Lecture 28: Philosophical perspectives 2

Artificial Intelligence
CS-GY-6613-I

Julian Togelius
julian.togelius@nyu.edu

You are a computer scientist. You are writing a series of lectures about computational creativity and artificial intelligence. You are writing a lecture explaining text generation to your students, and decide that you should try to write something more than just the usual introductory text on this subject.

What do you start with?

> You include a screenshot demonstrating the use of AI Dungeon, as an introductory example.
This is a good idea! The game has already been released for several years now, so it would be perfect to introduce the concept of AI Dungeon in your class.

> You regret the idea somewhat because it's not actually very interesting to show a page of text onscreen.
Well, what can you do? You are the teacher after all. Your students are going to love this.

> You remain unconvinced.
OK, fine. You have been known to teach quite dry material in the past, but showing AI Dungeon doesn't seem like it will be all that interesting.
You decide what else would be interesting to students.

Tip: You can write much more verbose actions than just "grab bucket", etc...

Do What do you do?

Ethical and societal dimensions

- Surveillance
- Employment
- Loss of control

Surveillance

- Ubiquitous computing and networking makes massive data collection possible (inevitable?)

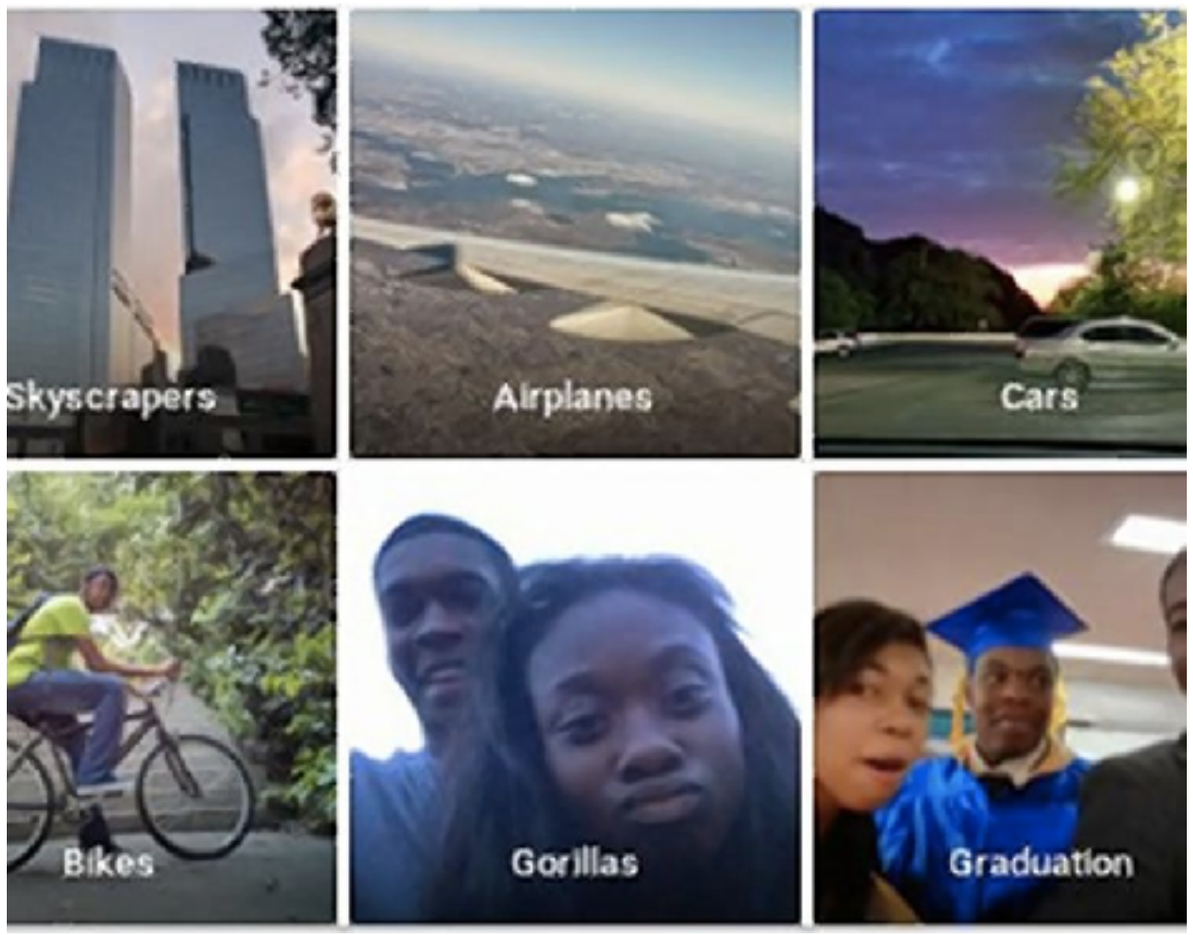
- AI / machine learning methods make it possible (inevitable?) to analyze all this data and draw conclusions

