title: Stats and Quotes Notes

Table of Contents

Science

Examples

Medicine and Pharmacology

- The National Heart Centre Singapore has proposed that scans of patients' hearts could be turned into 3D models. This has long-standing benefits as it helps cardiac surgeons make better surgery plans, especially for non-invasive procedures, and can also be used as a training tool for young doctors. Most importantly, the arrival of such technology would make animal testing obsolete; finally, human health need not be predicated on the suffering of animals, which is a step forward for mankind.
- Medco Health Solutions, one of America's largest pharmacy benefit managers until it was acquired by Express Solutions in 2011, was leading the way in making the provision of personal genomics services to the masses a reality. It had already achieved successes with personalized treatment of Warfarin, a widely used blood thinner to prevent clots, and Tamoxifen for breast cancer. Essentially, matching the right drugs to the patients has obvious clinical benefits, but also makes good economic sense. By reducing the occurrence of misdiagnosis, long hospitalization periods and the need for follow-up treatment, personalized healthcare can generate significant cost savings.
- In the United Kingdom, the National Healthcare System is collaborating with academia and industry to analyse the genetic material of persons with rare disorders through the 100,000 Genomes Project. It is hoped that such information will shed light on and save lives from disorders which were previously unknown.

Ethics

- The high profile suicide of Dr Yoshiki Sasai, a disgruntled stem-cell biologist at the Riken Centre for Developmental Biology in Japan, after allegedly fabricating data for clinical trials published in international journals, is just the tip of the iceberg. Institutes place immense pressure on scientists to produce transformative research, at the expense of their well-being and integrity. Many scientists have fabricated research published in academic journals, with even peer-reviewed scientific journals to verify the results of such experiments. This may have far-reaching consequences in the future as fabrications not only cast doubt on the credibility of medical research but leave scientists vulnerable to making critical mistakes.
- In 2007, British bases in Basra were attacked by terrorist who had used aerial footage from Google Earth to identify target locations.
- In his bestselling book 'Homo Deus: A Brief History of Tomorrow', Professor Yuval Noah Harari commented that "during the Agricultural Revolution, humankind silenced animals and plants, and turned the animist grand opera into a dialogue between man and gods. During

the Scientific Revolution, humankind silenced the gods too." In fact, the very premise of Harari's seemingly outlandish claims is that modern science has made men gods; although the best and the brightest understand that scientific research simply reflects the inadequacy of human knowledge, the accessibility and transformative power of modern science has granted us an immeasurable amount of power which we are wont to abuse.

Genetic Engineering

- Aldous Huxley's *Brave New World* describes a dystopian world where infants are grown in vats and sorted according to their intelligence levels. Even back in 1937, when the novel was first published, the fear of dehumanization and infringing upon the sanctity of human life was already gaining traction among readers.
- The Green Revolution, which involved high yielding varieties (HYVs) and genetically modified crops, resulted in an exponential increase in global cereal production by 280% and in global consumption per capita by 25% between 1961 and 2004. Besides addressing hunger, the Green Revolution addressed other aspects of food security, such as nutritional inadequacy, with genetically modified crops. Golden Rice, touted to be a genetic marvel, was efficient in meeting the dietary requirements of those afflicted with Vitamin A deficiency. In societies where widespread famine has struck and there seemed to be no hope for improvement, the Green Revolution was an enormous breakthrough for poverty reduction efforts and indeed shines as a success story.

Inequality and Discimination

- "Talking Books" the godfather of audiobooks was developed in 1930 in US for people who have impaired vision. Some hacked the system to increase reading speed, leading to audio time-stretching technology
  - This shows disabilities driving developments
  - They are key players not an afterthought in innovation

Peer-Review Processes in Research

Process	Single Blind	Double Blind
How	Authors are unaware of who the Reviewers are, but the Reviewers know who the Authors are	Authors and Reviewers are both unaware of who the other is
Why is **DB** Better?	The name of the authors is a considerable factor in the peer review process.	Anonymity ensures that quality of paper is assessed rather than the name of the authors
Examples	Peter Higgs, whose seminal paper postulating the existence of the Higgs Boson, was rejected by the Physics Letters Journal, one infamous for employing single blind protocol in peer review processes, although later it was proven to be true and Higgs even won a Nobel Prize for his work back in 2013.	NYU Professor Yann LeCun, who is internationally regarded as one of the pioneers of modern AI development, recently posted on many Social Media sites with the proud admission that one of his most recent papers was rejected by the NeurIPS journal, one graded on double blind protocol.

Stats

COVID-19 Vaccination

- high-income economies with around 16% of the world's population have secured over 70% of 5 major vaccine doses for 2021

  Source: `Challenges in ensuring global access to COVID-19 vaccines: production, affordability, allocation, and deployment`

  Notes: `Research paper on theLancet, found on Fortune. Both are not so well known sources`
- Covax has pledged to send 200 million vaccine shots to some 92 countries. However only 30 million has been received.

