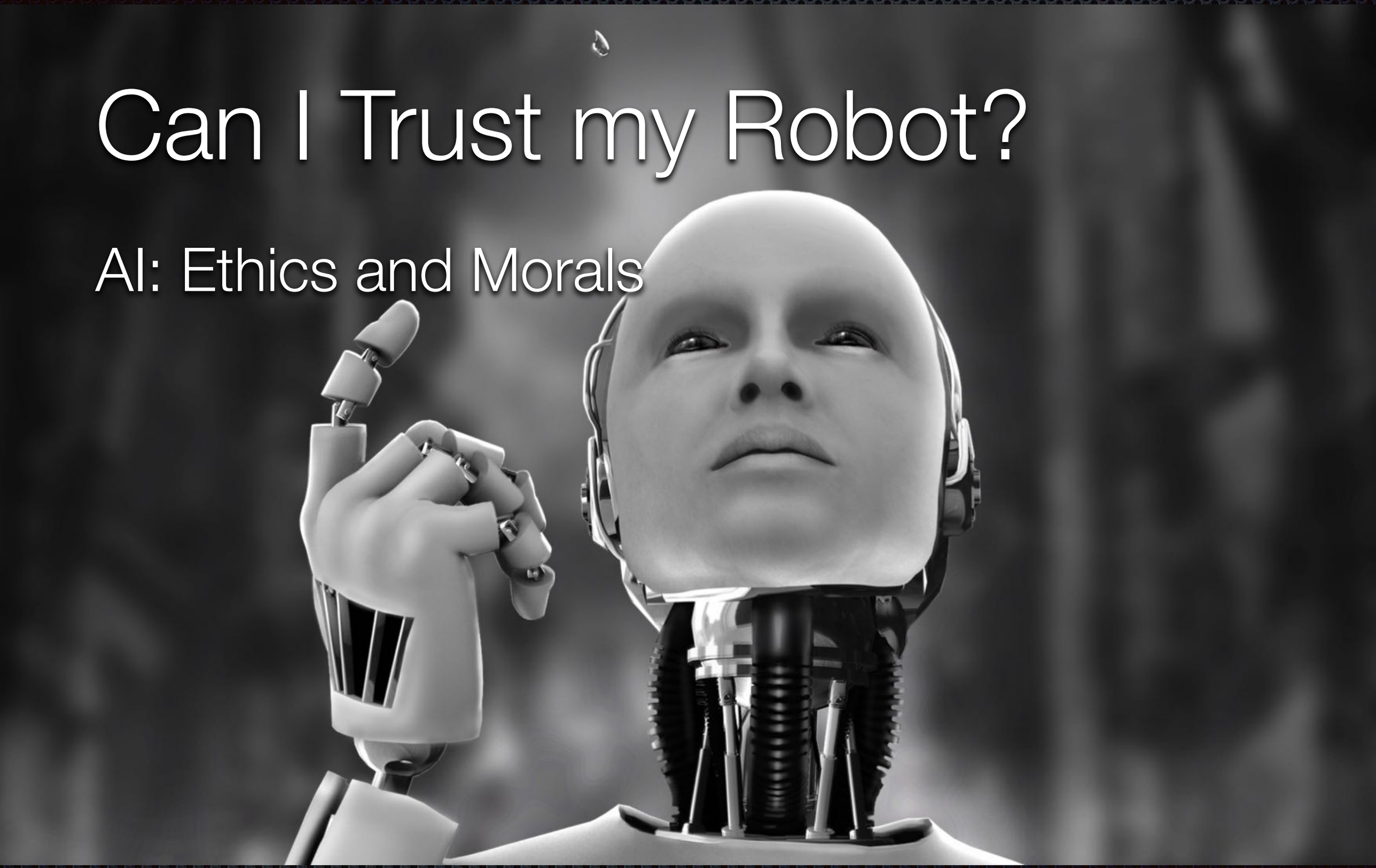
Can I Trust my Robot?

AI: Ethics and Morals



Agenda

- Part 1
  - Introduction
  - Issues: Jobs
  - Issues: Safety
  - Issues: Society
- Part 2
  - How it works (v very briefly)
  - Conscious Machines

A Big Question

- AI is...
  - ...not artificial consciousness.
- Is an artificial mind possible?
  - More in part 2.

Meanwhile...

- AI is already affecting our lives

Neural Network Finds 8-Planet System

By: **Monica Young** | December 15, 2017

346

Scientists have applied a brand of artificial intelligence to data from the exoplanet-hunting Kepler satellite, resulting in the discovery of the first eight-planet system outside our own.

Neural networks, an application of artificial intelligence, can do a little bit of just about anything, from diagnosing breast cancer to driving cars. Now, they can help detect planets, too. A unique collaboration between an astronomer and a Google engineer has resulted in a neural network that combed through a preliminary sample of Kepler-detected exoplanets, making two Earth-size discoveries along the way.

Artist's depiction of the Kepler-90 system. Kepler-90i, one of the two exoplanet discoveries NASA announced, is the third planet from the left. It's Earth-size and likely rocky.
NASA / Ames Research Center / Wendy Stenzel

There will be big benefits

- Dangerous work
- Tedious and unpleasant work
- Constant help and care for the vulnerable

Click to enlarge

Alpha 1S Humanoid Robot

Product Code : RB-Ubt-01 by UBTECH Robotics

(1) Add my review

In stock

Free shipping on this item

- Compatible with iOS and Android
- Finger-friendly structural design
- APP programming by positioning the servos manually, easy to learn
- APP control program features
- 16 high precision servos

Risks & Issues

- Take away human work
- Profound effects on our societies
- Safety
- Responsibility when things go wrong
- The treatment and ownership of robots themselves

Robots in Fiction and Film

- Asimov's Robots (“I, Robot”)

NS5
Domestic Robot

1

A robot may not injure a human being or, through inaction, allow a human being to come to harm.

WHAT WILL YOU DO WITH YOURS?

