

Artificial Intelligence: How far should we take this?

Abstract

There is no doubt that Artificial Intelligence is the next big thing of the high-tech industry. The research and innovation led by the top technology companies are influencing industry verticals including healthcare, automobile, finance, manufacturing and retail. Though technology has always been an important factor for all these domains, AI is making technology the core of the business. From critical life-saving medical equipment to self-driving vehicles, AI will be infused into almost every application and device. So we have to admit that AI is going to leave no stone unchanged.

Keywords: Artificial Intelligence; Simulation; Smart Phones; Personal Assistants; Recommendations.

Introduction

So what is really the accepted definition of AI? The dictionary would have you believe that AI is "simulated intelligent behavior". Basically, whether or not; a machine can imitate intelligent human behavior. Consider Deep Blue beating Kasparov at chess, or Watson winning at Jeopardy, Google DeepMind's AlphaGo beating Lee Sedol and Ke Jie at Go... these are examples of computers beating humanity's best and brightest at their own game! Should that be considered AI?

Artificial Intelligence (AI) is the concept of having machines "think like humans" — in other words, to perform tasks like reasoning, planning, learning, and understanding language. While no one is expecting parity with human intelligence today or in the near future, AI has big implications in how we live our lives. The brain behind artificial intelligence is a technology called machine learning, which is designed to make our jobs easier and more productive.

Aim of the Study

This literature will be fruitful for everyone who is surrounded by AI but don't know about the applications which are very useful in daily as well as professional life. By this, an If you use AI, things can be simpler. It's all upon you. The article was designed and carried out to achieve following objectives.

1. To know about the artificial intelligence.
2. Applications of artificial intelligence.
3. General awareness for AI.
4. Some facts and figures of AI.

Review of Literature

This paper reviews the field of artificial intelligence focusing on its applications. For this article, I have taken data from Statistica® which conducted a research on artificial intelligence's impact on global market (2018-2035) and the following were considered:

Lighthill Report

The British Science Research Council asked James Lighthill, a well-renowned British scientist at the time, to undertake a study and file a report on AI. In 1973 he completed and published his report titled Artificial Intelligence: A General Survey, in which he was very, very critical of the accomplishments of AI research. Although he did praise the work done in very specific and niche fields such as those for trying to solve small and specific problems, he was critical of all general purpose AI research.

The press caught on and eventually turned public opinion against money being wasted on a pipe dream. The British government cut off funding for all AI research, and it started what would be later called the AI Winter (like Nuclear Winter). Even the Americans undertook a similar study after hearing about Lighthill's report, and the US government also massively cut back on AI funding.

Since then, the field of AI (much like a lot of other things) has undergone a bubble phase where it's super hyped, only to then have the



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bubble pop and re-enter AI Winter. A lot of this yo-yoing is caused by people like us, the press, because it's the easiest thing for journalists to get carried away with a fad or a new hype, only to then quickly realise that they were wrong, and write scathing takedowns.

ARM | Northstar(2017-18)

Globally, 3,938 consumers were interviewed through an online survey.

These interviews fall out across regions and markets as above.

All respondents know either "lots" or "a bit" about artificial intelligence.

All respondents think that AI either "already" has or "eventually" will have an impact on the way we live as humans.

(Rory Cellan-Jones(2016) stated that "Two years ago Stephen Hawking told the BBC that the development of full artificial intelligence, could spell the end of the human race."

His was not the only voice warning of the dangers of AI - Elon Musk, Bill Gates and Steve Wozniak also expressed their concerns about where the technology was heading - though Professor Hawking's was the most apocalyptic vision of a world where robots decide they don't need us any more.

What all of these prophets of AI doom wanted to do was to get the world thinking about where the science was heading - and make sure other voices joined the scientists in that debate.

(Edgar Alan Rayo(2018)) Artificial intelligence and machine learning adoption among different industries represents a new chapter in digital transformation. However, according to our own research across industries, AI adoption in 2017 remains low with majority of major success stories coming only from the largest tech players in the industry (Google, Baidu, Apple, etc). McKinsey Global Institute estimates that in 2016, tech giants invested \$20-30 billion into AI, while smaller companies altogether invested an estimated \$6-9 billion.

(Global Research on Artificial Intelligence from 1990–2014: Spatially-Explicit Bibliometric Analysis (2016))

By employing the method of bibliometric analysis, a clear understanding of the global trends in AI research patterns during 1990–2014 was developed in this study. The amount of AI publication presented a solid growth with an increasing number of articles. This can be seen as a new research upsurge in AI after the rapid development from the 1990s. "Computer science" and "engineering" were the two major subject categories. Artificial Intelligence is the most important journal with the highest number of citations per article.

Am I already using AI?

Yes. Almost everyone who has a computer, smart phone, or other smart device is already using AI to make life easier:

The goal of work in artificial intelligence is to build machines that perform tasks normally requiring human intelligence. (Nilsson, Nils J. (1971), *Problem-Solving Methods in Artificial Intelligence* (New York: McGraw-Hill): vii.)