  Article: `The Straits Times` - `Problems at biggest vaccine maker in Indialeave world short on Covid-19 shots`
- Serum's CEO, Adar Poonawalla, pledged 400 million doses for low and middle-income countries by the end of 2020. As of Jan 2021, only 70 million shots were manufactured.

  Article: `The Straits Times` - `Problems at biggest vaccine maker in Indialeave world short on Covid-19 shots`

  Notes: `Mr Poonawalla mentions that the company is uncertain about when it would receive a licence from India and did not have enough warehouse space.`

Inequality and Discimination

- 58% of Women with STEM Degree have STEM Jobs, 70% of men with STEM Degree have STEM jobs

  Source: `Study by Nanyang Technological University`

  Notes: `Dataset of 738 Singaporeans`

Medicine and Pharmacology

- About half of 117 million American adults are on medication for preventable chronic diseases such as diabetes.

- According to research conducted by health research firm Quintile IMS, the number of prescriptions filled for Americans increased by an astronomical 85% between 1997 and 2016, from 2.4 billion to 5.4 billion a year, even as the population increased by a mere 21% during this period.

- In Singapore, 10.5% of the adult population currently receive treatment for diabetes management.

- The Health Promotion Board estimates that by 2050, 1 in 3 Singaporeans will develop Type 2 diabetes.
  - This worrying trend compelled the then Health Minister Gan Kim Yong to declare a 'war' on diabetes in 2016.

- Research conducted by the American Society of Plastic Surgeons suggest that Americans underwent close to 17.1 million cosmetic procedures in 2017 alone. Across the Pacific Ocean, the plastic surgery industry is booming, with more than 22 million undergoing cosmetic surgery in 2017.
- In the cases of polio and smallpox, where in collaboration with the World Health Organization, medical resources were able to reduce the prevalence of such diseases.
  - The Global Polio Eradication Initiative reduced the number of cases of polio by 99% and more than 2 billion children have been immunized.
  - The negative effects of smallpox were also short-lived as it was officially eradicated in 1980. It has been estimated that at least 20 million people would have died of smallpox had it not been eradicated.

Technology

Definitions

Cancel Culture

- "Cancel": To effectively end their career or revoke their cultural cachet, whether through boycotts of their work or disciplinary action from an employer.
- "Cancel Culture": The culture of cancelling people who have done something bad in the eyes of the public, which often involves unfair attempts of online vigilantism, often effectively destroying one's life in the process.

Big Tech

- **Big Tech** / **FAGMA**: Word/Acronym used to describe the five largest tech companies in the world, namely Facebook, Amazon, Google, Microsoft and Apple
  - Sometimes includes Netflix, Telsa and Nvidia (FAANG)
  - Big companies that have technology of mass public usage, and have a big market share.
  - Apple was the first of these to achieve a two trillion dollar valuation in August 2020
  - The combined net worth of these five, in addition to five other top tech companies, rounds up to a whopping nine trillion dollars.
  - The current stock market value of the Big Five ($9.3 trillion) is more than the value of *the next 27* most valuable U.S. companies put together, including corporate giants like Tesla, Walmart and JPMorgan Chase, according to data from S&P Global Market Intelligence.
- **BATX**: Acronym used to describe China's four largest tech companies, that being Baidu, Alibaba, Tencent and Xiaomi.
  - ByteDance is often counted into this list, despite it's name being missing from the actual acronym
  - Beijing has, over the past two years, started to crack down on these companies, especially Alibaba.
- *Data Collection*: Collection of data for mass usage, eg MOST cookies, data stored on websites - Data is not distributed to alternative areas

AI

- *Theory of Affordance*: a term coined by psychologist James J. Gibson. It states that when intelligent beings look at the world they perceive not simply objects and their relationships but also their *possibilities*. Eg, when we sit on a chair, the chair "affords" the possibility of sitting, whereas the same cannot be said about water, which instead "affords" the possibility of drinking or swimming in.
- *The Coded Gaze*: Defined by MIT grad student Joy Buolamwini as the bias in machine learning systems that involve lower accuracy for individuals of different skin tones and genders.

Surveillence and Security

- "Surveillance": Either specifically highly targeted or aimless but covert monitoring of individuals, usually through audiovisual data collection

    - "CCTV": inherent yet embraced form of surveillance in public spaces, less disconcerting
    - "Online tracking": Infringement of rights in the form of sharing of data to other sources (very concerning)
- "Stalkerware": Defined by its ability to hide and stealthily record information from the device. As the name implies, it is used for stalking.

Quotes

- "All of the biggest technological inventions created by man say little about his intelligence, but speak volumes about his laziness." ~ (widely attributed to) Mark Kennedy

Cancel Culture

- "Canceling is a way to acknowledge that you don't have to have the power to change structural inequality, You don't even have to have the power to change all of public sentiment. But as an individual, you can still have power beyond measure." ~ Charity Hudley
- "All I know is just what I read in the papers, and that's an alibi for my ignorance." ~ Will Rogers

Morals and Ethics

- In surveys, people say they want an autonomous vehicle to protect pedestrians, even if it means sacrificing its passengers but also that they wouldn't buy selfdriving vehicles programmed to act in this way.