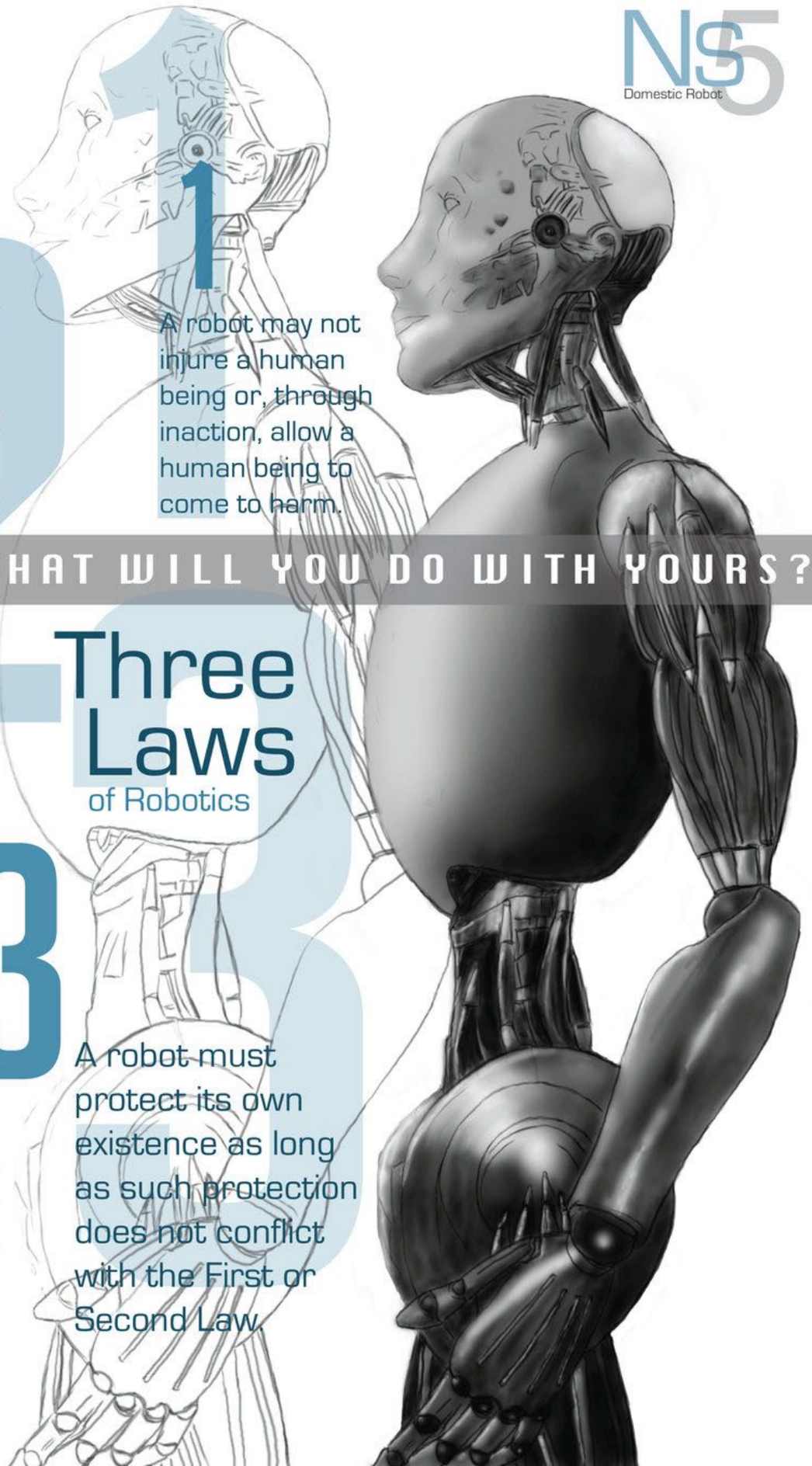
2

A robot must obey orders given to it by human beings, except where such orders would conflict with the First Law.

Three Laws of Robotics

3

A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.



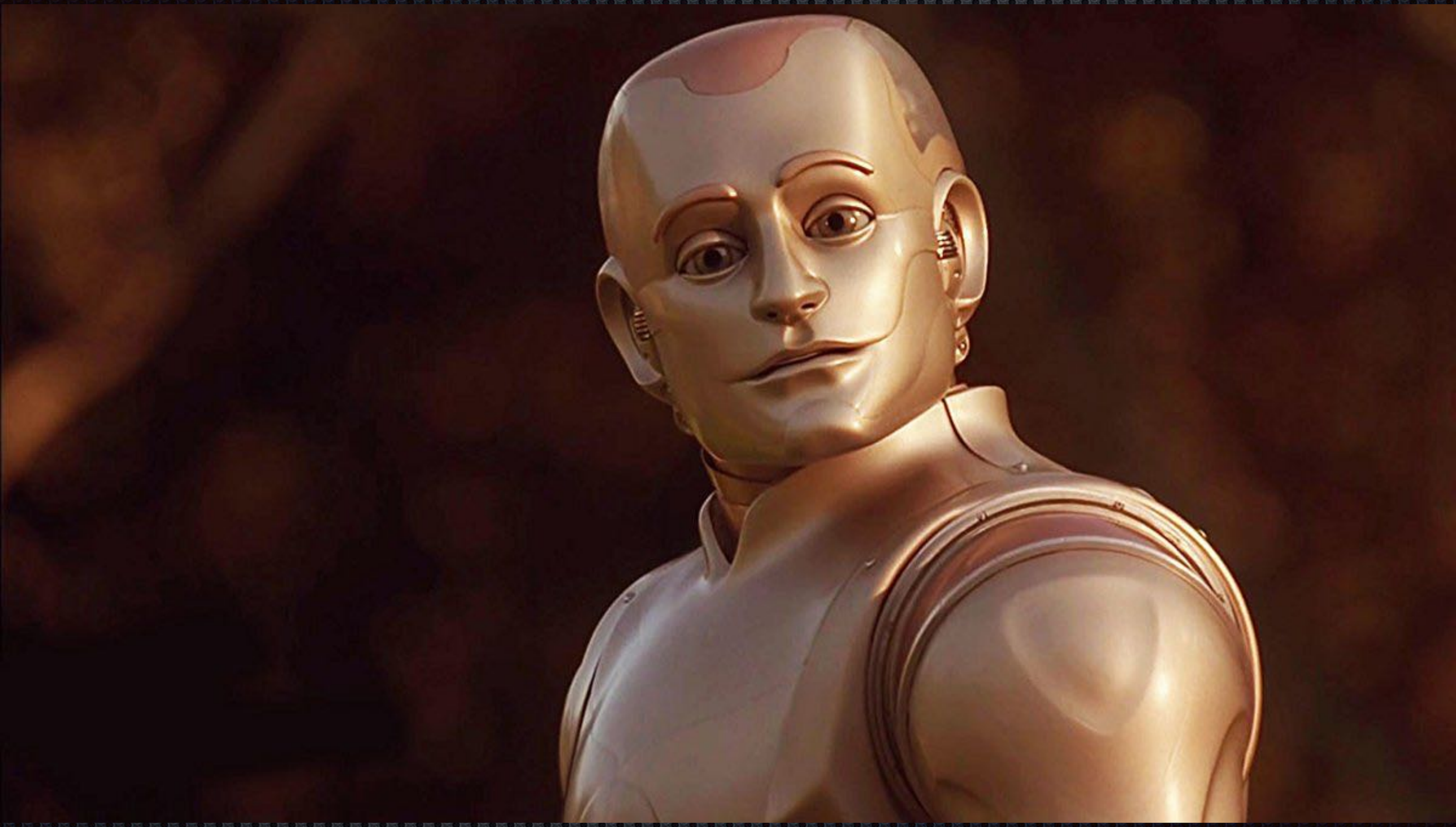
Robots in Fiction and Film

- Asimov's Robots
- "3 Laws of Robotics"
  - Nice idea - not possible.

Robots in Fiction and Film

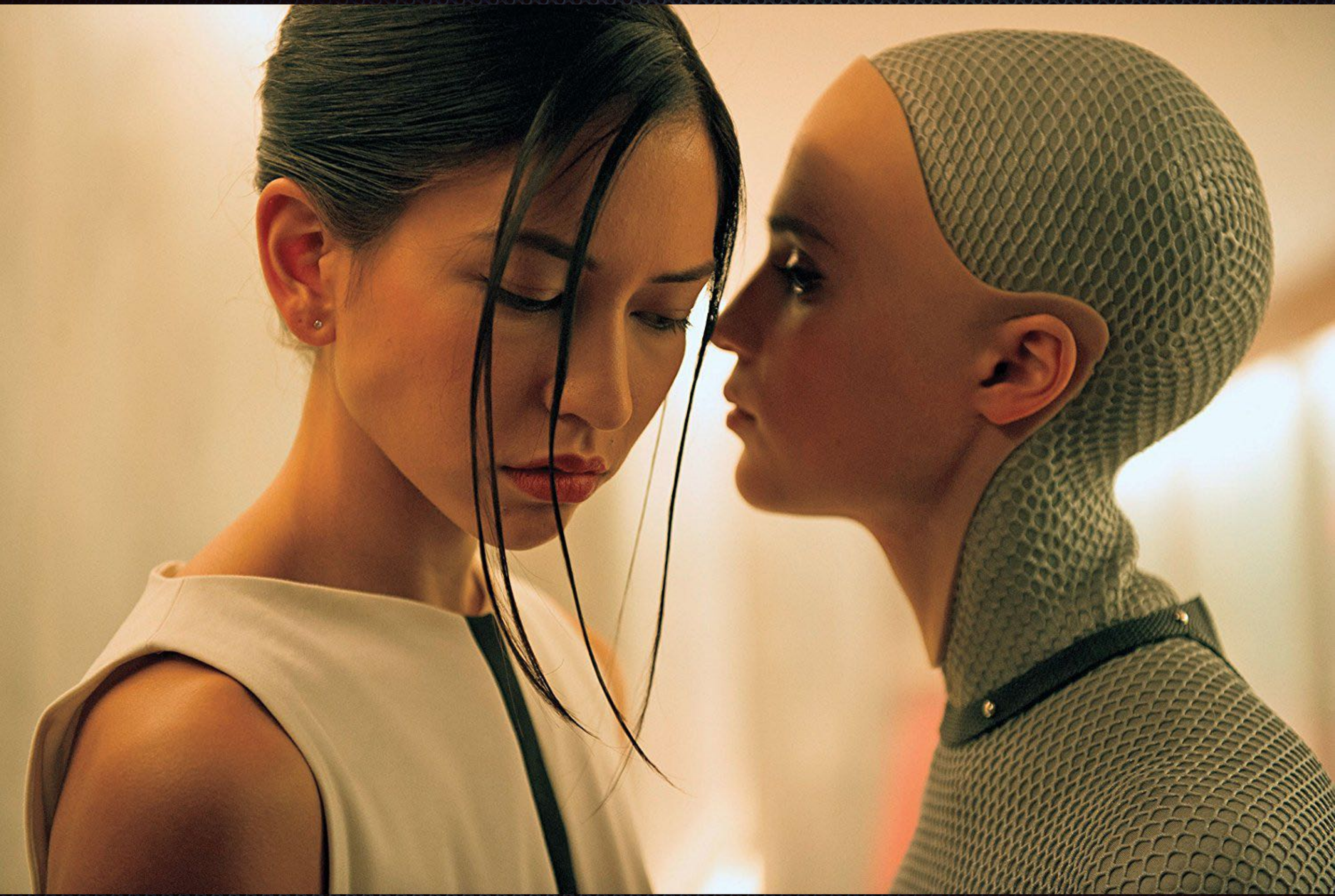
- AI, Bicentennial Man
  - Exploring the meaning of Personhood