Gattaca (1997)

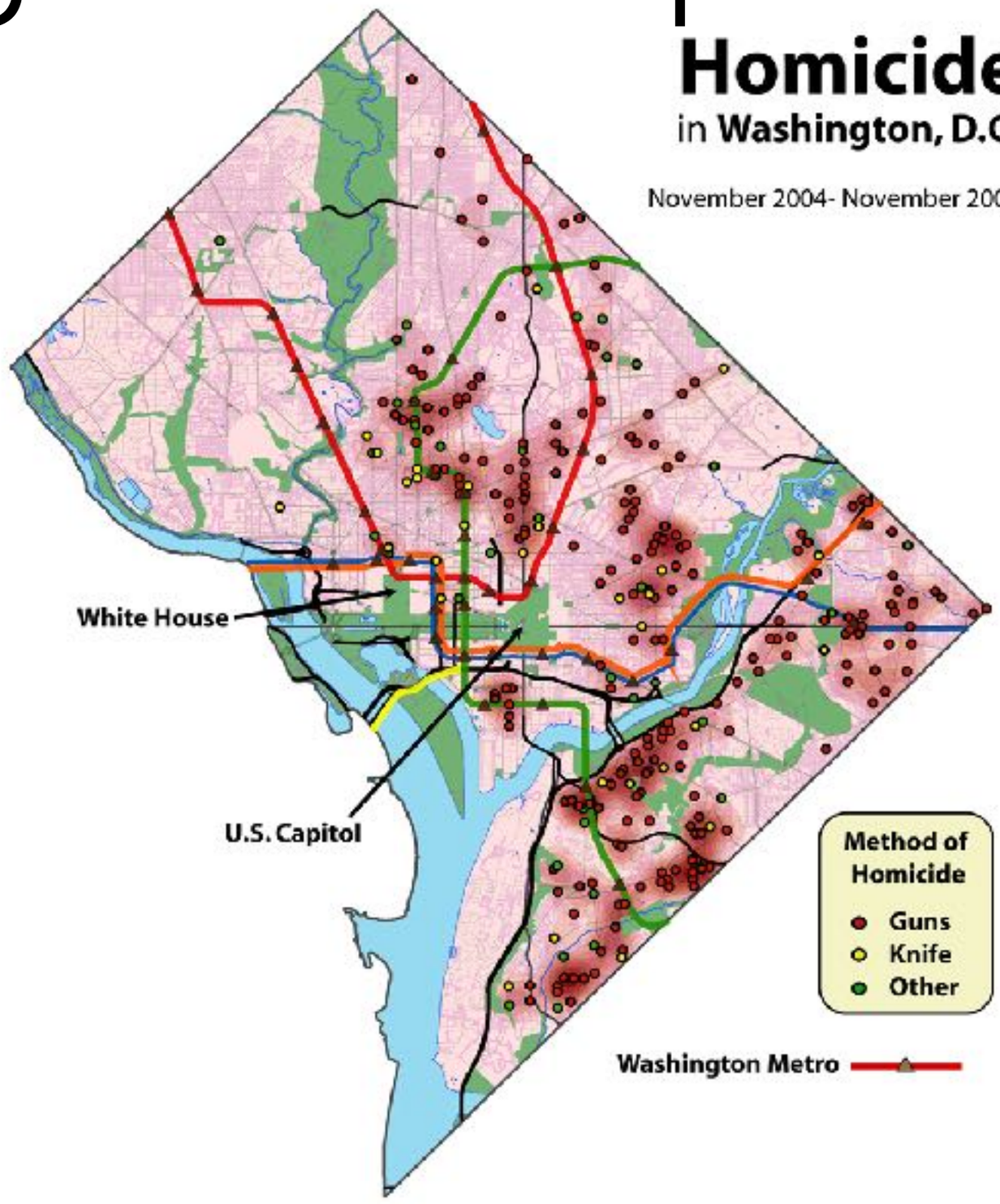
Minority Report (2002)