    Source: `Nature, Bonnefon, J. et al. Science 352, 1573–1576 (2016)`
- "Technology is not neutral"

    Source: `Sam Gregory, program director of the human rights nonprofit Witness`

    Notes: `On software created with intent of malicious usage`
- "Science in itself is morally neutral; it becomes good or evil according as it is applied"

    Source: `Aldous Huxley`

Examples

Social Media

- **The Arab Spring of 2011**, where social media was used to rapidly spread awareness of and coordinate the protests. The uprising led to the overthrow of Ben Ali, Mubarak and Gaddafi in Tunisia, Egypt and Libya respectively, and civil war in most others. Notwithstanding the fact that those governments were oppressive and an uprising may perhaps be justified, the fact remains that the use of social media could turn the people against their leaders with unprecedented intensity and speed.

- In China, Facebook was used during the July 2009 Urumqi Riots by the minority Muslims in Xinjiang which led to the deaths of almost 200 people and almost 2,000 injured, in turn leading to the ban of the social media platform nation-wide.

- Netizens in China use "May 35th1989" to refer to the date Tiananmen Incident—"July 4th2019"—which itself is a banned phrase as the incident remains taboo.

- In August 2019, the *New York Times* reported that China was using LinkedIn to recruit spies in the US, by posing as businessmen or academics inviting American targets to travel to China for an academic conference or presentation, or a business opportunity. From there, the Chinese agents start building a rapport with their targets and slowly convince them to hand over state secrets.
  - Microsoft recently stopped LinkedIn's services in China due to lack of cooperation.

- The US is also a victim of Russia's use of Facebook to interfere in the 2016 Presidential Election that saw the election of Donald Trump—at the time perceived by Russia as their preferred candidate. Exacerbating these problems is the proliferation of "fake news", which many experts suspect not only influenced the outcome of the 2016 US Presidential Election, but the 2016 Brexit vote in the UK as well.

- In Singapore, the government passed a new piece of legislation in 2019—the Protection from Online Falsehoods and Manipulation Act—proving that social media poses a serious enough challenge to governments hoping to protect their citizens from malicious content.

- Internet users are particularly vulnerable to confirmation bias as online algorithms detect users' personal opinions based on their online behaviour, and upload relevant posts on their news feed accordingly.

- An extreme case happened in Turkey in 2016, when President Recep Tayyip Erdogan managed to survive a military coup by appealing to his supporters via a live stream on FaceTime.

- In 2011, American congressman Anthony Weiner was forced to resign after a sexually suggestive photo he sent to a woman via Twitter was leaked to the public.

- Launched in 1997, this website Six Degrees enabled users to upload a profile and make friends with other users. It was the predecessor of the many social networking sites to come, and its creation heralded the advent of a new era – an era in which social media would emerge as a new medium of communication.

- Cognizant of the increasing online presence of Singaporeans, the Singapore government created a website called eGov2015 in a bid to ensure that feedback from Singaporeans from all walks of life can be heard, and to facilitate greater co-creation and collaboration between the government and the people.

- The ALS Ice Bucket Challenge, started in the summer of 2014, raised $11.5 million for its cause. Over 17 million people uploaded their challenge videos to Facebook, and thus the cause was also championed by celebrities such as Taylor Swift, Bill Gates and Mark Zuckerberg. The challenge was started in a bid to raise awareness for the disease known as

amyotrophic lateral sclerosis, and the use of social media spreading this challenge resulted in its resounding success.\

- The Trashtag Challenge, where social media users pick up litter, clean their environment and later post a photo of their accomplishments on social media. It has allowed users a better insight of the sheer scale of the plastics pollution problem. It is a good example of how social media can go further than raising awareness to mobilizing individuals to act, producing tangible results.

Big Tech

- **The NSA Scandal**: It was revealed in 2013 that America's NSA and their British counterpart had been stealing information secretively from users of Google, Yahoo and many other tech products, with the creators of the products being completely oblivious to this happening. This led to widespread fear regarding government surveillance and stigmated views against Big Tech.
  - Classified as "surveillance", since the data was used as a form of targeted monitoring to triangulate individuals based on the others' relative positions in order to identify potential threats.
- **The Facebook-Cambridge Analytica Scandal**: In 2016, after Trump's victory at the Election, it was revealed that the company it was working with, the British political firm Cambridge Analytica, had been surreptitiously stealing and harvesting data from Facebook users and in an effort to manipulate and brainwash them, by showing people against Trump's campaign more positive articles about his work in an act of political advertising to influence their decision to work. This massive scandal led to widespread stigma against Big Tech and especially Facebook, which had yet to come into the line of fire. However, Facebook was the most severely hit, with the years that followed being some of its worst.