DARLENE
At Last-A Love of Your Own
DAVID
At Last-A Love of Your Own
DAVID
Height 50"
Weight: 75lbs
Multi-lingual
Easy to follow instruction
5 yr. ull service warran



Robots in Fiction and Film

- Blade Runner, Ex Machina
  - Safety and Slavery



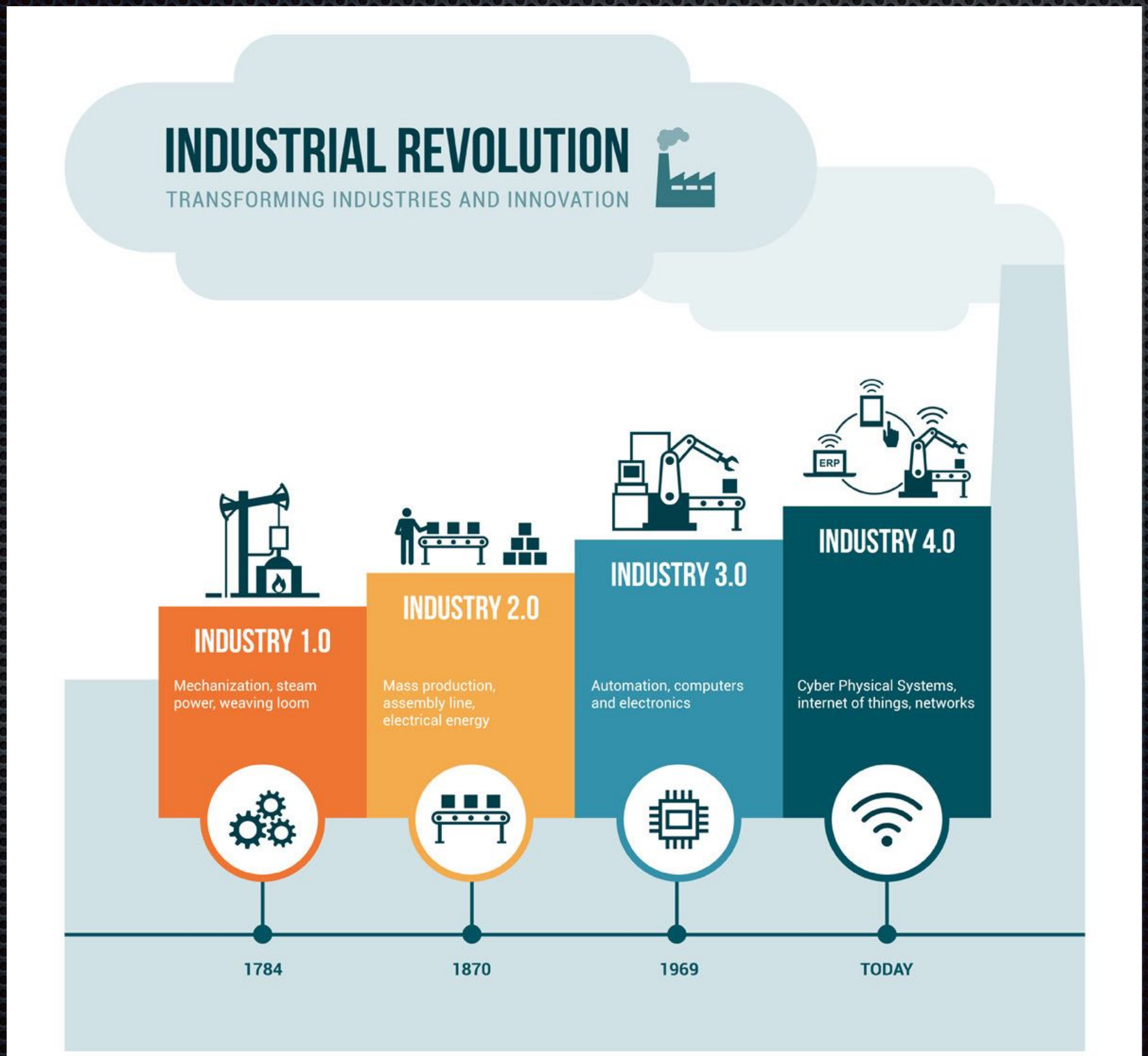
Part 1: Some Issues

Issue 1:
“They're taking our jobs!"

Impact of automation

- Similar things have happened before:
  - Industrial Mechanisation
  - Mass Production
  - Computer Automation

4th Industrial Revolution



4th Industrial Revolution

- “New jobs will arise”

> The world will always need human brilliance, human ingenuity and human skills.
>
> Brad Keywell
> *Co-founder and CEO, Uptake*
>
> WORLD ECONOMIC FORUM

