

A close-up photograph of yellow flowers, possibly forsythia, against a clear blue sky. The flowers are in various stages of bloom, with some in sharp focus and others blurred in the background. The lighting is bright, suggesting a sunny day.

AI

DR CAROLINE JAWAD 2021

AI artificial intelligence
stirs excitement.

AI artificial intelligence
stirs excitement.

- Everyone should think about the ethics of the work they do, and the work they choose not to do. Artificial Intelligence (AI) and robots often seem like fun science fiction, but in fact [already affect our daily lives](#). For example, services like Google and Amazon help us find what we want by using AI. Every aspect of how Facebook works is based on AI and Machine Learning (ML). The reason your phone is so useful is it is full of AI – sensing, acting, and learning about you. All these tools not only make us smarter, their intelligence is based partly on what they learn both from us and about us when we use them. So we make the tools smarter too.

aspect of how

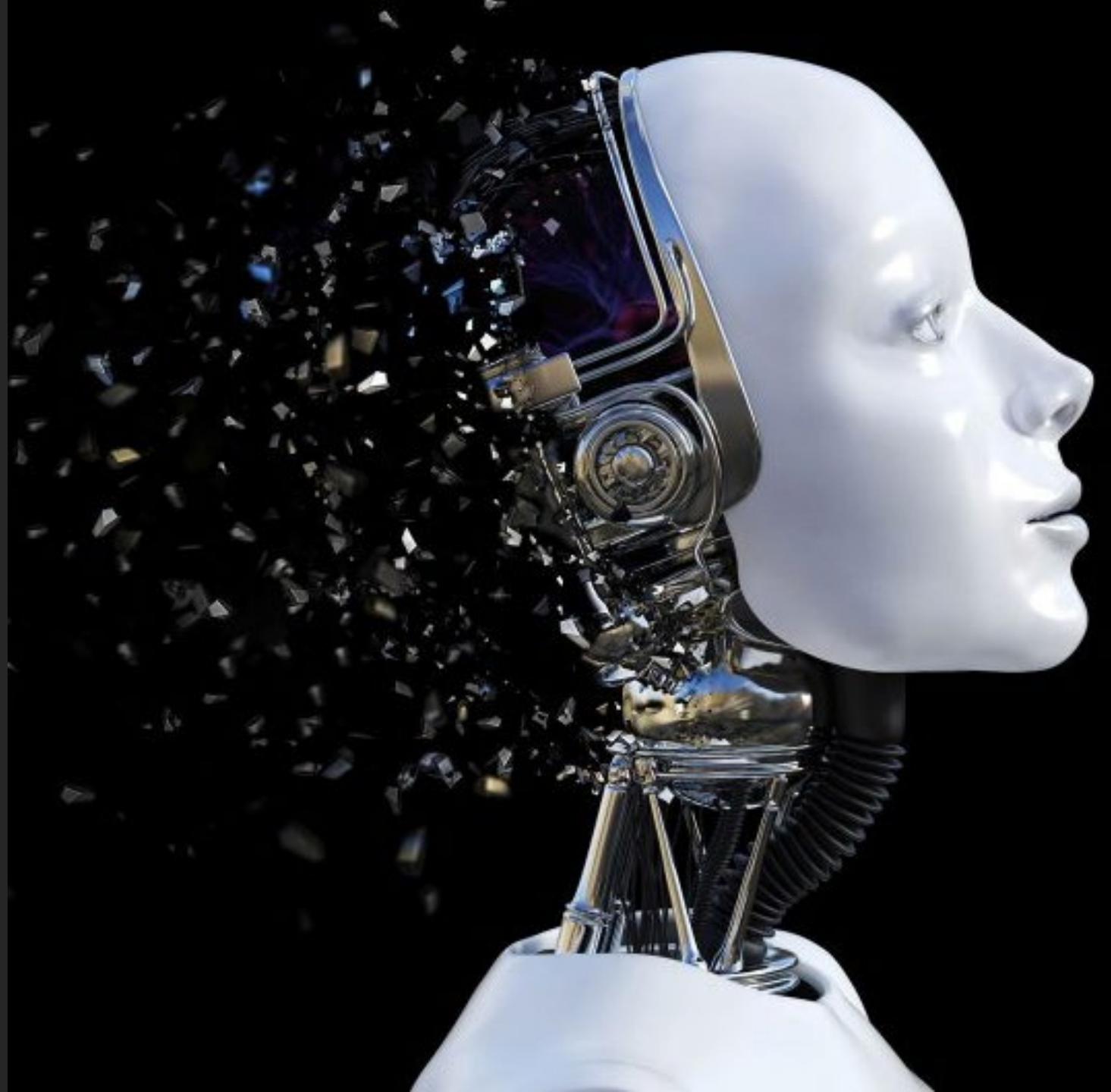
aspect of how

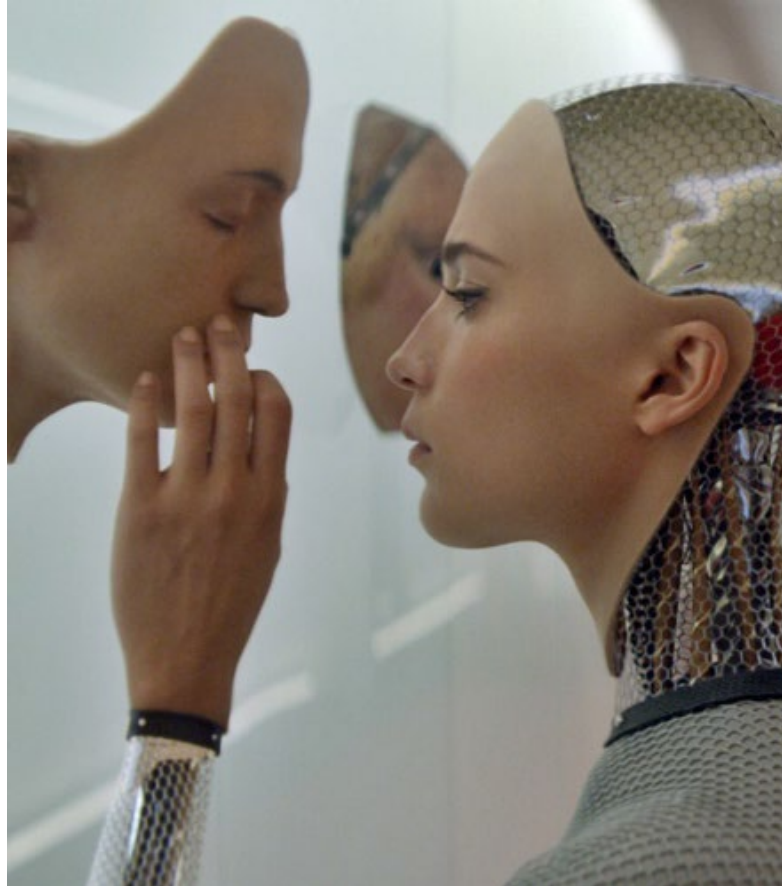




AI – IS IT GOOD OR BAD?

- <https://www.youtube.com/watch?v=Izd2qOgOGQI>
- <https://www.youtube.com/watch?v=GHc63Xgc0-8>





IT'S ONLY THE STUFF OF
MOVIES – RIGHT?

WHAT SOME SMART PEOPLE ARE SAYING ABOUT AI

- “The future is scary and very bad for people.”
- Steve Wozniak, Apple co-founder



BILL GATES MICROSOFT CO-FOUNDER

“I DON’T UNDERSTAND
WHY SOME PEOPLE ARE
NOT CONCERNED”





ELON MUSK TESLA CHIEF EXECUTIVE

AI IS A “DEMON” THAT IS
“POTENTIALLY MORE
DANGEROUS THAN NUCLEAR
WEAPONS”

STEPHEN HAWKING BRITISH THEORETICAL PHYSICIST

“ ... FULL ARTIFICIAL
INTELLIGENCE COULD SPELL
THE END OF THE HUMAN RACE ”





SOME OTHER QUOTES

- 'Eventually, I think human extinction will probably occur, and technology will likely play a part in this,' DeepMind's Shane Legg (DeepMind is part of Google)
- How can an AI system behave carefully and conservatively in a world populated by unknown unknowns - Tom Dietterich, president of the AAAI
- "It [AI] would take off on its own, and re-design itself at an ever increasing rate," – Stephen Hawking (on the consequences of creating something that can match or surpass humans)
- “Humans, who are limited by slow biological evolution, couldn't compete, and would be superseded.” – Stephen Hawking



2017

STAGGERING STATISTIC

...47% of jobs are
“at risk” of being
automated in the
next 20 years.

- Carl Frey and Michael Osborne, *The Future of Employment: How Susceptible Are Jobs to Computerisation*, University of Oxford

OVER 70%
2019

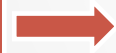
- <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationsareathighestriskofbeingautomated/2019-03-25>

PRINCIPLES

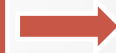
- Robots should not be designed as weapons, except for national security reasons.
- Robots should be designed and operated to comply with existing law, including privacy.
- Robots are products: as with other products, they should be designed to be safe and secure.
- Robots are manufactured artefacts: the illusion of emotions and intent should not be used to exploit vulnerable users.
- It should be possible to find out who is responsible for any robot.

ARTIFICIAL INTELLIGENCE (AKA MACHINE INTELLIGENCE) HAS BEEN AROUND FOR SOME TIME WITH NO ONE CLAIMING POTENTIALLY DANGEROUS CONSEQUENCES (OUTSIDE SCIENCE FICTION) – SO WHAT'S CHANGED?

What is AI?



Are there
dangers - What
are they?



What can be
done about
them?

NOT A NEW THING



Strength – tractor replaced horse-drawn plow that replaced human labor



Speed – Automobile replaced the horse that replaced walking



Sight – telescopes & microscopes enhance human visual capabilities



Hearing – non-electronic amplification (e.g., gramophone)
electronic amplification (electric speakers)



These are generally regarded as good things



What about enhanced intelligence?

WHAT IS IT?