- **The Rohingya Genocide and Facebook's Involvement**: The Rohingya Genocide happened as a result of the overly stigmatized views of people against the Rohingya Muslims, a set of muslims often considered some of the, if not the most discriminated people in the world. During the genocide, many of the military officers went on Facebook posing as popular individuals and purposely incited hate speech, which was one of the main catalysts for the truly inhumane acts that followed.

- **The Christchurch Shootings**: In March 2019, a man openly streamed his video on Facebook Live as he went and shot nearly 51 people in 2 mosques in Christchurch, New Zealand, in an effort to spread hate speech towards the Muslim population in New Zealand. The videos surfaced on Facebook, with many audience members surprisingly cheering on for the act to continue, leaving a bleak shot of the white nationalism ever present in Oceania today. While this may not be fully attributed to Facebook, it was nonetheless a display of one of Facebook's weakest moments.

- **The Facebook Whistleblower, Frances Haughen**: An ex-employee of Facebook, Frances Haughen had been secretly copying and storing hundreds of internal files in Facebook with regards to research it had done on the impacts of its algorithms to better serve their purpose as a tech company, and shared it with the Wall Street Journal (WSJ), leading to the creation of the "Facebook Files" series at the WSJ. Research done by Facebook itself found that
  - **angrier posts often got higher engagements**, hence in 2018, Facebook's algorithms were reconfigured to give priority to these posts in user feeds. An implication of this would entail that more individuals would be angrier while reading the post and it is definitely possible that it may have led to incitement of more hate speech. This is incredibly problematic, but Facebook's insistence to focus on the profit made by more

user retention due to this algorithm led to this being left to the wayside by the developers.

- During the sudden appearance of the pandemic, a large number of posts with contradictory information was shared on these social media platforms that left many users excessively confused. In fact, a study by the National Centre of Infectious Diseases (NCID) revealed that 6 in 10 Singaporeans received fake information regarding the pandemic. This information overload, or "infodemic", as termed by the World Health Organisation (WHO), has led to the spread of excessive amounts of misinformation.
- During events like the excessive aftermath of George Floyd's death and the Taliban's take-over of Afghanistan, an incredible number of posts led to these events being blown out of proportion.

- **The Capitol Riots and Trump's Ban**: After the absolutely horrific events of January 6th 2021, where a mob of individuals barreled their way into the US Capitol Building in support of Trump after his recent loss in the presidential elections, Trump was permanently banned from multiple social media platforms, like Facebook and Twitter. YouTube also banned him, and Apple and Google both refused to offer the Parler, which was commonly associated with Trump and his followers, on their respective mobile app stores. This was followed officially with the impeachment of Trump just a few short days of his term, but it also painted a picture of just how powerful Big Tech Countries, with their act of censorship making them act more like a government than a group of businesses.

- **WhatsApp's Privacy Settings**: In the beginning of 2021, millions of people around the globe received a message on their phones that WhatsApp was updating their privacy settings such that certain data would be stored by WhatsApp. Being an application recently acquired by Facebook, this message led to immediate terror and uproar amongst the general populace, with many worldwide immediately deleting the app and switching to Telegram and Signal, the latter of which was instigated by Tesla CEO Elon Musk. While these concerns ended up being overexaggerated, it was still notable that the general populace has become more receptive to privacy concerns and the impacts that these settings could have.

- **Theranos** has been a very clear indicator of how much trust we have in technology today. The scandal was one of the many such cases involving market fraud and the misleading of shareholders over the past few years and has been helmed as Silicon Valley's Greatest Disaster. With an idea as incredible as was the founder's, Elizabeth Holmes, who possessed a very limited amount of knowledge regarding medical trials and entrepreneurial methods and a small patent developed within a few five days, Theranos seemed doomed from the start, yet it grew from a simple start-up in 2003 to a highly valued company with a valuation of about 9 billion dollars in 2014. In a few short years, the medical company had grown to the point that Holmes was now the richest self-made female billionare in the world, yet all it had was a disappointing line-up of inaccurate products with fabricated results that left many flabbergasted. Holmes had somehow managed to convince stakeholders and even the board of directors of her own company to let her continue the fraud.

Cancel Culture

- J.K. Rowling faced intense criticism after voicing transphobic beliefs, got cancelled. In June 2020, she published a transphobic manifesto, sales increased in her home country (Britain)

Prejudice and Discrimination

- Mr Saidullah Karimi, a orthopedic technician and Afghan refugee, built a fully-functioning robot called Athena from recyclable parts to stand as a symbol of what refugees can accomplish and contribute to society if given the chance. In fact, refugees are often denied

work by companies in Europe and the US since they are said to use different technology in their homeland, which is far from the truth.

AI

- An AI chatbot developed in South Korea named Luda Lee, initially popular for its cheerful disposition and ability to talk like a human being, quickly became the source of controversy after it made inappropriate comments regarding women's rights, lesbianism and disability, joining a long list of such chatbots infamous for their polarising opinions, often contrary to public opinion, including Microsoft's Tay, Japan's Rinna and China's BabyQ. The company behind it was also sued for disseminating personal information of the users.