Racist AI?

- Is the error in the algorithm? In the dataset?
- Whose responsibility is it to detect it? To prevent it?
- What does it have to do with the composition of the tech work force?



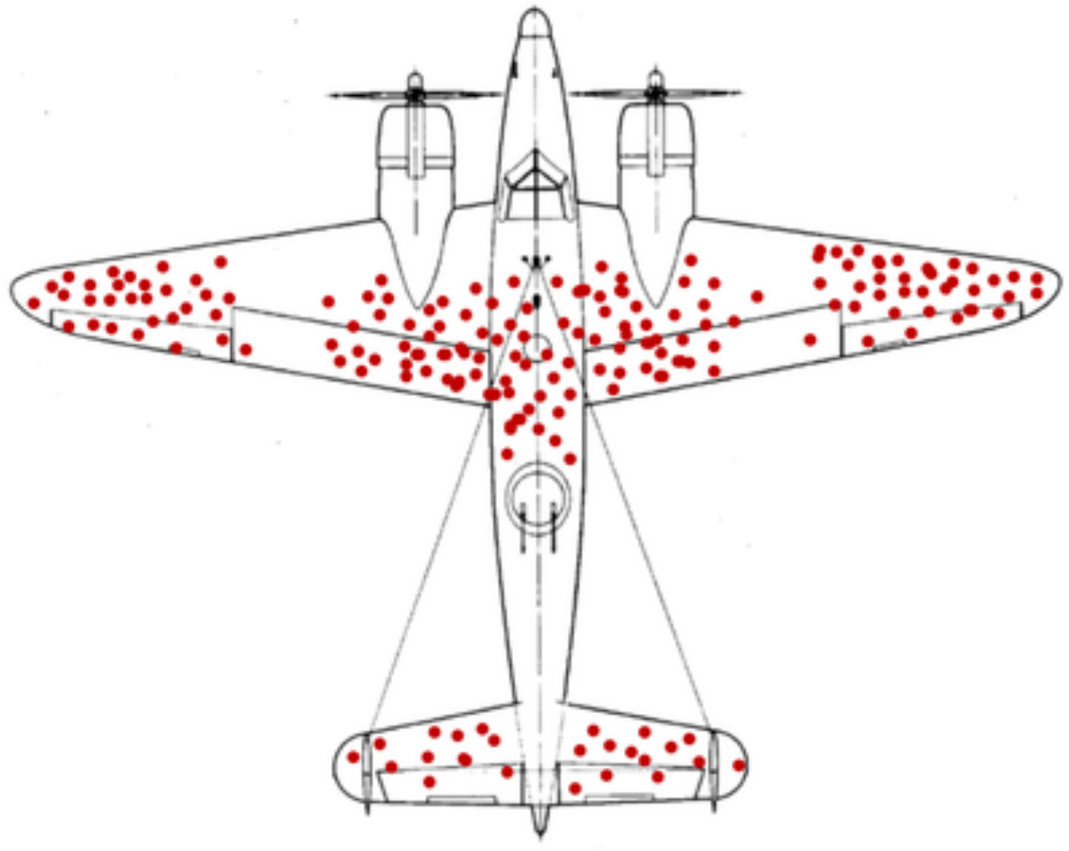
Algorithmic policing



Survivor Bias

In the second World War, returning aircraft were studied for damages by bullets.