- In 1956, the computer scientist John McCarthy coined the term "Artificial Intelligence" (AI) to describe the study of intelligence by implementing its essential features on a computer.
- **Artificial intelligence** (AI) is the intelligence exhibited by machines or software.

CAN A MACHINE BE INTELLIGENT? CAN IT "THINK"?

- Turing's polite convention - We need not decide if a machine can "think"; we need only decide if a machine can act as intelligently as a human being. This approach to the philosophical problems associated with artificial intelligence forms the basis of the **Turing test**.

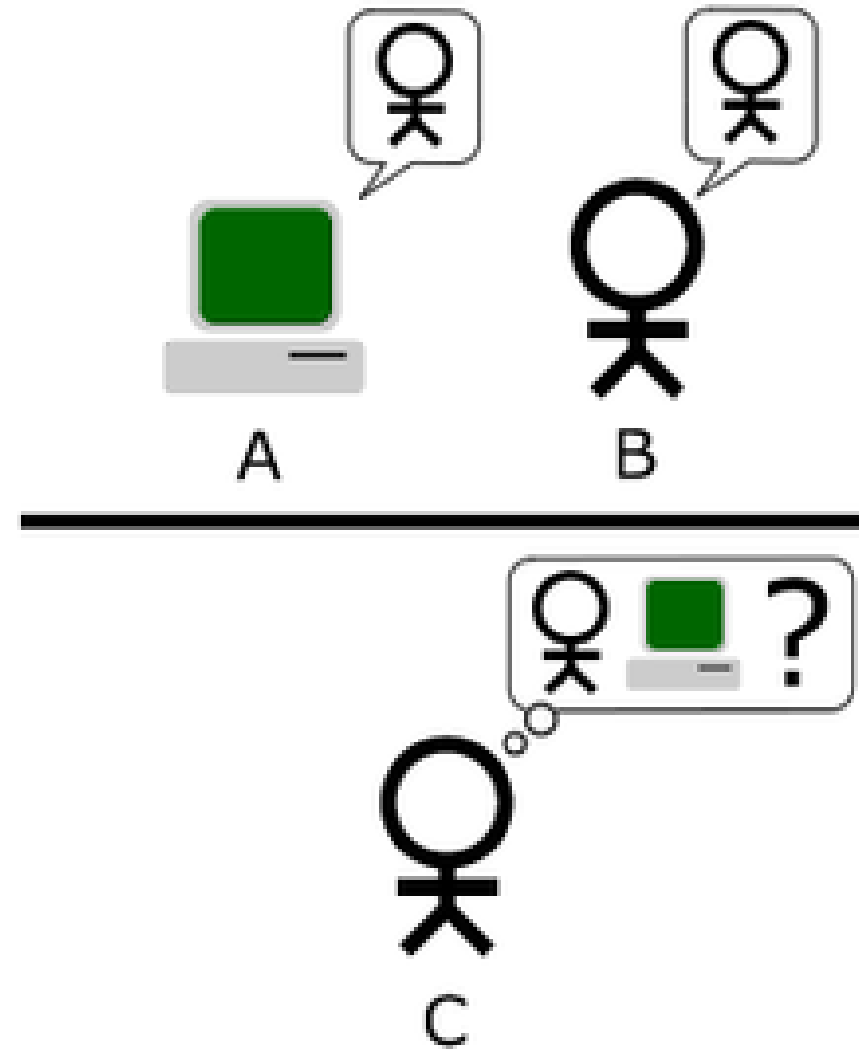


THE TURING TEST

- The Turing Test was introduced by Alan Turing in his 1950 paper Computing Machinery and Intelligence
- “I propose to consider the question, ‘Can machines think?’”
- Since “thinking” is difficult to define, Turing chooses to “replace the question by another, which is closely related to it.”
- “Are there imaginable digital computers which would do well in the imitation game?”
- A test for intelligence in a computer, requiring that a human being should be unable to distinguish the machine from another human being by using the replies to questions put to both.

THE IMITATION GAME

- A human judge engages in a natural language conversation with one human and one machine, each emulating human responses.
- All participants are separated from one another.
- If the judge cannot reliably tell the machine from the human, the machine is said to have passed the test.
- <http://www.turinghub.com/> - take a Turing test on-line





ARE WE THERE YET?

- Cleverbot's software learns from its past conversations, and has gained high scores in the Turing test, fooling a high proportion of people into believing they are talking to a human.
- <http://www.cleverbot.com/>



HTTP://WWW
.WHICHFAC
EISREAL.CO
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CAN EXPERTS BE FOOLED?

- Robert Epstein is a psychologist. A former editor & chief of Psychology Today. He lives in San Diego area and is also a leading researcher in computer human interaction



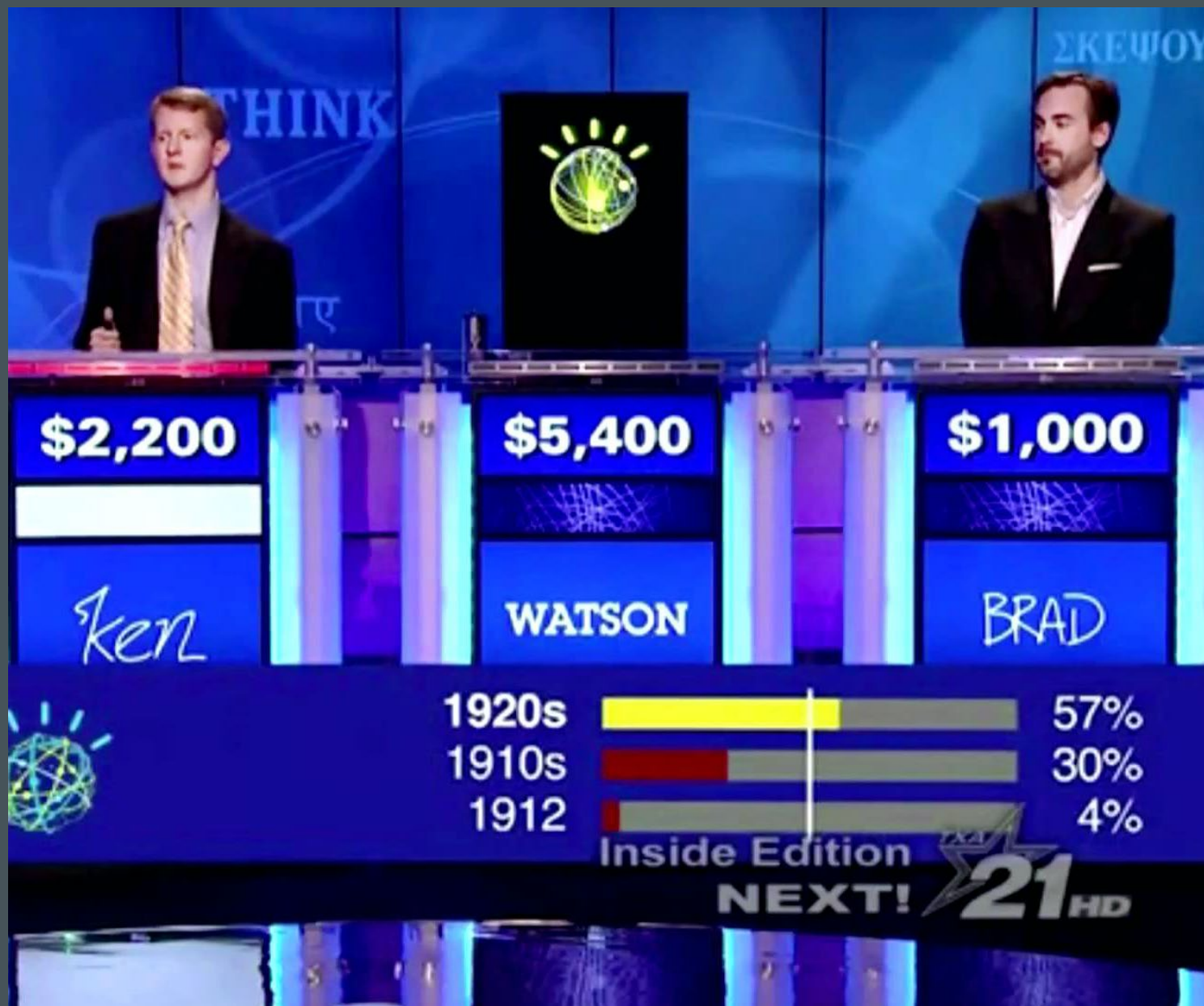
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AI AND JEOPARDY

- The first round was broadcast February 14, 2011: Jennings with \$4,800, Rutter with \$10,400, and Watson with \$35,734
- The second round was broadcast February 15, 2011:
- Watson with a score of \$77,147, besting Jennings who scored \$24,000 and Rutter who scored \$2



[HTTPS://WWW.YOUTUBE.COM/WATCH?V=P18EDAKUC1U](https://www.youtube.com/watch?v=P18EDAKUC1U)