- Research done by the University of Montreal suggests that AI has better clinical decision-making capability than do humans, but generally in a more secondary sense, i.e. in the form of a second opinion.

- A horrifying application of AI has been tools developed by many that utilise DeepFake technology in the form of false shaming individuals. For example, a software called DeepNude was recently taken down which involved taking in the image of a face, and mapping that onto a Pornographic Film using DeepFake technology.

    Source: https://www.technologyreview.com/2021/09/13/1035449/ai-deepfake-app-face-swaps-women-into-porn/ (MIT Technology Review, 13th September 2021)

- AI Dungeon, a text generator game utilising AI, was used by a few individuals to generate child pornography.

    Source: Vikram Ramanathan, 21st September 2021

- Baidu's Xiaodu is an all-inclusive technology to aid an oncoming "Silver Tsunami", providing many crucial services like access to emergency care and emotional support.

- AI algorithms developed by Big Tech and integrated into commerical and consumer products which drive the daily function of workplaces and people's lifestyles such as Google's search engine may gain more affordance than it should. Gebru Timnit, a researcher at Google's AI labs, grew wary of how quickly such technology were deployed and gaining dominance, and had criticise how black box language models developed by Google and competitors such as Microsoft's GPT-3, may for instance be trained on abusive language of the internet and develop biases yet elbow out promising alternatives, and later cause the future of AI technology to be built on shaky foundations... (List examples from other sections; e.g. coded gaze, stanford facial recognition; google's featured snippets).

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    Source: https://www.technologyreview.com/2021/06/14/1026148/ai-big-tech-timnit-gebru-paper-ethics/ (MIT Technology Review on Timnit Gebru's sacking, 14th June 2021)

- Use of AI in courts: see Science and Technology/Tech/AI/AI in courts.
    - Example: Advisory AI: Civil Resolution Tribunal (CRT) in British Columbia, Canada for disputes relating to subsidised housing. Predictive AI: Correctional Offender Management Profiling for Alternative Sanctions for predicting recidivism, has been known to overestimate recidivism among African American defendants compared to Caucasian Americans (though this may be natural consequence of greater concentrations of black felons in some areas), judges using the tool detain people more than before although it was intended to suade judges towards the opposite outcome.
    - This human control was an issue in the Loomis case, before the Supreme Court of Wisconsin.16 At stake were: (1) whether the use of the result of a risk assessment by an

instrument such as COMPAS, where the operation is a business secret, violates the defendant's right to a fair trial because the secret operation deprives a defendant of the opportunity to test the accuracy and scientific value of the risk assessment, and (2) whether it violates the right to a fair trial to rely on such a risk assessment because it includes gender and race in the assessment of the risk of recurrence. The Wisconsin Supreme Court dismissed Loomis' objections, but said that the judge should give reasons as to how he or she uses COMPAS. The case was referred to the Supreme Court of the United States, which decided not to hear the case.

- Pros: Reduced Recidivism, streamlines process and makes it more accessible (cheaper and faster), possibly reduce bias of human jurors (more for felonies since human jurors are supposed to be competent), cases like divorce and employment contract terminations are predictable and the job of a court proceeding is often merely to check all the terms are fulfilled.
- Cons: In the US, predictive tools are offered commericially and workings are thus business secrets.

- Ethical Principles (mostly pertaining to previous point): Outlined by The Commission for the Efficiency of Justice (CEPEJ) of the Council of Europe:

  1. Respect for fundamental rights. Ensure that design and implementation of AI services and tools are compatible with fundamental rights such as privacy, equal treatment and fair trial.
  2. Equal treatment. Avoid discrimination between individuals and groups of individuals. The example of COMPAS above shows that discrimination and unjustified distinction between individuals and groups, is a real risk. The data used by the algorithm may be the cause, and the prejudice may also be embedded in the algorithm itself.
  3. Data security. When processing judicial decisions and data, certified sources and data that cannot be altered should be used, with models that are multidisciplinary in design, in a secure technological environment.
  4. Transparency. Data processing methods should be made transparent and comprehensible, and external audits should be allowed. The requirement of transparency is now established case law. The user of an algorithm must make public the choices made, and the data and assumptions used, in a complete, timely and appropriate manner so that these choices, data and assumptions are accessible to third parties. Such full, timely and appropriate disclosure should make it possible to assess the choices made and the data, reasoning and assumptions used, so as to ensure effective legal protection against decisions based on those choices, data, reasoning and assumptions, with the possibility of judicial review by the courts.
  5. AI under user control. The algorithm may not be used as a prescription, i.e. the computer does not prescribe anything and cannot decide by itself. Users must know and understand what the AI does, and the users must be in control of the choices they make. This means that users must be able to deviate from the outcome of the algorithm without difficulty.