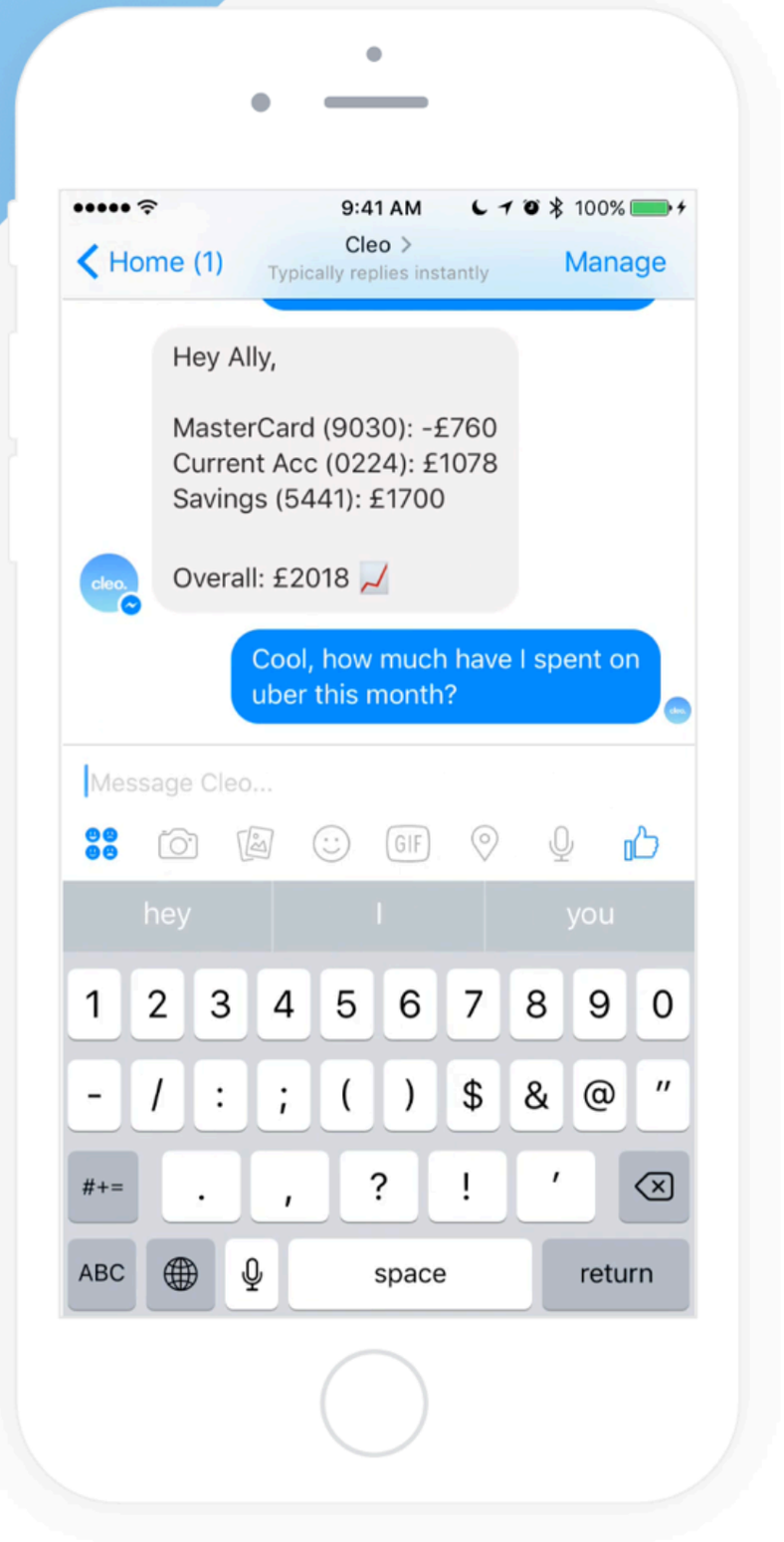
- What if *all* human work can be done more cheaply and equally well by a robot?

What jobs could they do?

- Taxi driver?
- Nurse?
- Domestic servant? (everyone loves ironing!)
- Doctor?
- Finance?

cleo.

Blog Company Help FAQs Careers



Meet Cleo.

Your AI friend that looks after your money.
Sign up for free, it takes less than 2 minutes.

Sign up →

▶ Watch our video

What jobs could they do?

- Taxi driver?
- Nurse?
- Domestic servant? (everyone loves ironing!)
- Doctor?
- Finance?
- Engineer/inventor?
- Teacher?

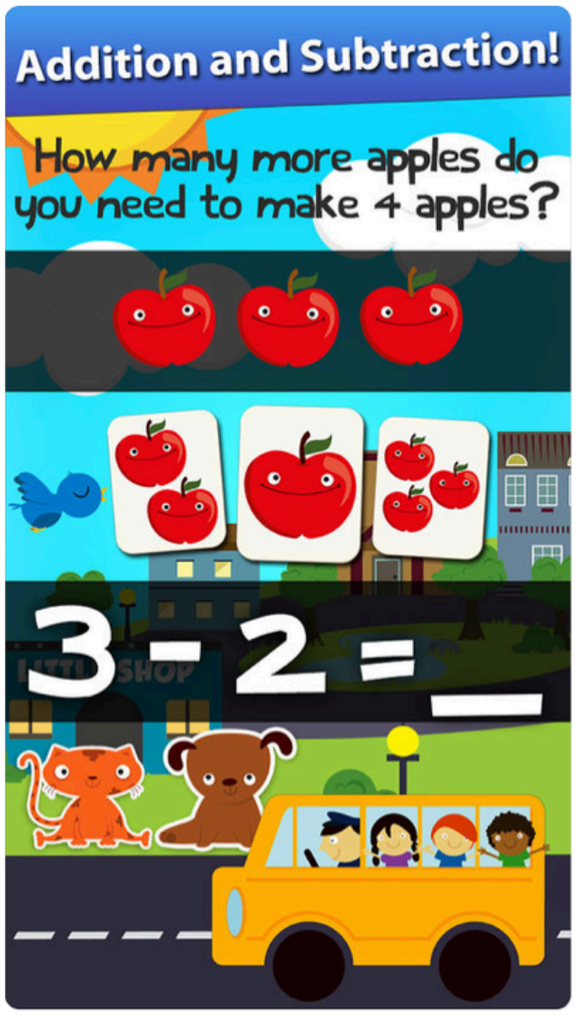
Animal Math Games for Kids in Pre-K, Kindergarten and 1st Grade Learning Numbers, Counting, Addition and Subtraction Premium 4+

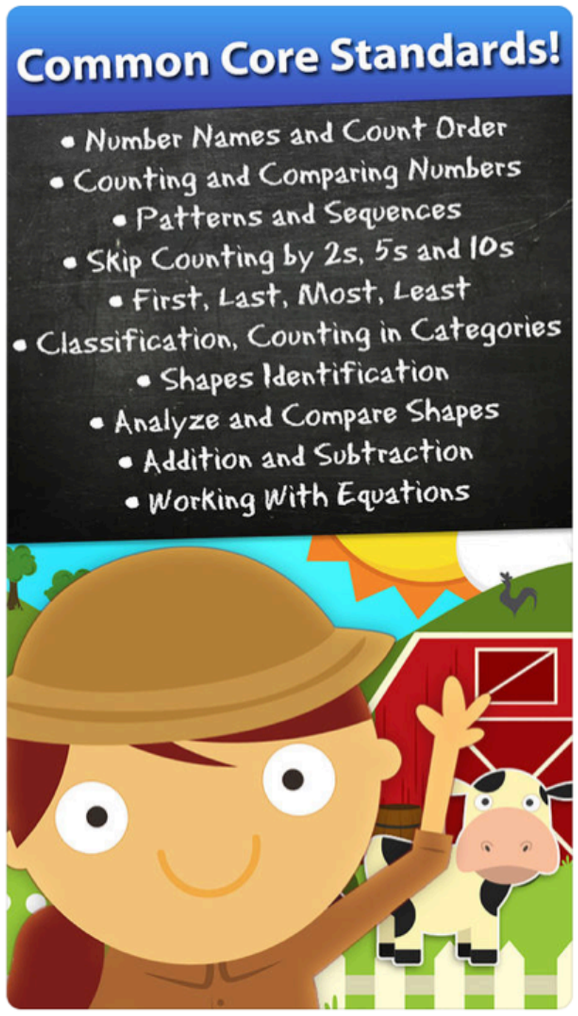
Eggroll Games LLC

★★★★½ 47 Ratings

$4.99

Screenshots iPhone iPad





What jobs could they do?

- Taxi driver?
- Nurse?
- Domestic servant? (everyone loves ironing!)
- Doctor?
- Finance?
- Engineer/inventor?
- Teacher?
- Artist?
- Church of England Vicar?

Is meaningful work destined to be the preserve of a lucky few people?

- There is a clear Biblical command for people to work.
- *"The Lord God took the man and put him in the garden of Eden to work it and keep it."* *Gen 2:15*
- *"Six days you shall labour, and do all your work," Ex20:9*
- Idleness is not how God intended us to live.
  - Even if all our physical needs can be provided.

Implications

- Safety
- Liability
  - Who is responsible in an accident?
  - What if an AI reacts in an unpredictable way? Perhaps by crashing the stock market?
    - Who pays? Who gains?

On the other hand...

- We could work less and better.
- Less drudgery, more fun?
- Less isolation.

Question

- Are there jobs that robots should never be allowed to do?

Issue 2: Is it safe?