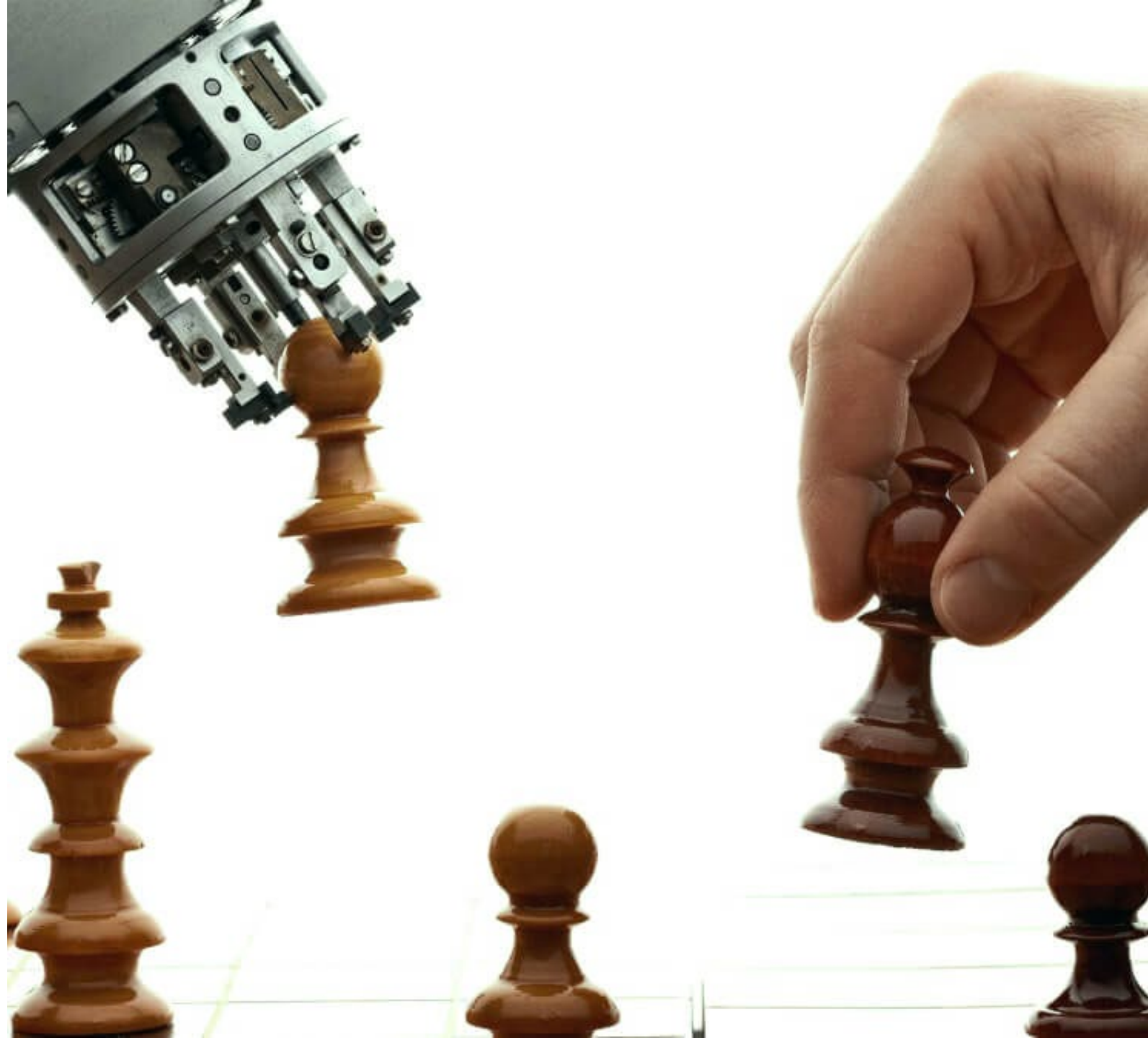


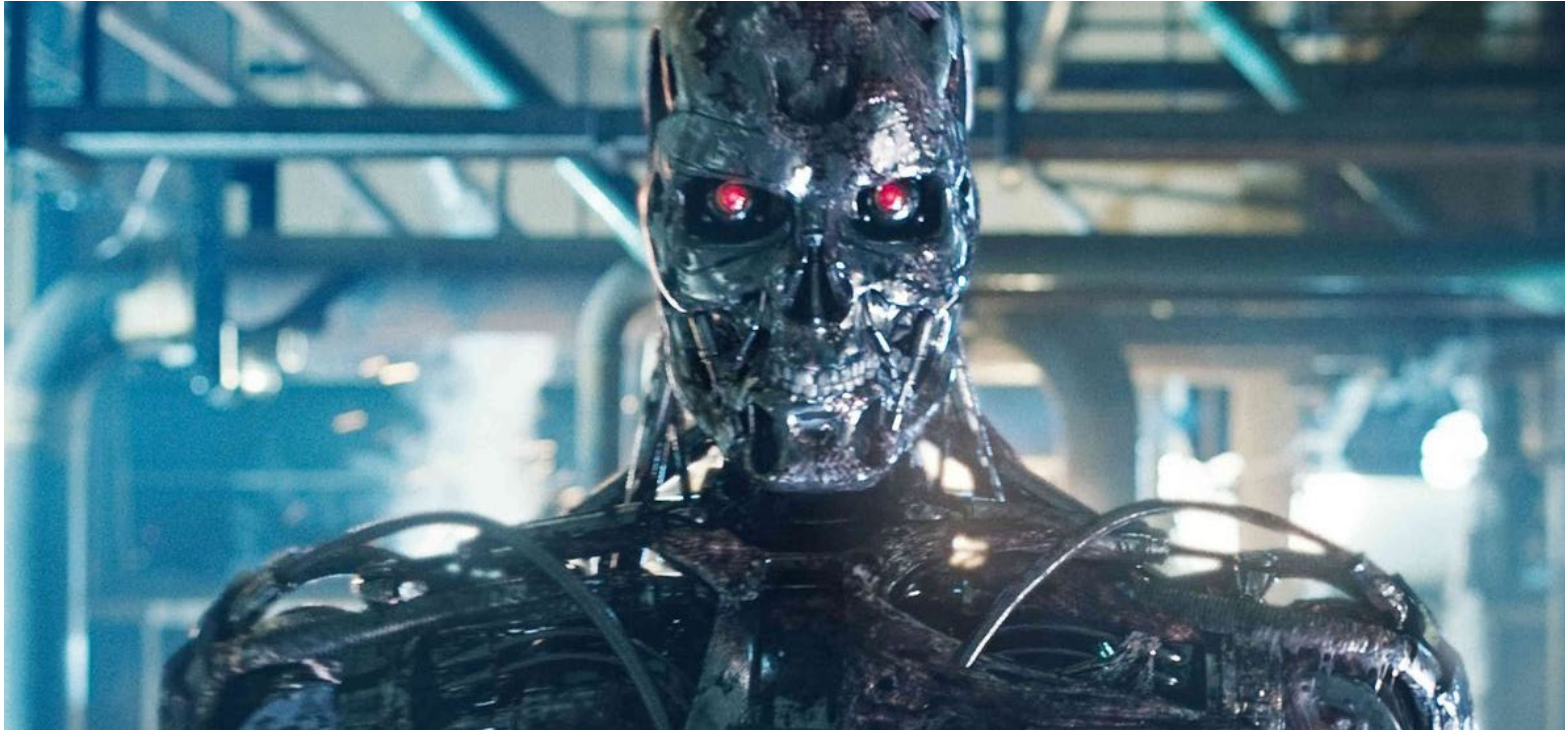
IS THE TURING TEST ENOUGH?

- “. . . it's not enough to have a human be deceived for a machine to be real, The machine needs to convince the human to do things for it -- to fall in love with it, to serve its own purposes.” Tim Tuttle, a former MIT AI researcher and the CEO of the predictive-intelligence company Expect Labs
- IBM's Deep Blue is better at chess than any human and Watson proved it could outsmart Jeopardy world champions, but they don't have any consciousness of their own.
- It's worth noting that neither of those supercomputers has gone through the Turing test, though inventor and futurist Ray Kurzweil believes Watson could be retooled to pass it easily.

WILL ARTIFICIAL INTELLIGENCE SURPASS HUMAN INTELLIGENCE? IF SO . . . WHEN?

- The “singularity” - the point in time in which artificial intelligence exceeds human intellectual capability.
- Kurzweil predicts the singularity to occur around 2045, others predict some time before 2030.





WHAT IS THE PROBLEM IF MACHINES
ARE SMARTER THAN PEOPLE?



WHAT ARE THE DANGERS?

- Automation putting us all out of work
 - We will be working for robots
- Loss of human control of our lives - Robots that surpass humans in strength, speed, agility, endurance, decision making, intelligence
- Killer robots – militarization of robots (e.g. drones) with AI
- Robot emotions – will they have empathy
- Will goal seeking intelligent machines, seek the same goals as we do? Will their goals “evolve” in a negative direction?
- Everybody knows everything – the drones are watching you!



WHAT ARE THE BENEFITS?

- 'The potential benefits are huge, since everything that civilization has to offer is a product of human intelligence; we cannot predict what we might achieve when this intelligence is magnified by the tools AI may provide, but the eradication of disease and poverty are not unfathomable' – Elon Musk, Stephen Hawking.

AI IS BECOMING UBIQUITOUS



ARE THEY TAKING OUR JOBS? FROM BUSINESSINSI DER.COM

Industries that robots will transform by 2025

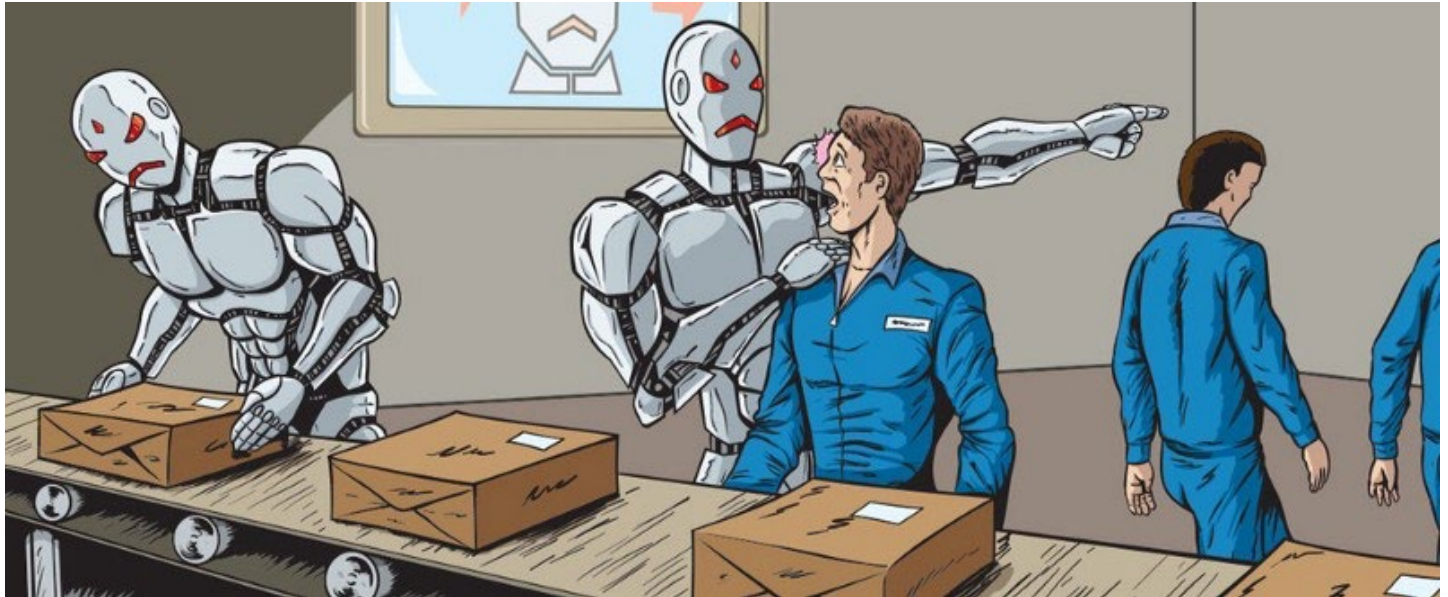
- **Automotive** - 10% of cars will be fully autonomous and many will drive themselves. Japan is testing "robot taxis" for transportation during the 2020 Olympics in Tokyo.
- **Agriculture** - Farm will increasingly use AI technology and big data analytics to optimize crop output. More driverless tractors, drones and milk bots.
- **Service** - Personal robots will take on easy, dangerous or repetitive jobs. Mowing your lawn, cleaning your windows, washing dishes.