- What can happen when IT is blindly relied upon is shown by an example from the courts in the United Kingdom.18 There, a relatively simple piece of IT determines the financial capacity of (ex)-spouses in maintenance proceedings. The parties fill in a PDF form, and the IT calculates the resulting capacity. Due to a small mistake, which went unnoticed, incorrect calculations were made in 3,638 cases between April 2011 and January 2012, and between April 2014 and December 2015. Debts, instead of being deducted, had been added to the assets, so the assets taken into account were too high. In cases that were still pending, this could still be corrected. However, incorrect decisions were issued, and presumably complied with, in more than 2,200 cases.

- When researchers asked OpenAI's GPT-3 model, one of the largest and most sophisticated of these models ever created and generally considered to be one of the biggest AI breakthroughs in the past decade, to complete a sentence containing the word "Muslims," it turned to violent language in [more than 60% of cases](#) — introducing words like bomb, murder, assault, and terrorism.

- A new [report](#) from Georgetown University's Center for Security and Emerging Technology (CSET) says there is little evidence to suggest there is a massive, urgent AI skills gap.

- According to the annual State of AI report,

    - academic organizations don't have enough compute resources to accomplish their projects—but 88% of "top AI faculty" have received Big Tech funding, the researchers wrote.
    - although AI safety is making headlines, "fewer than 50 researchers" are working on it full-time at the largest AI labs, according to the report — meaning there are a lot more people whose full-time job it is to build this tech rather than think about potential consequences.

- In a recent article by the newsletter, Emerging Tech Brew, the journalist talks about how 94% of AI systems studied are more inaccurate when compared to human radiologists. This statistic may seem pretty indicative of the relative nascence of AI, but it in fact demonstrates that many journalists have no clue as to how AI truly works, with statements like these being played for entertainment rather than truth.

Autonomous Vehicles

- Moral Machine Experiment: a worldwide survey pertaining to choices made by Autonomous Vehicles in adverse situation wherein one or more are susceptible to death. Revealed different opinions across the world, with people residing in Asian Countries displaying a slight favouritism to the elderly while some expressed greater appreciation for Females.

Stats

Social Media

- According to the International Communication Union, there are more than 3 billion Internet users worldwide.
- According to a research conducted by Pew Research Centre on 700 American youth in 2018, close to 95% of teenagers have access to a smartphone, and 45% say that they are online on social media platforms on a 'almost constant' basis. The older generation is remarkably less adept at using technology and social media: while 90% of those aged 18-29 use at least one social media account, only 40% of those aged above 65 do.
- According to research by the Pew Research Centre, 47% of conservatives are likely to see Facebook posts aligned with their own views, as opposed to half that percentage for those who seek the middle ground.
- Since close to 1.7 billion people of the 7.2 billion people in the world today have active social media accounts, there is a *smorgasbord* of differing opinions online.
- Naturalistic research indicates that people who had conversations without the presence of a mobile phone felt that these conversations felt higher levels of 'empathetic concern', as opposed to those who conversed with the presence of a mobile phone.

Autonomous Vehicles

- 9.1 crashes per million miles driven for self-driving cars, compared with 4.1 crashes per million miles for conventional vehicles.

  Source: `University of Michigan's Transportation Research Institute`

  Notes: `Using crash stats from US National Highway Traffic Safety Administration`

- Autonomous vehicles cause 0.36 injuries per crash, compared with 0.25 for conventional vehicles.

  Source: `University of Michigan's Transportation Research Institute`

  Notes: `Using crash stats from US National Highway Traffic Safety Administration`

- Self-driving cars are not responsible for any accidents

  Source: `University of Michigan's Transportation Research Institute`

  Notes: `Using crash stats from US National Highway Traffic Safety Administration`

Big Tech and Big Data

- Combined stock market valuation of Apple, Alphabet, Nvidia, Tesla, Microsoft, Amazon and Facebook (i.e FAAMG + Nvidia + Tesla) is $3.4 trillion in 2020.

  Article: `CNBC` - `Tech's top seven companies added $3.4 trillion in value in 2020`

- 80% of people have TraceTogether, reducing contact tracing from 4 days to 1.5 days

  Article: `CNA` - `Bill restricting police use of TraceTogether data introduced in Parliament, with tougher penalties for misuse`

  Source: `Smart Nation and Digital Government Group (SNDGG) Singapore`

- [Free markets are creating a major free speech problem](#)
  - Companies retroactively policing those who express dissent against China. Many such cases: John Cena calling Taiwan a country, LeBron James & Morey in solidarity with HK, Mercedes Benz quoting Dalai Lama. While individually the cases are not major, the opinions were expressed on english platforms (some banned in China like Twitter), towards english-speaking audiences.
  - PNTR (Permanent Normal Trade Relations which promised US-Chinese economic integration) during Clinton administration was not only for economic growth, but also for the US to abet the liberaization of the human potential of the people with American values in society and trade. (socially and economically since China is communist and micromanages private industries unlike US). However, unexpectedly censorship was smuggled into the US as to be elaborated.
  - Apple TV streaming service disallows any content which criticises or paints China as a villain. While reasonable to market to Chinese consumers, a blanket categorical ban on any such content should ring alarm bells, especially when considering news agencies are pro-profit (slight stretch).