- Robots running amok? Might we accidentally make this a reality?

Case Study: Autonomous Vehicles

- Potentially much safer than humans:
  - More and faster senses
  - 360° cameras, Radar and LiDAR
  - React faster

Complex problem!

- View the scene
- Measure ranges, directions & speeds of everything in it
- Map the environment surrounding the vehicle
- Predict the movement of everything in the map
- Understand the behaviour of people, vehicles, animals...
- Decide what to do.
- REPEAT THE ABOVE ABOUT 25 TIMES EVERY SECOND!

If your autonomous vehicle makes a mistake...

- Whose fault is it?
  - Yours, as the car owner?
  - The car manufacturer?
  - The people who made the camera or computer?
- Who do we sue?

Mistakes

- What are you going to think when one of these AIs makes a mistake?
  - Your AI doctor?
  - Your child's AI teacher?
  - Your domestic appliance, help or valet?
  - Your AI investment manager?

Ethics for AI?

- Research: to mimic human decision making
  - Are human ethics appropriate to imitate?
- "Zero risk" approach does not work
  - AI "Ethical Paralysis"
- Possibility of malicious human exploitation of AI conditioning?

Issue 3:
Human society will change

New technology changes us

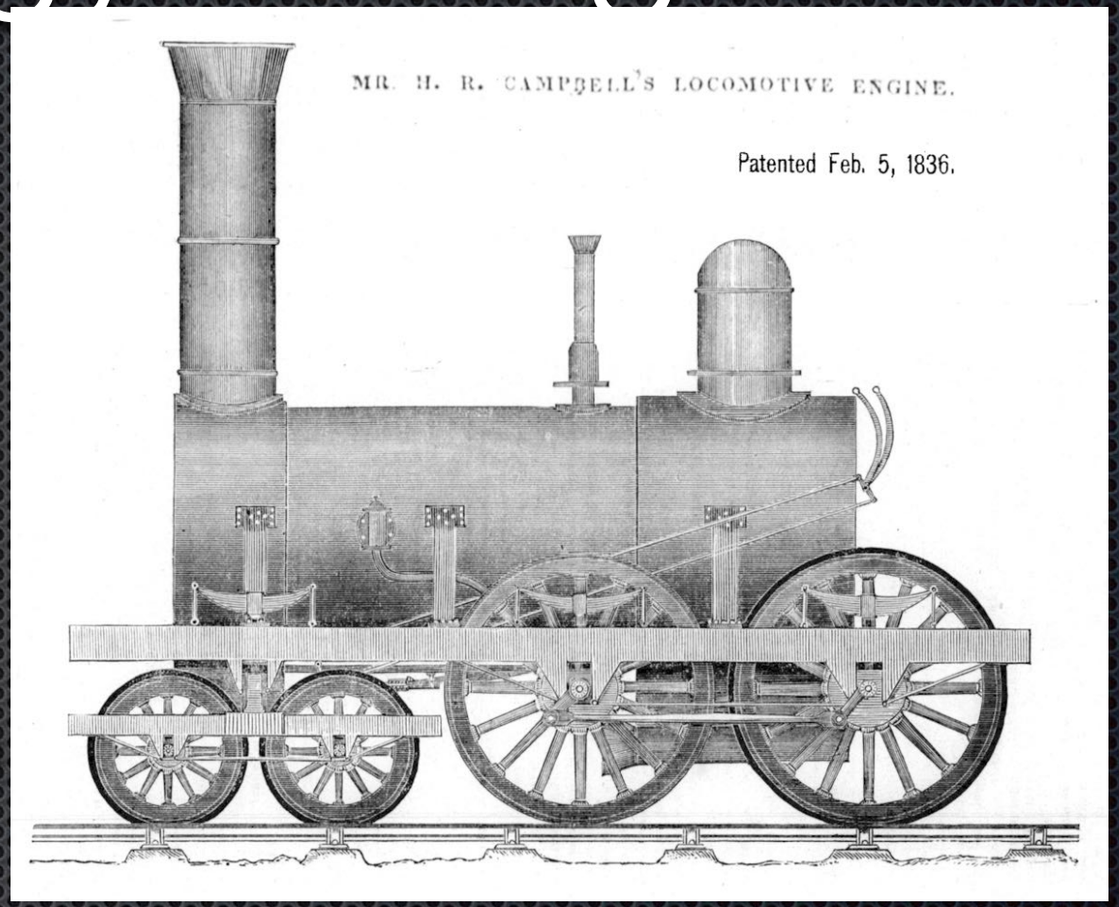
- Consider...
  - The Printing Press

New technology changes us

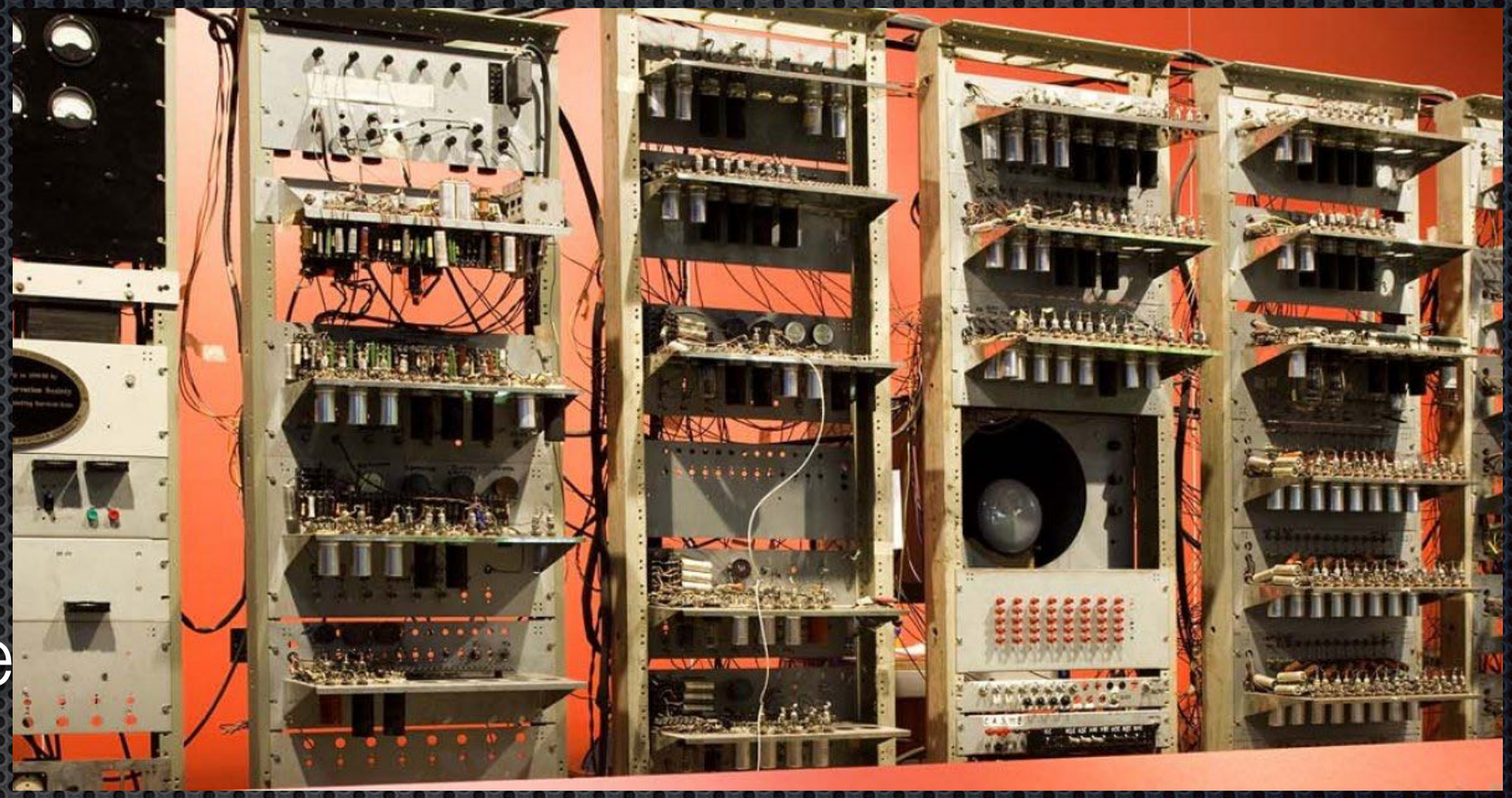
- Consider...
  - The Printing Press
  - Industrial mechanisation