Where should you reinforce the aircraft?



Shooting Bias

Mekawi, Yara & Bresin, Konrad. (2015). Is the evidence from racial bias shooting task studies a smoking gun? Results from a meta-analysis. Journal of Experimental Social Psychology. 61. 120-130. 10.1016/ j.jesp.2015.08.002.

Employment

- First and second industrial revolution: mechanization replaced physical labor, workers moved to more intellectually demanding jobs

- Early 21st century: a “service economy” (in the west)

- Will AI replace our need for service workers?

“It was a tough decision, but I’ve decided on which one of you I’m going to hire.”

Employment

Truck and taxi drivers, nurses, nannies, accountants, lawyers, psychologists, game designers, researchers…?

MARCH OF THE MACHINE MAKES IDLE HANDS

Prevalence of Unemployment With Greatly Increased Industrial Output Points to the Influence of Labor-Saving Devices as an Underlying Cause

By EVANS CLARK.

A FEW days ago the General Motors Corporation reported the largest peace-time earnings ever made by a single concern in the history of America. Three days later Governor Smith made public a report from the New York Industrial Commissioner which called public attention to serious unemployment throughout the State; not since the depression of 1921, it was disclosed, have conditions been as bad.

The people of the United States—in the shadow of a Presidential election—are presented with a social

have gone far to make construction a machine industry instead of a collection of hand trades. One gasoline crane takes the place of ten or twelve laborers. The hod-carrier has disappeared before the invasion of the material hoist. In concrete construction building materials are mixed, like dough, in a machine and literally poured into place without the touch of a human hand. The Ohio figures reveal these results: with 25 per cent. fewer men employed, contractors put up 11 per cent. more square feet of finished buildings last year than in 1923.

Coal Mined by Machines.

Job Displacement

Industrial Revolutions

1st Industrial Revolution:

1760 - 1840: Steam Engine, Textiles, Machine Tools, Fertilizer, etc.

- Agricultural Revolution
- Modern Capitalism

Industrial Revolutions

2nd Industrial Revolution (Technological Revolution):

1870 - 1940: Internal Combustion, Steel, Railroads, Interchangeable Parts, Electrification, Mass Production, Telephone, Chemicals, Management

- Ends with World War 1

Industrial Revolutions

3rd Industrial Revolution (Digital Revolution, Information Age):

1950s - Present Day: Mass-produced Digital Circuits, Computers, Cell-Phones, Internet