- - Big tech is ultimately pulling the strings of countries as diplomatic agents as for instance since the chinese depend on iCloud and other technologies and does not want to fall behind the west and America does not want to falter in its ambition of liberating Chinese or lose economic primacy. While US and China are playing a precarious game of Twister, Big Tech (In this case FAANG rather than BATX) is free to hold their services hostage and leverage what type of content they will distribute or sponsor, thus influencing mass media, which is a threat to democracy yada yada.
- Big corporations are more likely to do well in bankruptcy court than small and medium-sized companies, according to a recent Brookings Institution study.
- Microsoft has aggressively pushed its new business messaging and collaboration tool, Microsoft Teams, which competes with the independent company Slack. On Thursday, Microsoft said the number of users on Teams had grown 37 percent in a week to more than 44 million daily users. There have been at least 900 million meeting and call minutes on Teams every day.
- Apple's profit just from the past three months ($21.7 billion) was nearly double the combined annual profits of the five largest U.S. airlines in prepandemic 2019.
- Amazon's stock price increases have made Jeff Bezos so rich that he could buy a new model iPhone for 200 million people — and he would still be a billionaire.
- Google's $50 billion in revenue from selling advertisements from April to June was about what Americans — *all of the Americans* — spent on gasoline and gas station purchases last month.
- The annual revenue of one of Microsoft's side businesses, LinkedIn, is nearly four times that of Zoom Video Communications, a star of the pandemic, in the past year.
- Facebook expects to dole out more cash outfitting its computer hubs and offices in 2021 than Exxon spends around the world to dig oil and gas out of the ground in a year.
- Amazon fell short of investors' expectations on Thursday. But in the past year, Amazon's e-commerce revenue still climbed by $109 billion — an increase in a single year that Walmart needed the past nine years to reach.

Cancel Culture

- More than 90% of the doxed files included the victim's address, 61% included a phone number, and 53% included an email address.

    Source: `2017 NYU` - `First large-scale doxing study reveals motivations and targets for cyber bullying`

    Notes: `Over 5500 files of doxxing, implies over 5500 cases of doxxing as sample size`
- 12% of the students acknowledged their engagement in doxing.

    Source: `Int J Environ Res Public Health` - `Doxing: What Adolescents Look for and Their Intentions`

    Notes: `Survey of 2120 Hong Kong students`

Surveillance

- Ten of 24 US Governmental agencies surveyed plan to broaden their use of facial recognition systems by 2023, while eighteen of 24 currently use some form of the technology, according to an August 2021 report by the US Government Accountability Office (GAO).

- [Facial recognition has proved to be less accurate on people with darker skin](#), women, and younger and older people, according to a 2018 paper presented by MIT and Stanford University researchers. This was due to the fact that dataset used to assess its performance was more than 77 percent male and more than 83 percent white. Leading to a disparity of nearly 46% for some individuals.

- [Your face is not a barcode - Arguments against Facial Recognition Technology (2003)](#) Comprehensive list of arguments against the use of facial recognition and rebuttals of common arguments.

  - Large potential by abuse by governments (e.g. China & Uyghers) or becoming compromised by hackers
  - As opposed to other similar technologies like fingerprinting, facial recognition requires least cooperation from the individual as one can be identified in a crowd from afar. Thus it is quite open to attack vectors.
  - Quite fallible to false positives and inaccuracies from poor lighting conditions e.g.
  - Inefficient among all the false positives, i.e. 1 terrorist among 1000 false positives. Other measures may be preferable for such use-cases, despite scares pushing towards facial recognition post-9/11.
  - Hard to give effective notice, and gain proper consent. Adoption in public spaces such as government buildings or other institutions means it is a fait accompli that those uncomfortable with the technology have to accept.
  - Technology may not necessarily be only accessible and implemented by the government but also by businesses or district authorities, who may wittingly or unwittingly abuse the technology
  - Sets a poor precedents as even if it is well-implemented by wealthier and democratic governments with respect for civil liberties, it may gain adoption among less enlightened governments. For instance, a report by The Conservation where some Chinese citizens were informally interviewed on their thoughts on the government's inexorable push for social surveillance systems believed the west also had similar concepts of social credit which China is justified to follow to catch up with other superpowers. They welcome the infringements of the civil liberties in favor of the public order solidified by such developments (May not necessarily be deluded, just differing culture). If the west must adopt facial recognition to protect the nation or safeguard their democracy, then the artificial 'Tian' watching over Chinese citizens or similar facsimilies that may prop up in other nations will only gain in prevalance and apparent signficance in protecting a nation's civil morals.
- Facial recognition used to catch felons at a Superbowl in Tampa, Florida 2001

- According to recent [research](#) by the Center for Democracy and Technology (CDT), "86% of teachers reported that, during the pandemic, schools provided tablets, laptops, or Chromebooks to students at twice the rate (43%) prior to the pandemic, an illustration of schools' attempts to close disparities in digital access." More than 80% of surveyed teachers and 77% of surveyed high school students told the CDT that their schools use surveillance software on those devices, and the more reliant students are on those electronics, unable to afford supplementary phones or tablets, the more they are subjected to scrutiny.