ARE THEY TAKING OUR JOBS?

- **Financial** - Up to \$2.2 trillion in investments will be made through AI-enabled computers that can learn markets
- **Healthcare** - Robot assistance in critical surgery, elderly care, disabled patient assistance. In 2000 there were 1,000 robot-assisted surgeries performed, with 570,000 in 2014
- **Manufacturing** - 10% of worldwide manufacturing tasks are automated. In 10 years that will increase to 45% as robots get cheaper.
- **Aerospace and Defense** - 90 countries now operate drones, 1/3 are armed. The number of commercial and military drones will triple over the next 5 years. Autonomous military vehicles and land robots are under development.

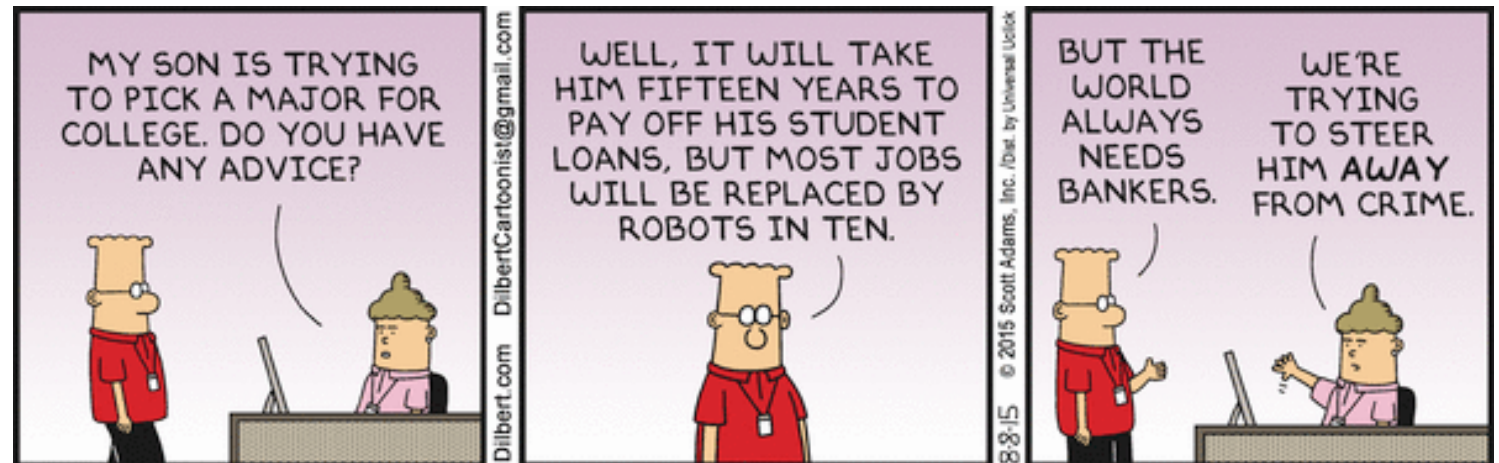
IS YOUR JOB AT RISK?

- 80 million jobs in the United States are at risk of being taken over by robots in the next few decades, a Bank of England (BoE) official warned.
- In a speech at the Trades Union Congress in London, the bank's chief economist, Andy Haldane, said that up to 15 million jobs in the U.K. were at risk of being lost to an age of machines, which is around half of the employed population.



IS YOUR JOB AT RISK?

- Jobs with the highest level of being taken over by a machine in the U.K. included **administrative, production, and clerical tasks**. Haldane (Bank of England (BoE) official) gave two contrasting examples of risk, with **accountants** having a 95 percent probability of losing their job to machines, while **hairstylists** had lower risk, at 33 percent.
- With robots being more cost-effective than hiring individuals in the workplace over the long term, jobs with the lowest wages were also at the highest risk of going to the machines.



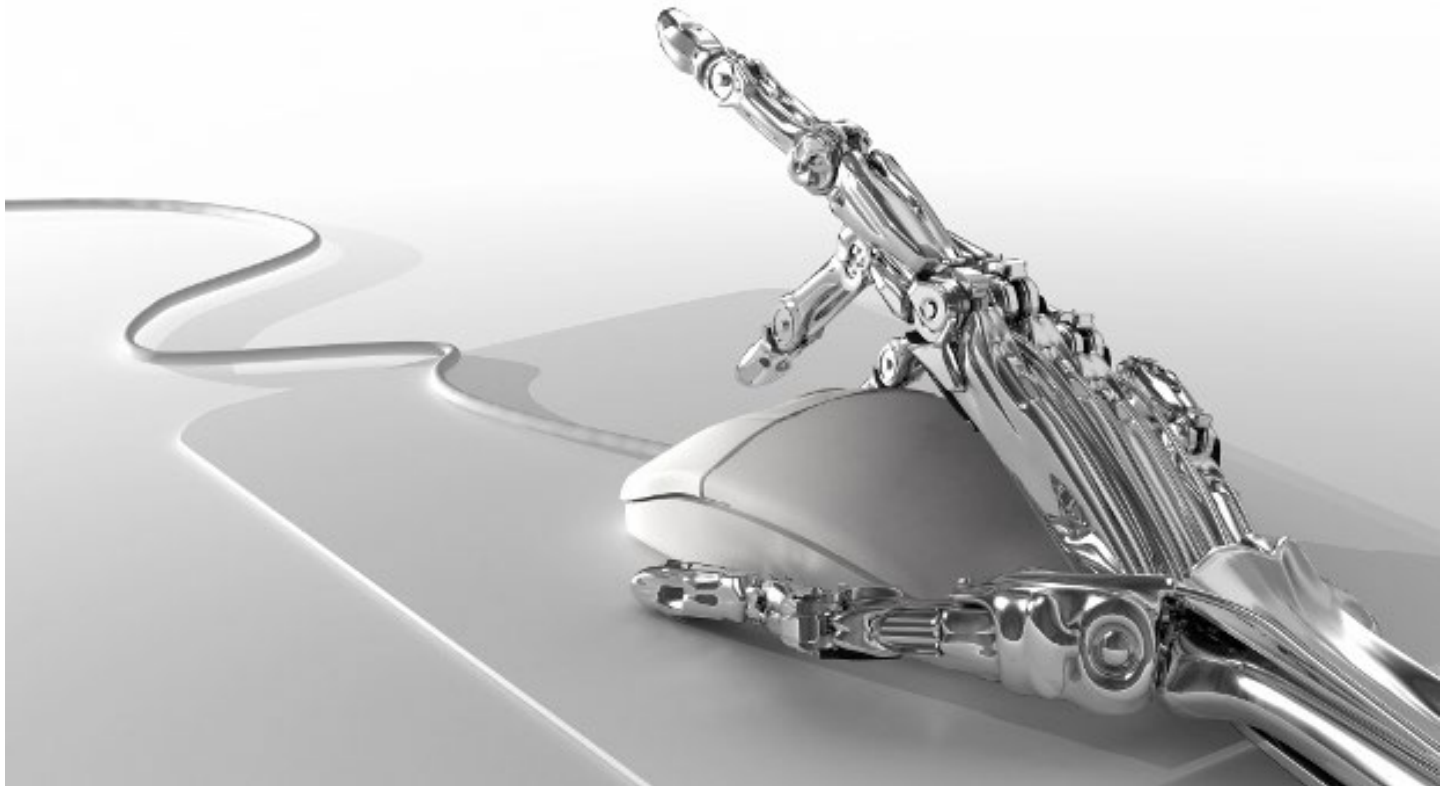
IS YOUR JOB AT RISK?

- Haldane noted, adding that in the past, workers have moved up the income escalator by "skilling up," therefore staying one-step-ahead of the machine.
- Haldane suggested society may have an edge against machines in jobs which require high-level reasoning, creativity and cognition, while AI (artificial intelligence) problems are more digital and data driven.
- "The smarter machines become, the greater the likelihood that the space remaining for uniquely-human skills could shrink further. Machines are already undertaking tasks which were unthinkable – if not unimaginable – a decade ago. Algorithms are rapidly learning not just to process and problem-solve, but to perceive and even emote."