New technology changes us

- Consider...
  - The Printing Press
  - Industrial mechanisation
  - Fast and affordable transport

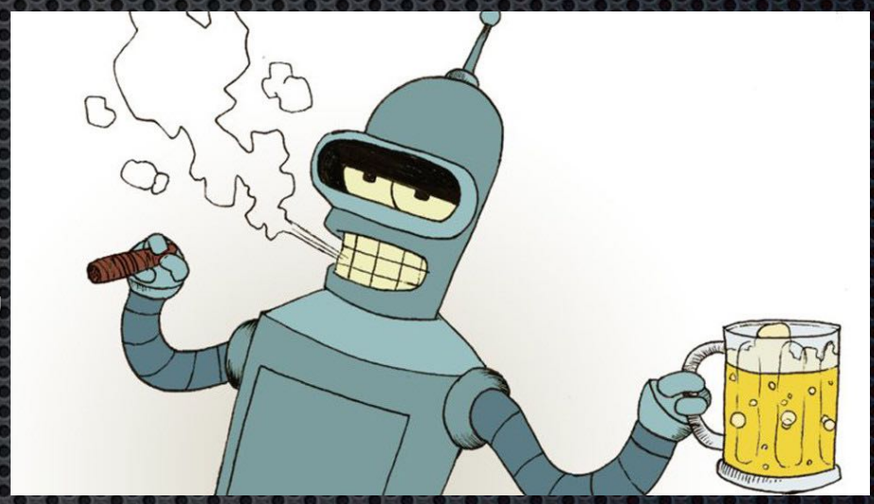


New technology changes us



- Consider...
  - The Printing
  - Industrial me
  - Fast and affordable transport
  - Computers, Internet and Mobile Technology

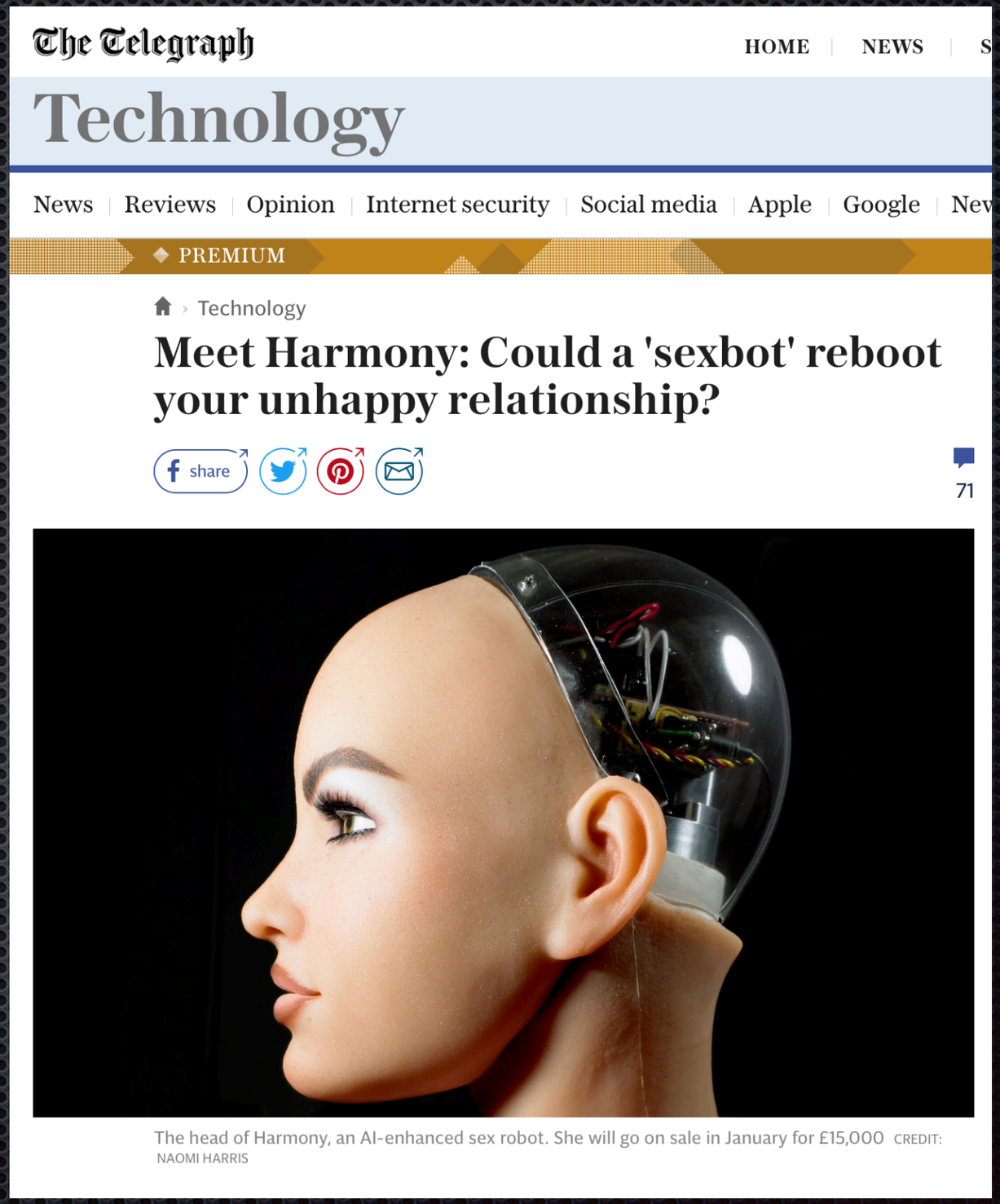
“I’m just going down the pub with the robot.”



- AIs will be very interactive, intelligent, responsive devices
  - Humans will build them into our social interactions.
- We are compulsive communicators.
  - How will we behave when we have a device we communicate *with* (not just through)?

Inevitably

- New technologies and media too often start with pornography.
- AI will be no different.
- We need to be ready for the damage this will do.



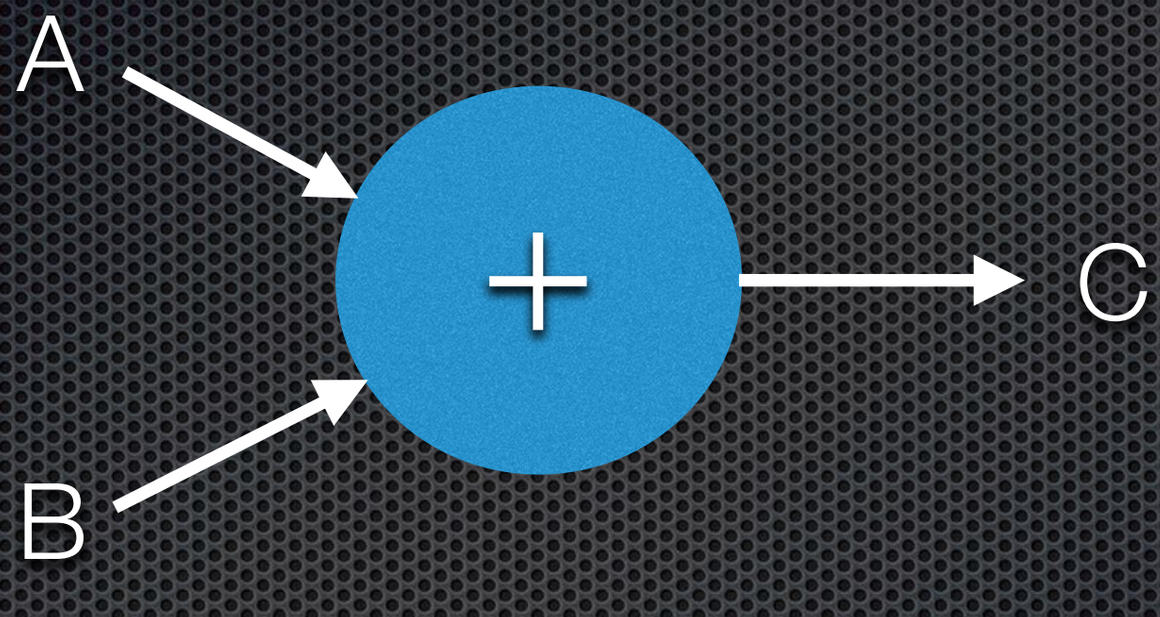
Part 2:

https://xkcd.com/1838/

How does machine learning work?