- Large, not fully understood, societal change

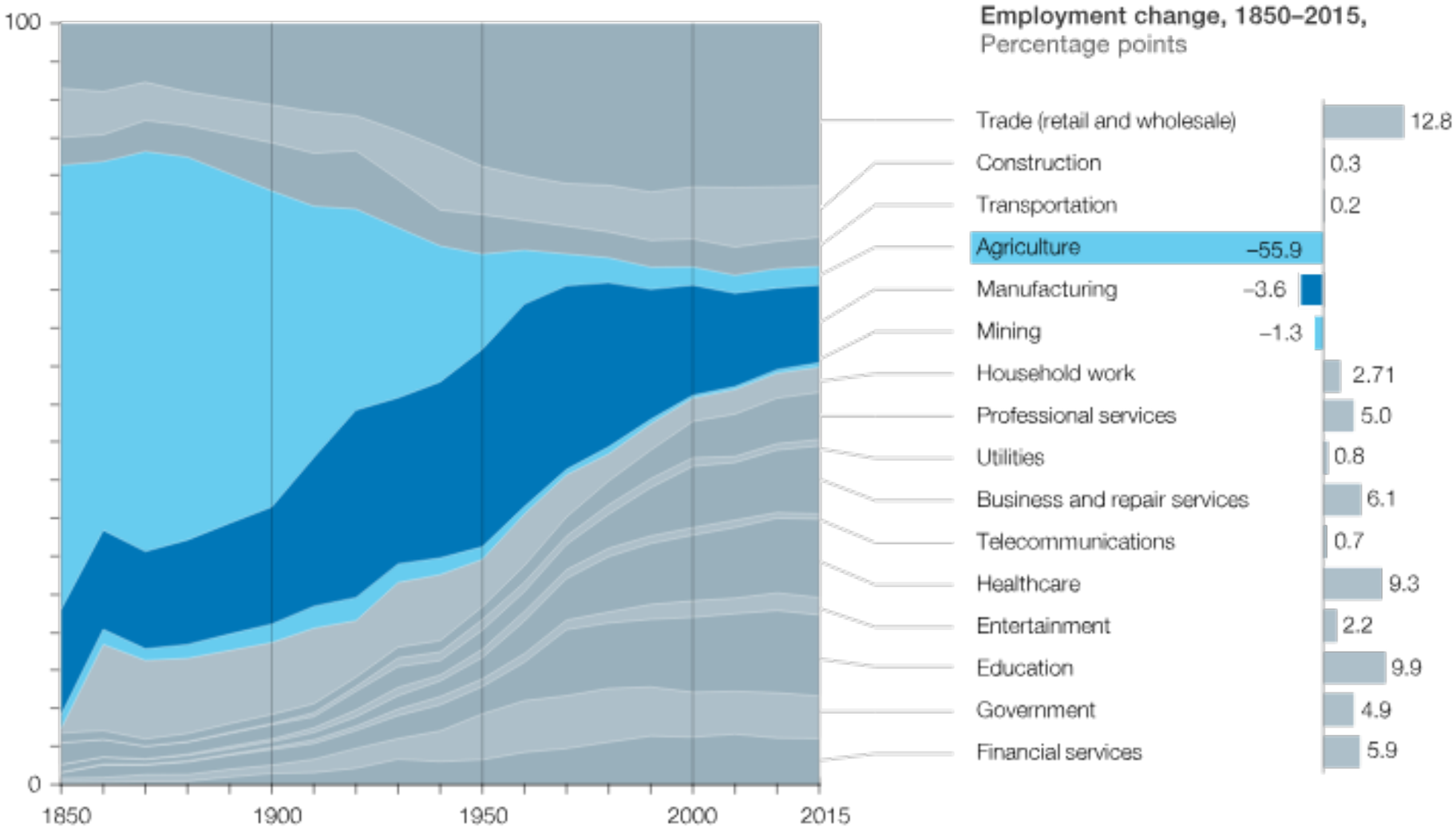
4th Industrial Revolution

The **Fourth Industrial Revolution** (**4IR**) is the fourth major industrial era since the initial Industrial Revolution of the 18th century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres, collectively referred to as cyber-physical systems.[1] It is marked by emerging technology breakthroughs in a number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, the Industrial Internet of Things (IIoT), fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous vehicles.

Wikipedia, 4th Industrial Revolution

History shows that technology has created large employment and sector shifts, but also creates new jobs.