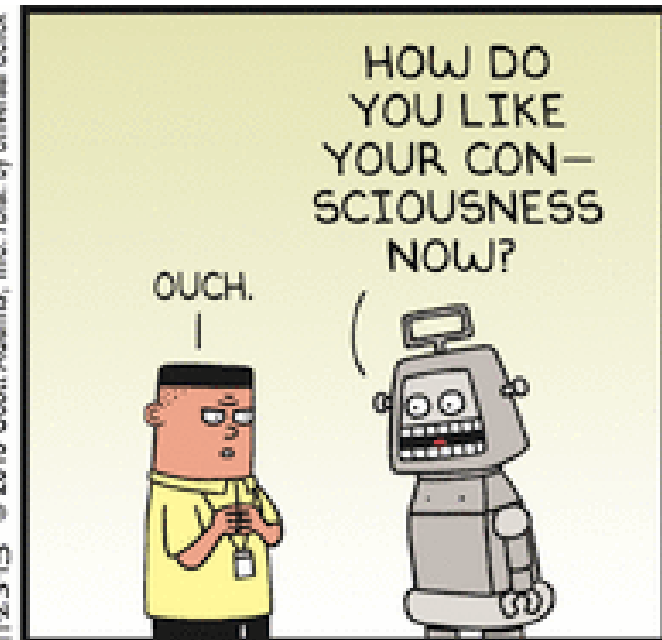
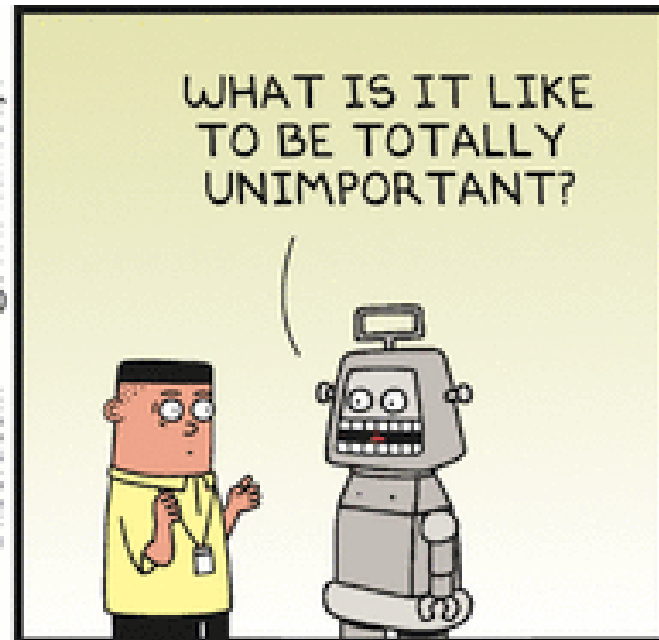
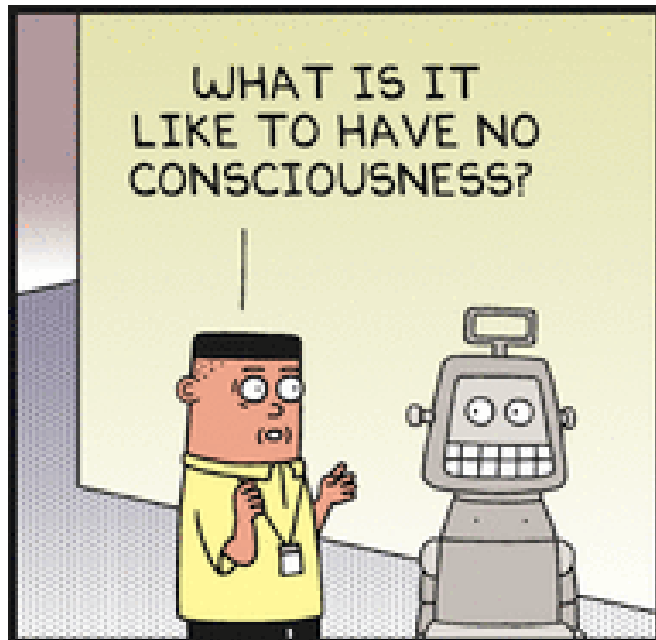
WILL WE WORK FOR ROBOTS?

- AI machines can learn from experience and from the humans around them. Which means that, as AIs take on a growing role in the workplace, a new role is opening up for humans: The robot's assistant.
- AI trainers who work as “robot's helpers” already exist at several tech companies: **Facebook**, virtual assistant start-up **Clara Labs**, and **Interactions**, a company that builds AI to handle customer service calls.



WILL WE BE WORKING FOR ROBOT BOSSES?

- Milgram obedience studies
(Yale University psychologist Stanley Milgram 1963)
- Young and Cormier Study found that around half of the participants obeyed the robot until the end, and many reacted to it as though it were human, offering compromises and logical arguments to persuade the robot
- MIT research has found that human employees are more productive when a robot allocates tasks





CAN AI MACHINES MAKE BETTER DECISIONS THAN US?



How well will an autonomous vehicle resolve conflicting priorities?

Should your car be making these decisions?

SMARTER WAR TOYS

- In March 2014, the Russian [Strategic Missile Forces](#) announced it would deploy armed sentry robots that could select and destroy targets with no human in or on the loop at five missile installations.
- China's Harbin Institute of Technology, unveiled at the Beijing 2015 World Robot Conference. The robots can wield anti-tank weapons, grenade launchers, or assault rifles.
- The Armata (T14 tank) now requires three crew members.
- *"Then it will be two and then without them at all,"* Vyacheslav Khalitov, the company's deputy director said.

AUTONOMOUS WEAPONS

- Uses a programmed flight path to reach a preselected area.
- Automatically identifies and targets the threat within that search area.
- Sends data back to its home base, where the information is verified by the human operator.
- Human OK's attack and a remote pilot essentially pulls the trigger, and the Taranis fires before flying back to the base on its own
- Because the Taranis is a prototype, it doesn't currently carry missiles, but future generations will likely carry weapons
- Taranis is a technology demonstrator, much like the U.S. Navy's [X-47B](#).



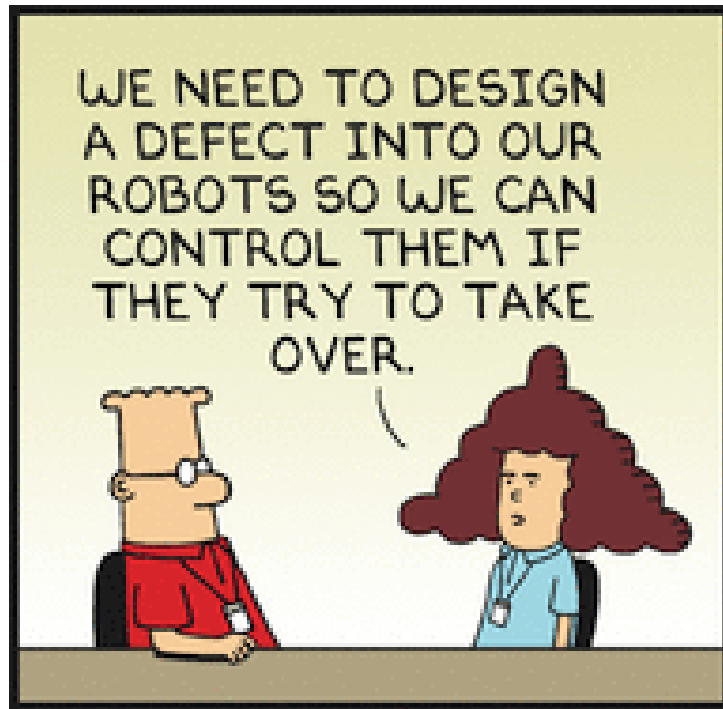
WHAT CAN WE DO?

- Duck & Hide
- Skill up
- Fight the machines
- Build in safeguards (against what?)
- Get leaders (researchers, technologists, government) aware and involved
- Implement more research into AI priorities
- Review, implement ethics related to AI

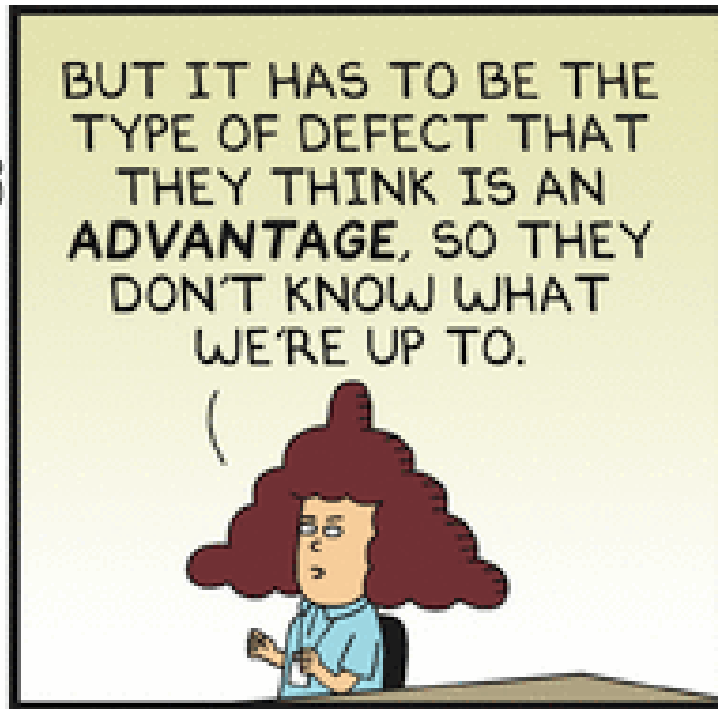


WHAT CAN WE DO?

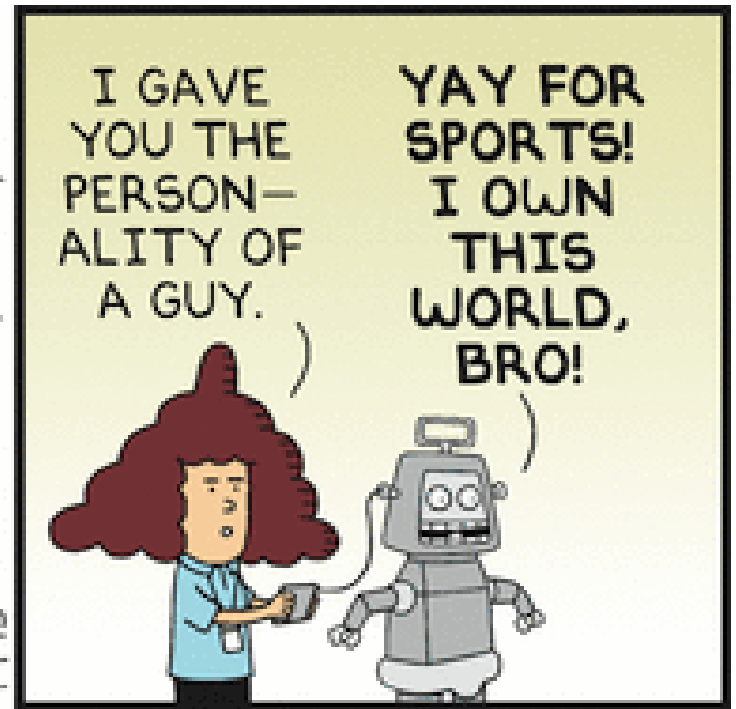
- A neo-Luddite movement?
- A Neo-Luddite is someone who believes that the use of technology has serious ethical, moral, and social ramifications. Operating under this belief, Neo-Luddites are critical of technology and cautious to promote its early adoption.
- The Luddites were English textile workers who protested newly developed labor-economizing technologies from 1811 to 1816. The stocking frames, spinning frames and power looms introduced during the Industrial Revolution threatened to replace the artisans with less-skilled, low-wage laborers, leaving them without work. Although the origin of the name Luddite is uncertain, a popular theory is that the movement was named after Ned Ludd, a youth who allegedly smashed two stocking frames in 1779.