- Not really “programmed”

First: a “normal” computer

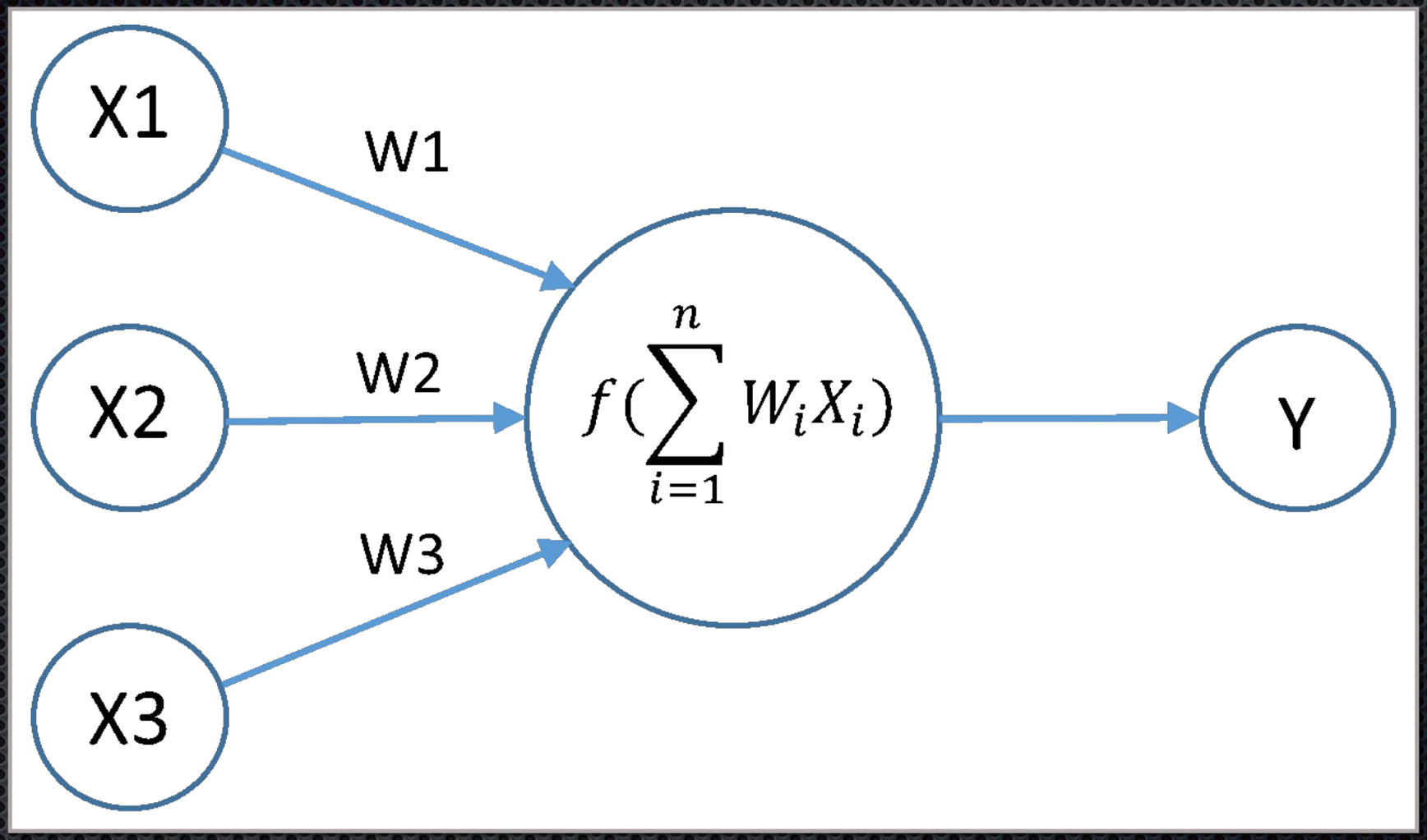


C = A + B;

```
for (i=0;i<100;i++)
    C[i] = A[i] + B[i];
```

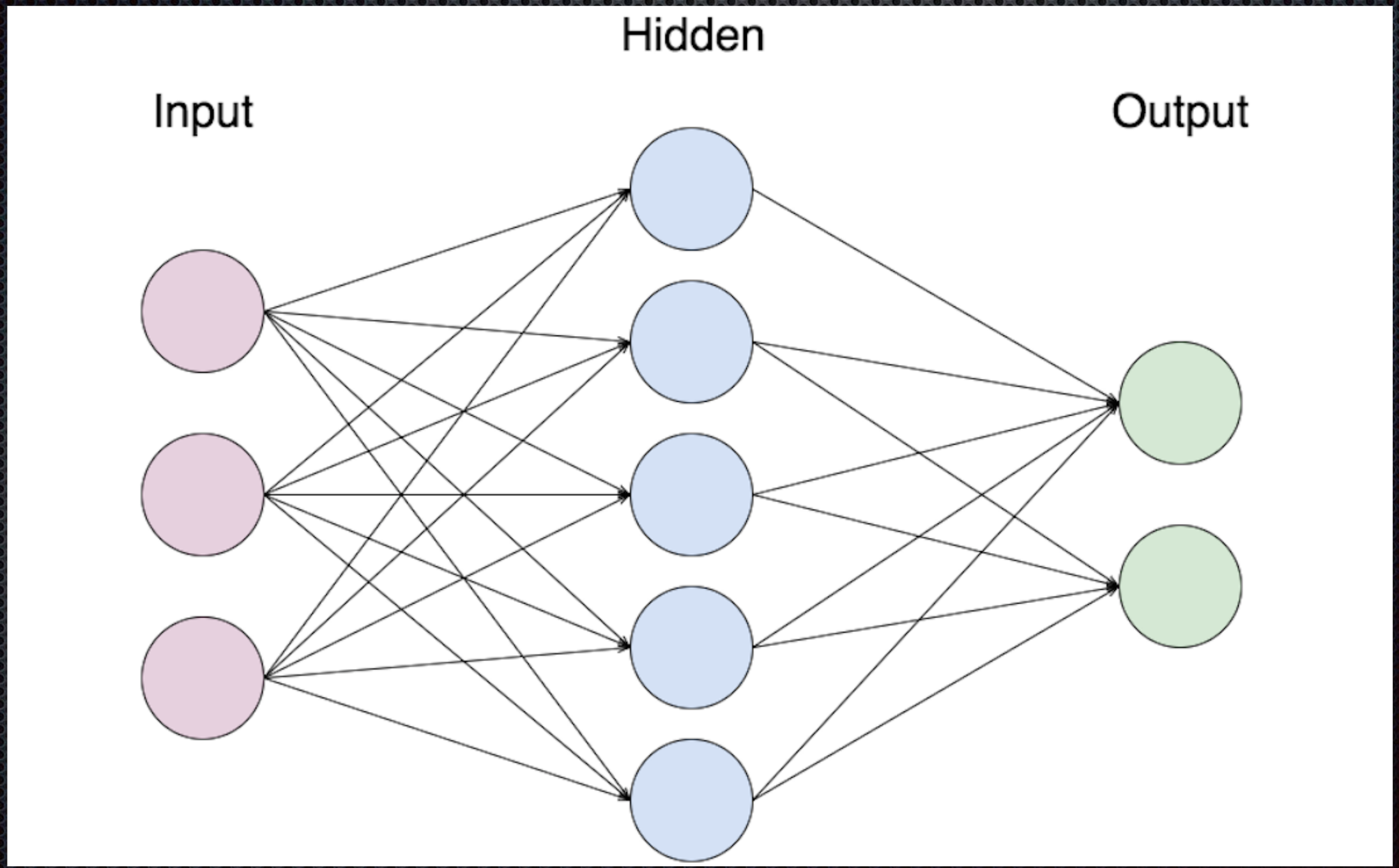
Human Neuron (Brain Cell)

Artificial Neuron



- Imitates the Biological Neuron with a Mathematical Function

Connect them together



How does machine learning work?