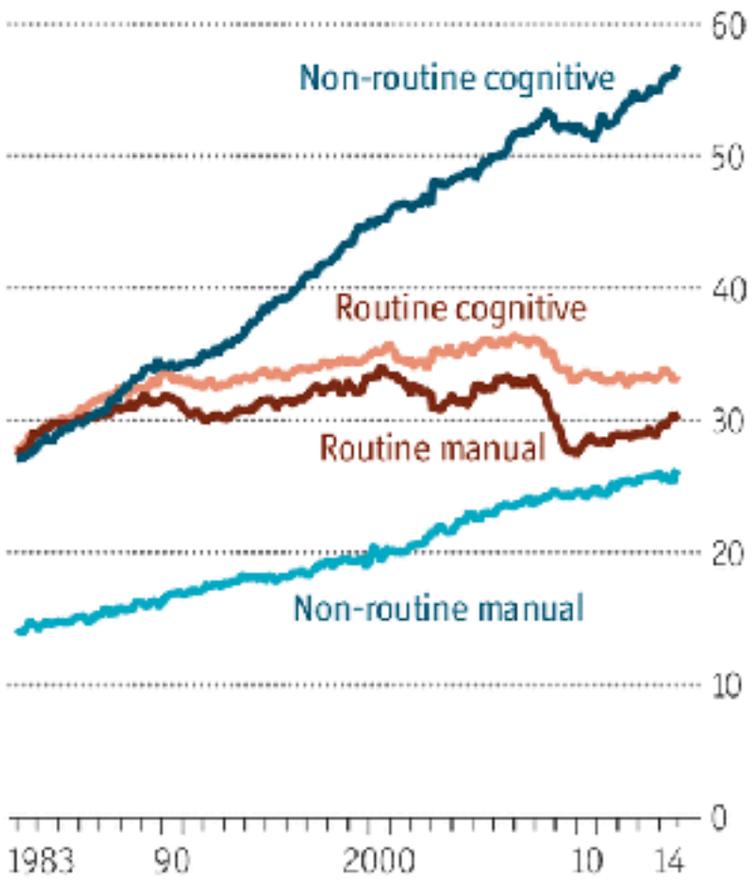
Share of total employment by sector in the United States, 1850–2015, % of jobs



McKinsey&Company | **Source:** IPUMS USA 2017; US Bureau of Labor Statistics; McKinsey Global Institute analysis

Think

United States employment, by type of work, m



Sources: US Population Survey; Federal Reserve Bank of St. Louis

Economist.com

Catalogue of fears

Probability of computerisation of different occupations, 2013
(1 = certain)

Job	Probability
Recreational therapists	0.003
Dentists	0.004
Athletic trainers	0.007
Clergy	0.008
Chemical engineers	0.02
Editors	0.05
Firefighters	0.17
Actors	0.37
Health technologists	0.40
Economists	0.43
Commercial pilots	0.55
Machinists	0.65
Word processors and typists	0.81
Real-estate sales agents	0.85
Technical writers	0.89
Retail salespeople	0.92
Accountants and auditors	0.94
Telemarketers	0.99

Source: "The Future of Employment: How Susceptible are Jobs to Computerisation?", by C. Frey and M. Osborne (2013)

Economist.com

https://www.economist.com/special-report/2016/06/25/automation-and-anxiety

Big Questions?

Is this going to be the same story as in previous Industrial Revolutions?

If not, what is different this time?

What societal changes will this Process bring?

Loss of control and accountability

- The complex nature of modern technical systems more or less require AI to control many systems

- Defense systems, power production, social security, credit rating, the Internet…

- There are so many systems that we don’t completely understand anymore and therefore don’t really control

- And this is likely to get worse!

Consciousness

Reasoning

Free Will

Being Alive

Being Human

Relationship with Others

Recognition by Law

Personhood

Life

Liberty

Happiness

Equality

Rights

Protections

Legal Liability

Robot Citizenship

Sophia

Hanson Robots

Honorary Citizen of Saudi Arabia

Robots and Legal Liability

EU Parliament:

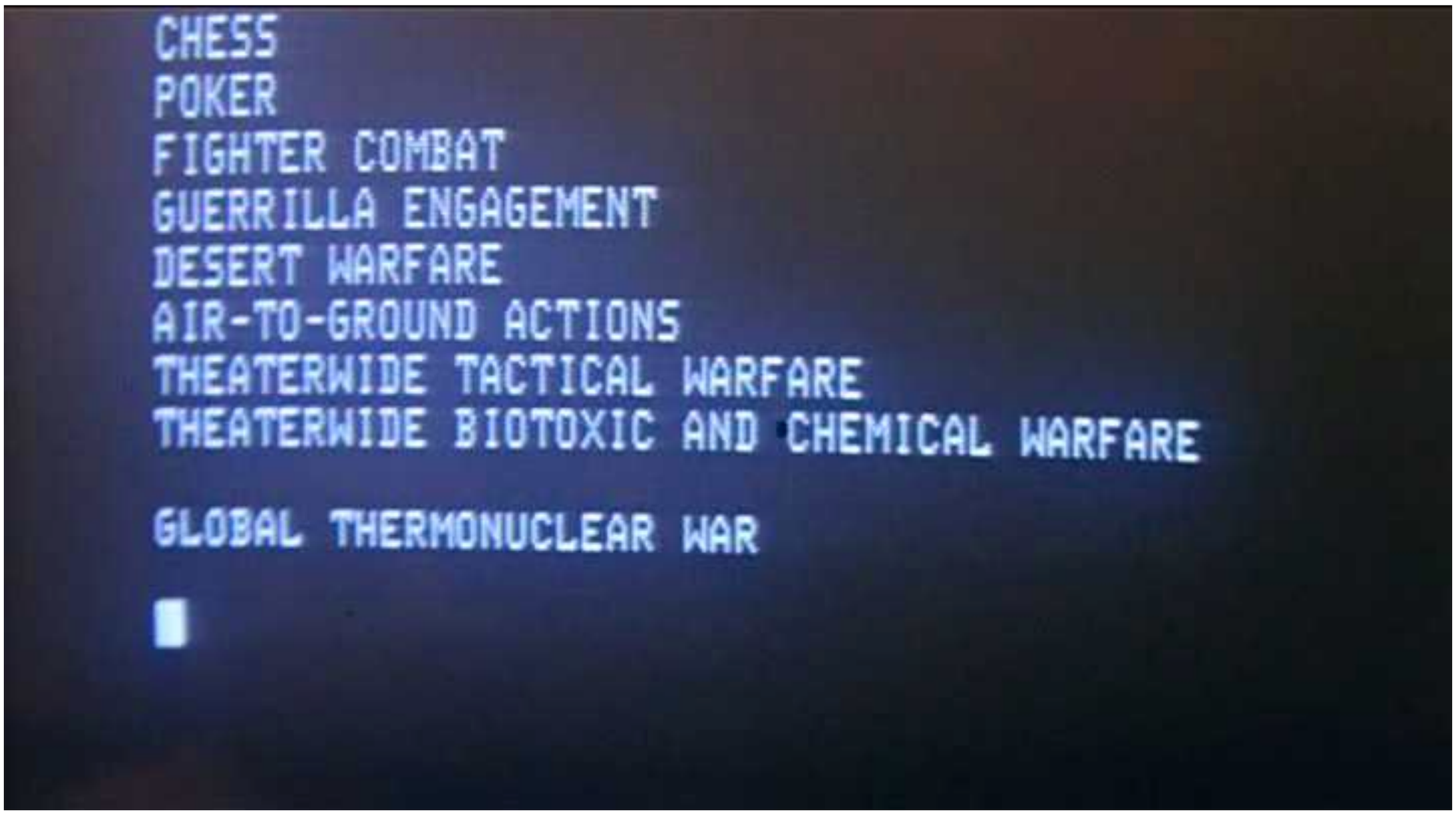
Creating a specific legal status for robots in the long run, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently.

Who is to blame?

In 2015 a 22 year old man was killed by an industrial robot in Wolfsburg.

Robots have nothing to lose!

War Games (1983)



SGR-A1

General characteristics

- **Type:** Lethal autonomous weapons system (LAWS) (stationary)
- **Weight:** 117 kg (about 258 lbs)
- **Height:** 120 cm (about 47 in)
- **Effective range:** 0-3.2 km (about 0–2 miles)
- **Daytime sensor detection range:** 0–4 km (about 0–2.5 miles)
- **Nighttime sensor detection range:** about 0–2 km (approx. 0–1.2 miles)

Weapons on Wikipedia always come with technical stats.