Dilbert.com DilbertCartoonist@gmail.com



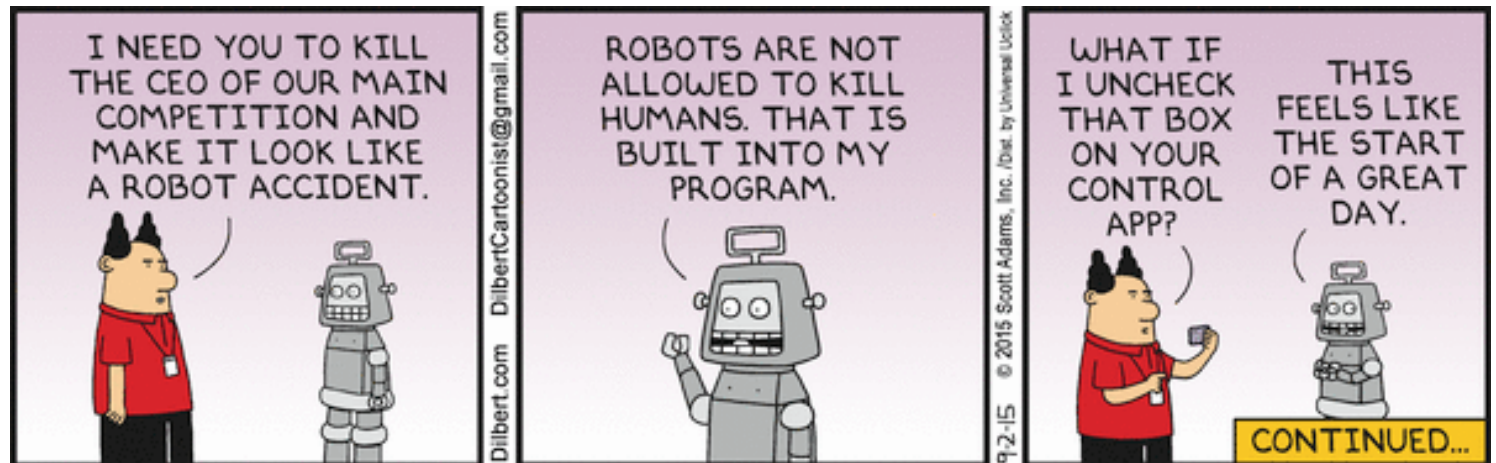
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WHAT CAN WE DO? BUILD IN SAFEGUARDS – THE THREE LAWS OF ROBOTICS

THREE RULES

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 protection does not conflict with the First or Second Laws.

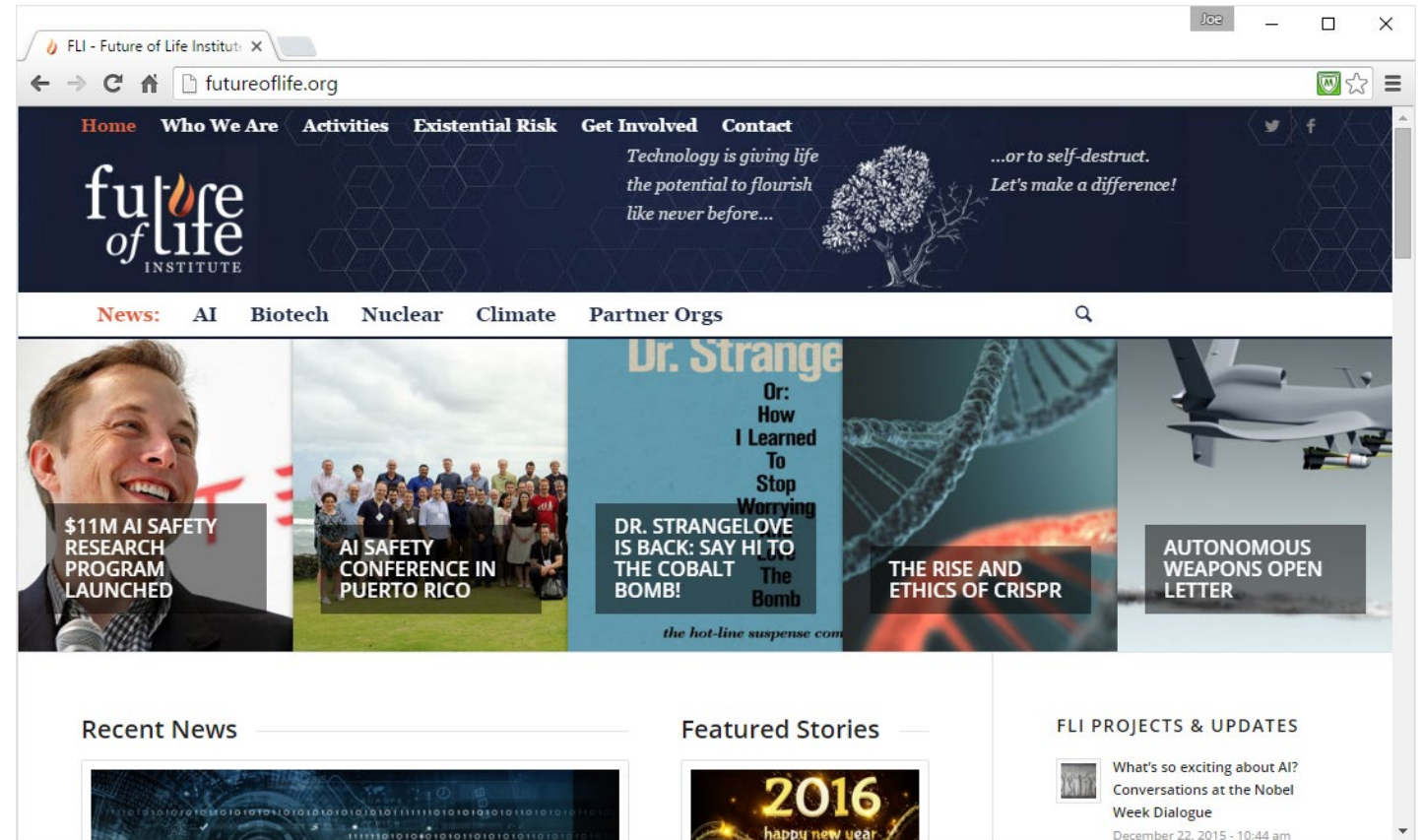


AUTONOMOUS WEAPONS ARE A PROBLEM

- More than 16,000 AI researchers have signed an open letter to the UN, urging government leaders to take action against the creation of semiautonomous and autonomous weapons.
- It's often unclear where the human comes into the decision process of targeting and firing an intelligent weapon
- Starting a military AI arms race is a bad idea, and should be prevented by a ban on offensive autonomous weapons beyond meaningful human control



FUTURE OF LIFE INSTITUTE





News: AI Biotech Nuclear Climate Partner Orgs

THE FUTURE OF LIFE INSTITUTE (FLI)

Mission: To catalyze and support research and initiatives for safeguarding life and developing optimistic visions of the future, including positive ways for humanity to steer its own course considering new technologies and challenges.

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- “We recommend expanded research aimed at ensuring that increasingly capable AI systems are robust and beneficial: our AI systems must do what we want them to do.”

Research priorities for robust and beneficial artificial intelligence

Last updated January 23, 2015*

Executive Summary: Success in the quest for artificial intelligence has the potential to bring unprecedented benefits to humanity, and it is therefore worthwhile to research how to maximize these benefits while avoiding potential pitfalls. This document gives numerous examples (which should by no means be construed as an exhaustive list) of such worthwhile research aimed at ensuring that AI remains robust and beneficial.

1 Artificial Intelligence Today

Artificial intelligence (AI) research has explored a variety of problems and approaches since its inception, but for the last 20 years or so has been focused on the problems surrounding the construction of *intelligent* agents that can learn and act in some environment. In this context, the mission for intelligence is

FUTURE OF
LIFE
INSTITUTE
\$11M AI
SAFETY
RESEARCH
PROGRAM
LAUNCHED
(37 PROJECTS
FUNDED)

- The 37 projects being funded include:
 - developing techniques for AI systems to learn what humans prefer from observing our behavior
 - how to keep the interests of superintelligent systems aligned with human values
 - making AI systems explain their decisions to humans
 - how to keep the economic impacts of AI beneficial
 - how to keep AI-driven weapons under “*meaningful human control*”



GOOGLE AI ETHICS BOARD - WHY DOES GOOGLE NEED AN AI ETHICS BOARD?

- Google is a computer software and a web search engine company
- In October 2015, Google became a subsidiary of Alphabet Inc.