- Not programmed: trained or conditioned.
- Each NN is trained to do only one thing.
- Deterministic.

That Big Question....

The Question:
Is a truly conscious machine possible?

- Maybe. Maybe not.
- Penrose's argument:
  - There is something special about the physics of our brains that enables consciousness

A Thought Experiment

- Just in case...
- Let's assume that we can and will build conscious machines.

A Thought Experiment

- How would we know?
  - Turing Test
  - "Wit, will and worry"
  - Conscience and compassion:
    - "Made in the likeness of God"?

IMHO:

- If we were to succeed:
  - We won't know how it works (in detail).
  - There will have to be some non-determinism build in, deep down.
    - We will not be able…
      - ...to program it
      - ...to determine its behaviour
      - …to be confident that it shares our sense of right and wrong or has a conscience.
- This is a serious problem.

Questions

- The questions that follow are provocative.
- I do not offer answers.

Questions (No answers)

"You shall not make for yourself a carved image, or any likeness of anything that is in heaven above, or that is in the earth beneath, or that is in the water under the earth." Ex20:4

- Could we be deceived into believing that a machine is a person and treating it as such?
- Could we be setting ourselves up as gods?

Questions (No Answers)

"But you, O Lord, are a God merciful and gracious, slow to anger and abounding in steadfast love and faithfulness." Ps86:15

- Is there a way that we could instil compassion and a conscience into a CM?
- Are emotions necessary for compassion or a conscience?
- What if CMs turn out to be psychopathic?

Questions (No Answers)

Is it possible that a CM is made in God's image?

- Only God can instil His image in a being.
- But it is not the case that the mind of such a robot would be the creation of the people that built it. They will only have built the machine that it resides in.
- Therefore, if it has a consciousness, who put it there?
- Could a robot sin?

Questions (No Answers)

- Can one be cruel to a robot?
- Would a conscious machine have rights?
  - The right not to be kept as slaves?
  - The right to payment for their labour?
    - What do you pay a robot with?
  - The right not to be switched off?
  - The vote?

Finally: Should we do it?

- A slave race of powerful but biddable creatures?
- We may be closer to making Caliban or Nexus-6 a reality.
- Are we ready for what it entails?

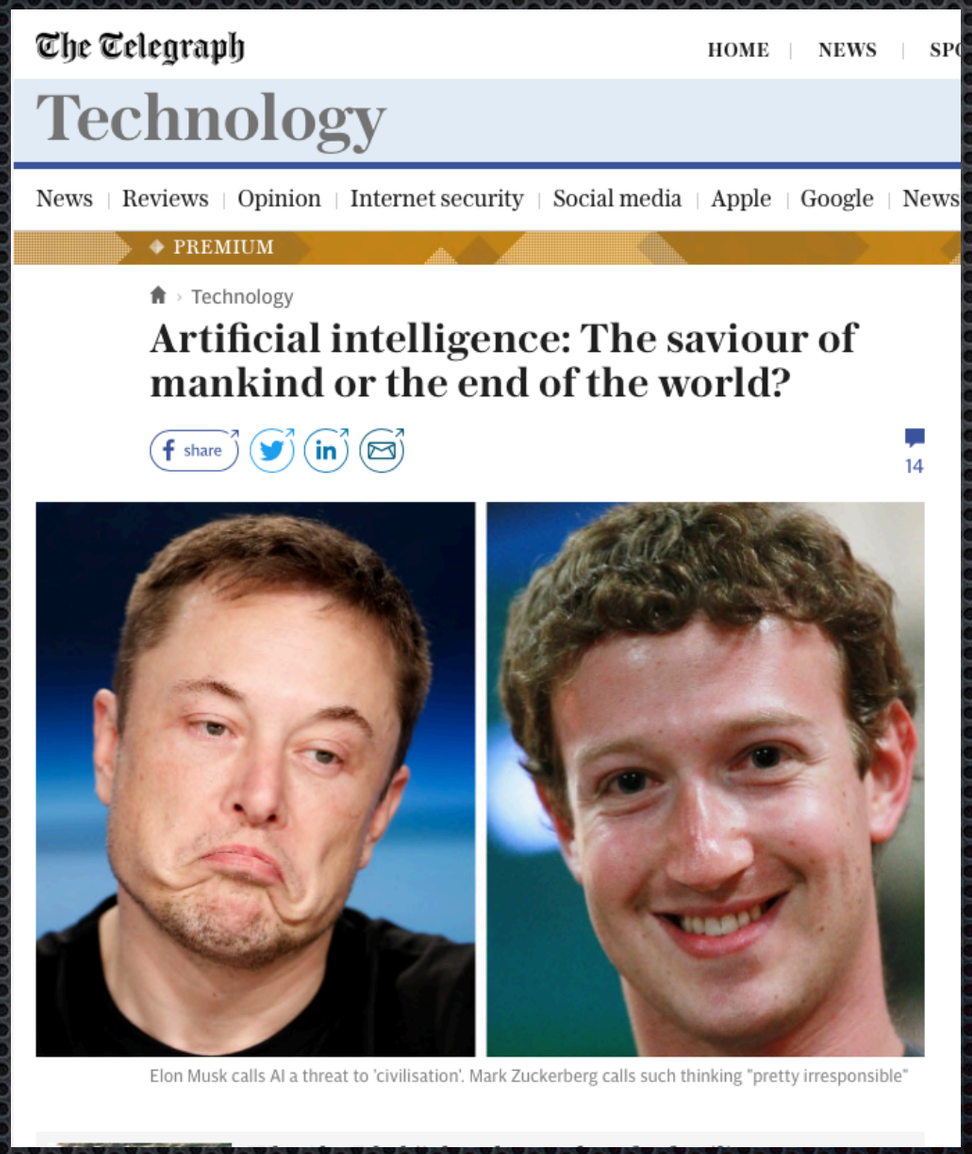
Finally: Should we do it?

- Ray Kurzweil: “Our sole responsibility is to produce something smarter than we are; any problems beyond that are not ours to solve.”

Leading technologists disagree

Cautious:

Elon Musk
Stephen Hawking
Nick Bostrom
Bill Gates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PREMIUM

Technology

Artificial intelligence: The saviour of mankind or the end of the world?

share 14

Elon Musk calls AI a threat to 'civilisation'. Mark Zuckerberg calls such thinking "pretty irresponsible"

Optimistic:

Mark Zuckerberg
Larry Page
Sam Altman

Finally: Should we do it?

Cody Volkers

“In Genesis 3, there are a multitude of sins wrapped into Adam and Eve’s disobedience. But behind their disobedience was a basic sinful desire: to achieve equality with God. The Bible teaches that we are to be God-like in a moral sense, but not in an axiological sense (that is, in terms of absolute value). Throughout the Old Testament, God’s people are taught to imitate God in character — to “be holy, as I am holy” (Leviticus 20:26). This carries over into the New Testament where Christians are exhorted to “imitate Christ” (Philippians 2). But this moral obligation rests on a basic ontological fact: We ourselves are creature, not God. We are to imitate God’s moral nature precisely because he is God, and we are not.”

http://www.ecclesiam.org/journal/a-christian-view-of-artificial-intelligence