Security

- 76.1% of websites use https by default, a more secure protocol to access websites, while the 85.5% top 1 million websites use https by default

    Source: `W3Techs`

    Notes: `Referenced by New York Times`

Morals and Ethics

- Estimated 90% - 95% of all online deepfake videos are nonconsensual porn, 90% of the porn feature women

    Article: `technlogyreview.com` - [A horrifying new AI app swaps women into porn videos with a click](#)

    Source: `research company Sensity AI`

    Notes: `IT IS AN ESTIMATION!!`

Youth

- Children who used the internet, social media or video games for entertainment ≥4 hours daily were 4x more likely to skip school.

    Source: `Rutgers University analysing China Education Panel Survey`

    Notes: `10000 1st year middle schoolers, mean age = 13.5`

- Boys used interactive technology for entertainment significantly more than girls. Boys also performed worse and showed lower engagement levels than girls

    Source: `Rutgers University analysing China Education Panel Survey`

    Notes: `10000 1st year middle schoolers, mean age = 13.5`

Tech Talent Crunch

- Singaporeans accounted for about 35 per cent of tech jobs, and 35 per cent of net tech jobs created in the past five years in banking and finance.

    Article: `NTU Business` - [what is stopping more Singaporeans from taking up tech jobs?](#)

    Source: `Monetary Authority of Singapore (MAS)`

- There appears to be a general lack of students graduating with degrees in Computer Science-related fields, with only 2,800 such graduates every year, compared to the demand of nearly 60,000 needed by 2023, according to Dr Vivian Balakrishnan, Minister-in-charge of the Smart Nation Initiative.
- The labour shortage by 2030 could cost Singapore nearly 39.2 billion SGD, which is very undesirable for the city state, since it could possibly account for 21 percent of Singapore's projected economy by then.

- Only a third of the technological workforce in the financial sector is made of Singaporeans

AI

- In 2019, the AI workforce made up 9% of total US employment. And over the next decade, employment in AI-related occupations is projected to grow twice as fast as employment in all occupations, according to data from the Bureau of Labor Statistics.
- The US needs to increase its supply of AI PhDs since [research suggests](#) there's a supply-demand gap for top-tier talent; "sustain and diversify" pipelines for technical AI roles; and introduce AI education into K-12 curriculums.
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Prejudice and Discrimination

Examples

- In some of the early chapters of Harper Lee's 1960 novel, *To Kill A Mockingbird*, we are introduced to the character of Ms Caroline and young schoolteacher who had come from another town. The chapters expand on some of the classroom sessions, showing some of the ways Ms Caroline was unaware of many of the cultural norms the rest had beome very much accustomed to. While a stretch, this can be well-reasoned to the issues that many foreigners experience in different countries, since these countries have differing systems and adjusting to these requires time.

Stats

- Women and early-career academics are more likely to feel like impostors in an academic discipline perceived to require raw talent for success.

  Source: `New York University 2021 Study`

Women in Tech

- A report by Microsoft found that more than 50% of young females are in fact interested in working in the STEM sector.
- Only 58% of females Singaporeans, after pursuing a degree in STEM, go on to STEM-related careers.
- According to the UNESCO Institute for Statistics, less that 30 percent of the world's researchers are female.
- Most women drop off the register of professional engineers before the age of 45.

Meritocracy & Elitism

- Harvard, Princeton, Stanford, Yale collectively enroll top 1% of income distribution than from households from bottom 60%
- In US, 7 top banks and law firms recruit exclusively from elite colleges
- In 2006 study by American University, 1% of children in bottom 20% of households will join top 5%.
- Pew Research Centre: 60% of Republicans believe colleges and universities are bad for the US.
- Burdening the rich is a non-sequitor to reducing inequality as severe income disparities cause the elite to become more competitive to hold onto their status, get a return on their

investment in social capital (education, networking etc.), and provide similar resources to their children for succeeding their wealth and status.
- **Elite Overproduction**: Coined by Peter Turchin, describing a phase of a complex society involving a bloated elite class, too few elite jobs, declining living standards among general population. [The Next Decade Could Be Even Worse](#)

Crime and Punishment

Examples

- In the 1994 prison drama, *The Shawshank Redemption*, the life story of an innocent man thrust into prison is shown, spanning nearly 20 years. As we progress through the story, we see him slowly but surely see the cruel injustices faced in prison, with his management of the corrupt warden's ledger. While an offense on its own, its rather ironic for a man as situationally perpetuated to be innocent as the warden to take over the role of a criminal. Unfortunately that is the case.