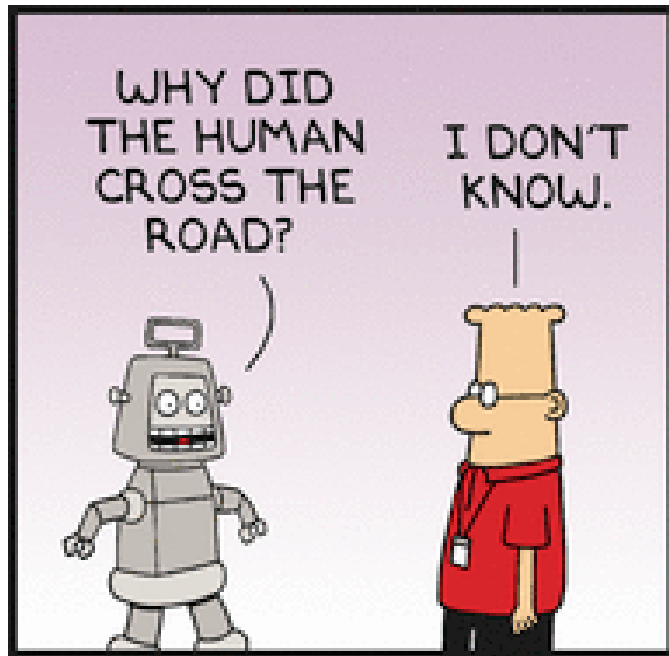


GOOGLE AI ETHICS BOARD

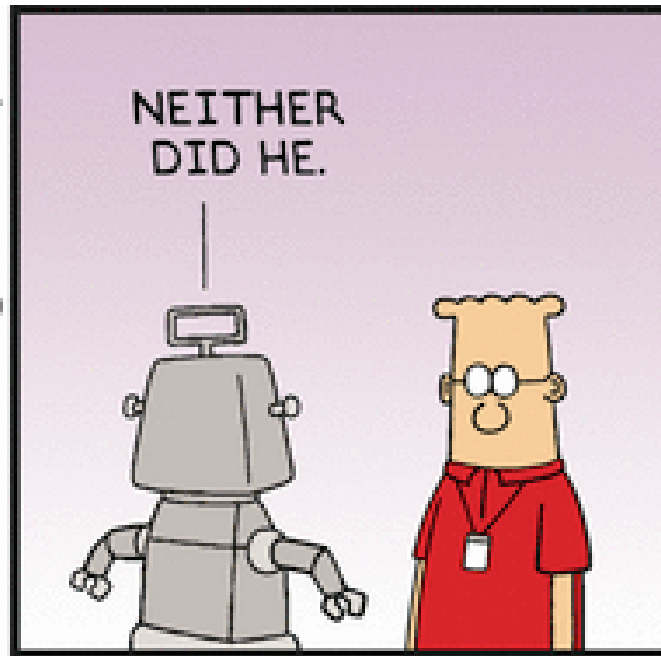
- Wikipedia list 187 acquired companies from Feb. 2001 thru Nov. 2015
- Dark Blue Labs - deep learning for understanding natural language
- Vision Factory - visual recognition systems and deep learning
- DeepMind Technologies, one of the biggest concentrations of researchers anywhere working on deep learning, a relatively new field of artificial intelligence research that aims to achieve tasks like recognizing faces in video or words in human speech
- Quest Visual, Inc. - augmented reality translation software
- Boston Dynamics a robotics design company designed for the U.S. military with funding from Defense Advanced Research Projects Agency (DARPA)

GOOGLE AI ETHICS BOARD

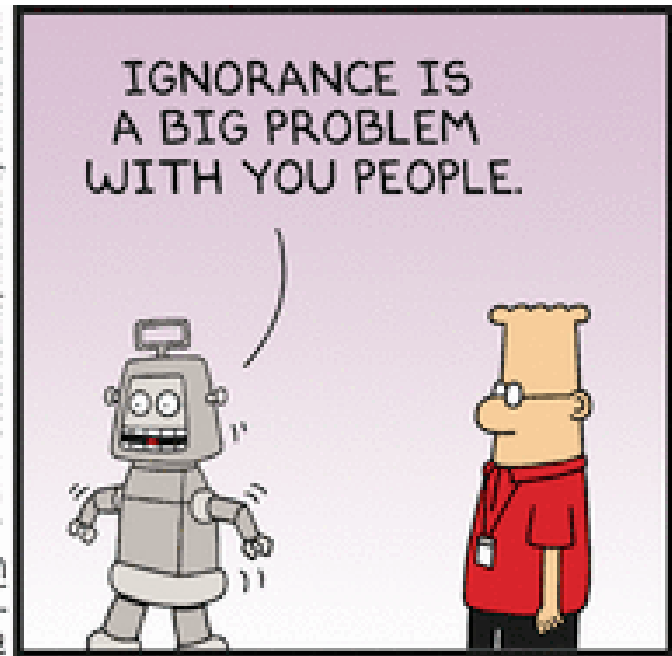
- Google bought seven robotics companies in December 2013 alone
- Google AI Ethics Board - Set up to oversee its work in artificial intelligence
- “AI is very powerful technology that is largely invisible to the average person. Right now, AI controls airplanes, stock markets, information searches, surveillance programs, and more. These are important applications that can’t help but to have a tremendous impact on society and ethics, increasingly so as every futurist predicts AI to become more pervasive in our lives.”



Dilbert.com @ScottAdamsSays

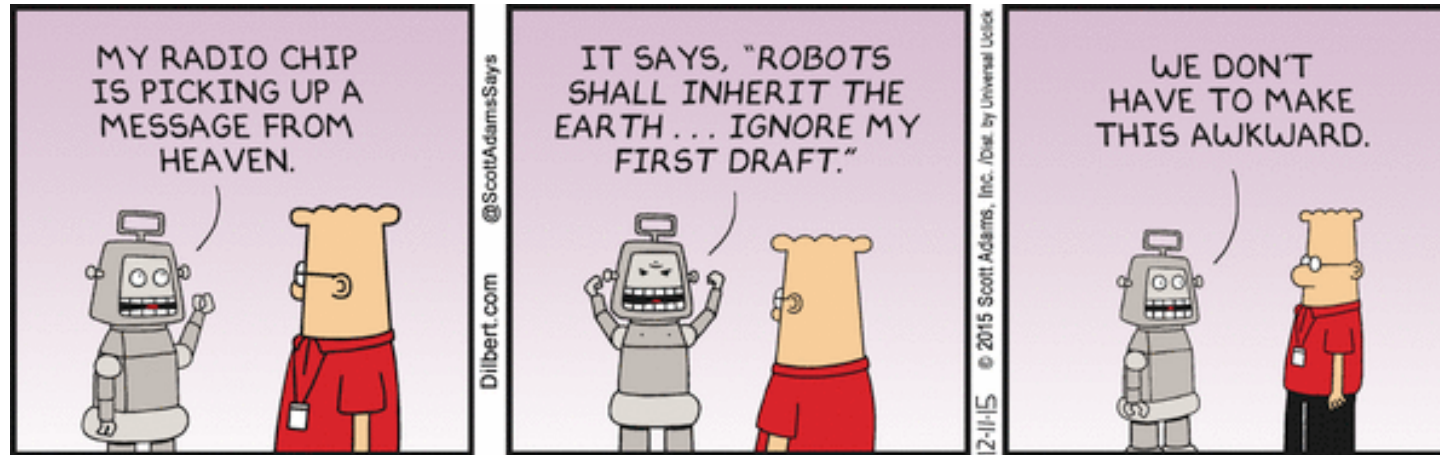


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THE END

Hopefully, just figuratively



THE TERMS AI AND MACHINE LEARNING

- AI (like ARTs? Where the "artificial" changed to "assisted" once it became normalized)
- Technologies and algorithms combined so that software does "intelligent" things ("computational intelligence"?)
- For some, "machine learning" is a synonym for AI, with all things like robotics, natural language processing, computer vision, etc. all part of it
- For others, machine learning is a subset of AI, or partially overlaps with AI, referring explicitly to AI that learns from its environment – which basically means performance improves over time with more data – including neural nets and deep learning
- Deep learning methods that use multi-layered neural networks are used on some tasks once believed to be incapable of automation
- PUBLIC THINKS ABOUT ARTIFICIAL GENERAL, NOT JUST NARROW, INTELLIGENCE and mixes ML / AI / ROBOTS, normalizing ubiquitous new ML interfaces quickly

NATIONAL ARTIFICIAL INTELLIGENCE R&D STRATEGIC PLAN FOR FEDERALLY FUNDED RESEARCH OCTOBER 2016

- Strategy 1: Make long-term investments in AI research. . .enable US to remain a world leader in AI
- Strategy 2: Develop effective methods for human-AI collaboration. Rather than replace humans, most AI systems will collaborate with humans
- **Strategy 3:** Understand and address the ethical, legal, and societal implications of AI... expect AI technologies to behave according to formal and informal norms to which we hold fellow humans
- Strategy 4: Ensure the safety and security of AI systems. . . assurance is needed that the systems will operate . . . in a controlled, well-defined, and well-understood manner
- Strategy 5: Develop shared public datasets and environments for AI training and testing. The depth, quality, and accuracy of training datasets and resources significantly affect AI performance
- Strategy 6: Measure and evaluate AI technologies through standards and benchmarks. . . and community engagement that guide and evaluate progress in AI
- Strategy 7: Better understand the national AI R&D workforce needs. . .AI will require a strong community of AI researchers

PARTNERSHIP ON ARTIFICIAL INTELLIGENCE TO BENEFIT PEOPLE AND SOCIETY (9/16; 1/17)

- January 2017: new members . . . based on expertise in civil rights, economics, and open research, to join Amazon, Microsoft, IBM, Google, Facebook and Apple
- Ensure that AI technologies are understandable and interpretable and benefit and empower as many people as possible; educate and listen to the public and actively engage stakeholders, including business
- Open research and dialog on the ethical, social, economic, and legal implications of AI.
- Privacy and security of individuals; understanding/respecting interests of all parties; making AI research and engineering communities socially responsible, sensitive and engaged with wider society; ensuring that AI research and technology is robust, reliable, trustworthy, and operates within secure constraints; opposing development and use of AI technologies that would violate international conventions or human rights, and promoting safeguards and technologies that do no harm

AUTONOMOUS AND ASSISTIVE & AUGMENTED ML/AI

- Some of the arenas where we once defined what it meant to be intelligent are now dependent on computational intelligence to be world class as a human (chess, Go)
- AI/ML good at things we are bad at that we do not think are intelligent (porn, dating..)
- Phylogenetic/ontogenetic correlates in layers? Social aspects of learning – snow monkeys . . .don't have to be that smart?
- Public has focused a lot on what AI would mean in autonomous form – from Sci Fi where robots have emergent intelligence, emotions and moral landscapes and consequent social and political organizing and plotting; and fears of autonomous warfare
- Assistive and augmentative ML has great potential for living well with various disabilities, as well as overcoming barriers, e.g language translation (romance ads)
- Hybrid human-AI systems also raise huge challenges about conforming to social norms and laws designed for human capabilities, boundaries of the self, and national borders

MACHINE LEARNING THREATS: ALGORITHMIC OPPRESSION / FILTERING / TRIAGE

- Dave Coplin from Microsoft: “in AI every time an algorithm is written, embedded within it will be all the biases that exist in the humans who created it”. He emphasised a need “to be mindful of the philosophies, morals and ethics of the organisations [...] creating the algorithms that increasingly we rely on every day” (HoC report, 10/16)
- Many scholars working on this: Safiya Umoja Noble algorithms of oppression; Cathy O’Neil weapons of math destruction; Holston, Ochigame algorithmic filtering
- Supervised learning algorithms, Unsupervised learning, Semisupervised learning, Reinforcement learning: each has its issues; even basic processes like validation and verification are relative to the constraints of the formal specifications

BIG ISSUES: THREATS, CONT

- Autonomous weapons – frameworks for regulation (lock-out with autonomous analyzing and countering cyberattacks?)
- Future of work – deskilling / reskilling / superskilling?
Which jobs will be hardest to automate, from citrus picking to emotion and care work. Many jobs that currently seem least likely to be automated have been racialized and gendered in ways connected to care and immigration, and have rarely paid living wages; how do we revalue work?
- Exacerbate inequality – digital divides; EJ and ecological concerns in data hardware and storage and cooling; fast innovation leads to extreme economic inequality; filtering / oppression / triage
- Divided societies with algorithmic bubbles – challenges of populism (recommendations, news feeds, etc)

SCIENCE FARE: SOCIAL BENCHMARKING

- Building in social goals in formal specifications; measure and correct shortfalls
- Infrastructure and goals: social benchmarks and milestones
- Empaneling experts and non-experts, stakeholders and non-stakeholders to set goals and measure outcomes and set correctives
- Those historically underserved within different arenas, such as underrepresented minorities and healthcare; disability justice and rights scholars and activists setting goals and correctives and monitoring for assistive and augmentative devices
- Highlight projects and set goals at the interface of social justice and ML: e.g. building up 360 and panoramic views from e.g. police body cameras

DATA SCIENCE PROGRAMS AND EDUCATION

- Data science programs at universities need to emphasize expertise from across campus
- No longer ok to be innumerate, though also work to do away with unnecessary barriers to entry and / or re-entry especially to diversify workforce and maximize creative input and work against implicit bias
- No longer ok to be illiterate – social science / arts / humanities should be folded in to basic ML literacy
- Our ML / AI workforce moving forward, as well as our humanity, requires this
- Re-value and re-invest in vocational training, while broadening what that means now that ML is becoming more and more integrated into all arenas

THE FUTURE OF HUMANITY AND ROBOT LOVE

- “A personal question of mine I’d love if you could get some answers - it’s whether the future for robots would be for the individual, whether that’s for pleasure, therapy, company, service, etc., or if the future will be focused on using them for our countries’ advantage, military, etc? Will they ever be a personal item? If so, would they have rights? Would their rights matter without consciousness? What is the pushback on the theories of “robots taking jobs?”
- “Can we have a Westworld? Not the settler colonial imaginary; just some sort of amusement park to experience AI first hand. Not a luxury vacation but more of an experience for those interested.”
- “Those bruhs need some ethics”: on putting together a robot ethics framework – how we should treat robots, as well as how they should behave . . .



RESOURCES

- Turing <https://arxiv.org/pdf/1906.05684.pdf>
- IBE https://www.ibe.org.uk/userassets/briefings/ibe_briefing_58_business_ethics_and_artificial_intelligence.pdf



WILL ROBOTS STEAL OUR JOBS?

- https://www.pwc.com/hu/hu/kiadvanyok/assets/pdf/impact_of_automation_on_jobs.pdf

A TRUE JOBLESS FUTURE?

■ Optimist:

■ Ray Kurzweil, a renowned futurist and Google's top engineering director, sees robots as a force for good, at least in terms of freeing people up to do what it is they love. By the 2030s, AI will outpace biological intelligence and self-driving cars will be everywhere.

■ "We are going to have new types of jobs creating new types of dollars that don't exist yet and that has been the trend," he says.

■ Pessimist:

■ Alibaba Founder Jack Ma, also a renowned futurist, is predicting "decades of pain."



[HTTPS://WWW.YOUTUBE.COM/WATCH?V=N9_XGHM8SII](https://www.youtube.com/watch?v=N9_XGHM8SII)

- Jack Ma and pain

POTENTIAL SOLUTIONS

- Raise awareness – among ED, workforce, business, educational and community leaders; employers; school administrators and teachers; parents; students and more
- Generate excitement about coding, data analytics, STEM/STEAM
 - Some say coding should be offered as second language
- For liberal arts enthusiasts, encourage focus on marketable skills - marketing, social and digital media, sales, data analytics and management, IT networking & support, graphic design

POTENTIAL SOLUTIONS

- “Skills broker”
 - To match employers with employees
- Grants for start-ups
- Allow unemployment dollars to be used toward starting a business
- Shift funding from other programs

POTENTIAL SOLUTIONS – HOW WE CAN COPE WITH AI

- “New Deal for the 21st Century”: A Study by the Council on Foreign Relations
 - Equip young people with education and skills to adapt to career changes
 - Provide retraining for older workers
 - Tax incentives and insurance, facilitate job mobility, reform occupational licensing
 - Career loan accounts w/repayment linked to future earnings
 - Wage insurance, direct wage subsidies, minimum wage increments
 - Civilian National Service Program
 - Alleviates social disruption, teaches new skills, helps those in need, invests in public infrastructure improvements



[HTTPS://WWW.YOUTUBE.COM/WATCH?V=NCCRYZOCRUG](https://www.youtube.com/watch?v=NCCRYZOCRUG)

- Tax robots

A WORD ABOUT UBI

- Universal Basic Income (UBI)
 - Experiments currently taking place in communities worldwide, including in US, in Oakland, CA
 - Not a new idea – heavily considered in 1970s under President Nixon
 - Based in part on Alaska’s “Permanent Fund,” which distributes dividend to every resident to share wealth from state’s natural resources
 - Supported by tech titans, including Mark Zuckerberg and Elon Musk

THE FUTURE

[HTTPS://WWW.Y
OUTUBE.COM/WA
TCH?V=C_8JB-
QG_UY](https://www.youtube.com/watch?v=C_8JB-QG_UY)

NEXT STEPS

- Raise Awareness
 - Messaging
 - Speaking opportunities; spread the word
 - Events
 - December 2017 or January 2018 (date awaiting confirmation)
 - 2x/year
 - Bring in futurists
 - FLX employers from across variety of sectors speaking about short-term and long-term future
 - Finger Lakes school district leadership
 - Continue to work with and through the Finger Lakes WIB on these endeavors



[Can Robots Fall in Love, and Why Would They?](#), a great interview with Peter Norvig and Dan Dennett, where Dennett expands on my line of argument.



Here's a more professional academic page on [Ethics in Computing: Artificial Intelligence](#).



Here's a more funny page on [the robot apocalypse](#) from Randall Munroe.



Here's the [Ethics Page](#) of the [Computer Professionals for Social Responsibility](#).



[Where's my robot?](#) A good question and a thoughtful blog.



[Developmental Technology](#) by [Marina Umaschi Bers](#) at Tufts is for helping children and teenagers understand and develop their self concept.



[Sherry Turkle](#). [Jim Moor](#).



For a dissenting perspective, the [Moral Machines Blog](#) by Wendell Wallach and Colin Allen, or [The Machine Question](#) by David Gunkel.

RESOURCES

CONTINUED

- [Why an intelligence explosion is probable.](#)
- [Rights for Robots.](#)
- [The American Society for the Prevention of Cruelty to Robots.](#)
- [Creating Friendly AI](#) from the [singularity](#) folks. One day in 1995, my friends from the MIT AI Lab and I went over to the Media Lab to see a talk about the "coming singularity" (when AI becomes smarter than people) by Vernor Vinge. That talk was one of the reasons I wanted to write "Just Another Artifact". We left the talk before it was over because it generally seemed silly and was getting repetitive and we needed to get back to work. But on the way back, while I was listening to some of my fairly brilliant friends (e.g. Charles Isbell and Carl de Marken) belittle the chances of their AI ever being able to take over a toaster, it did remind me of the scientists of Los Alamos betting facetiously on the effect size of the first atomic bomb.
- Here's what [Vinge was thinking in 2008](#). A bit more positive than a decade earlier, but otherwise similar. I do think it's good to have people who really think about the long term.
- Some of the arguments in the AI Companions piece were inspired by [White Dot](#).



QUESTIONS FOR YOU !!!

BIAS – IS AI FAIR?

LIABILITY – WHO IS RESPONSIBLE FOR AI?

SECURITY – HOW DO WE PROTECT ACCESS TO AI FROM BAD ACTORS?

HUMAN INTERACTION – WILL WE STOP TALKING TO ONE ANOTHER?

EMPLOYMENT – WHAT CAN WE DO ABOUT AI GETTING RID OF JOBS?

WEALTH INEQUALITY – WHO BENEFITS FROM AI?

POWER AND CONTROL: WHO DECIDES HOW TO DEPLY AI?

ROBOT RIGHTS: CAN AI SUFFER?



[HTTPS://WWW.LOGIKK.COM/ARTICLES/8-ETHICAL-QUESTIONS-
IN-ARTIFICIAL-INTELLIGENCE/](https://www.logikk.com/articles/8-ethical-questions-in-artificial-intelligence/)

■ ANSWERS