Virtual Personal Assistants

Siri, Google Now, and Cortana are all intelligent digital personal assistants on various platforms (iOS, Android, and Windows Mobile). In short, they help find useful information when you ask for it using your voice; you can say "Call Dad" "Where's the nearest Chinese restaurant?", "What's on my schedule today?", "Remind me to call Jerry at eight o'clock," and the assistant will respond by finding information, relaying information from your phone, or sending commands to other apps.

Now that voice-to-text technology is accurate enough to rely on for basic conversation, it has become the control interface for a new generation of smart personal assistants. The first iteration were simpler phone assistants like Siri and Google Now (now succeeded by the more sophisticated Google Assistant), which could perform internet searches, set reminders, and integrate with your calendar.

Video Games

One of the instances of AI that most people are probably familiar with, video game AI has been used for a very long time—since the very first video games, in fact. But the complexity and effectiveness of that AI has increased exponentially over the past several decades. First-person shooters like *Far Cry* and *Call of Duty* also make significant use of AI, with enemies that can analyze their environments to find objects or actions that might be beneficial to their survival; they'll take cover, investigate sounds, use flanking maneuvers, and communicate with other AIs to increase their chances of victory. As far as AI goes, video games are somewhat simplistic, but because of the industry's huge market, a great deal of effort and money are invested every year in perfecting this type of AI.

Fraud Detection

Have you ever gotten an email or a letter asking you if you made a specific purchase on your credit card? Many banks send these types of communications if they think there's a chance that fraud may have been committed on your account, and want to make sure that you approve the purchase before sending money over to another company. Artificial intelligence is often the technology deployed to monitor for this type of fraud.

Music and Movie Recommendation Services

While they're rather simple when compared to other AI systems, apps like Spotify, Pandora, and Netflix accomplish a useful task: recommending music and movies based on the interests you've expressed and judgments you've made in the past. By

monitoring the choices you make and inserting them into a learning algorithm, these apps make recommendations that you're likely to be interested in.

Google's AI-Powered Predictions

Using anonymized location data from smart phones, Google Maps (Maps) can analyze the speed of movement of traffic at any given time. And, with its acquisition of crowd sourced traffic app Waze in 2013, Maps can more easily incorporate user-reported traffic incidents like construction and accidents. Access to vast amounts of data being fed to its proprietary algorithms means Maps can reduce commutes by suggesting the fastest routes to and from work.

Ridesharing Apps like Uber and Ola

How do they determine the price of your ride? How do they minimize the wait time once you hail a car? How do these services optimally match you with other passengers to minimize detours? The answer to all these questions is AI.

Plagiarism Checkers

Many high school and college students are familiar with services like Turnitin, a popular tool used by instructors to analyze students' writing for plagiarism. While Turnitin doesn't reveal precisely how it detects plagiarism, research demonstrates how ML can be used to develop a plagiarism detector.

Social Networking

When you upload photos to Facebook, the service automatically highlights faces and suggests friends to tag. How can it instantly identify which of your friends is in the photo? Facebook uses AI to recognize faces. In a short video highlighting their AI research (below), Facebook discusses the use of artificial neural networks—ML algorithms that mimic the structure of the human brain—to power facial recognition software.

Instagram, which Facebook acquired in 2012, uses machine learning to identify the contextual meaning of emoji, which have been steadily replacing slang (for instance, a laughing emoji could replace "lol"). By algorithmically identifying the sentiments

behind emojis, Instagram can create and auto-suggest emojis and emoji hashtags.

Snapchat introduced facial filters, called Lenses, in 2015. These filters track facial movements, allowing users to add animated effects or digital masks that adjust when their faces moved.

Online Shopping

Your Amazon searches ("ironing board", "pizza stone", "Android charger", etc.) quickly return a list of the most relevant products related to your search. Amazon doesn't reveal exactly how its doing this, but in a description of its product search technology, Amazon notes that its algorithms "automatically learn to combine multiple relevance features. Our catalog's structured data provides us with many such relevance features and we learn from past search patterns and adapt to what is important to our customers."

Recommendations

You see recommendations for products you're interested in as "customers who viewed this item also viewed" and "customers who bought this item also bought", as well as via personalized recommendations on the home page, bottom of item pages, and through email. Amazon uses artificial neural networks to generate these product recommendations.

Voice-to-Text

A standard feature on smartphones today is voice-to-text. By pressing a button or saying a particular phrase ("Ok Google", for example), you can start speaking and your phone converts the audio into text. Nowadays, this is a relatively routine task, but for many years, accurate automated transcription was beyond the abilities of even the most advanced computers. Google uses artificial neural networks to power voice search. Microsoft claims to have developed a speech-recognition system that can transcribe conversation slightly more accurately than humans.

Some Findings

Figure 1 Robotics and artificial intelligence (AI) worldwide market size estimates, based on 2018 to 2030 forecasts, by segments (in billion U.S.dollars)

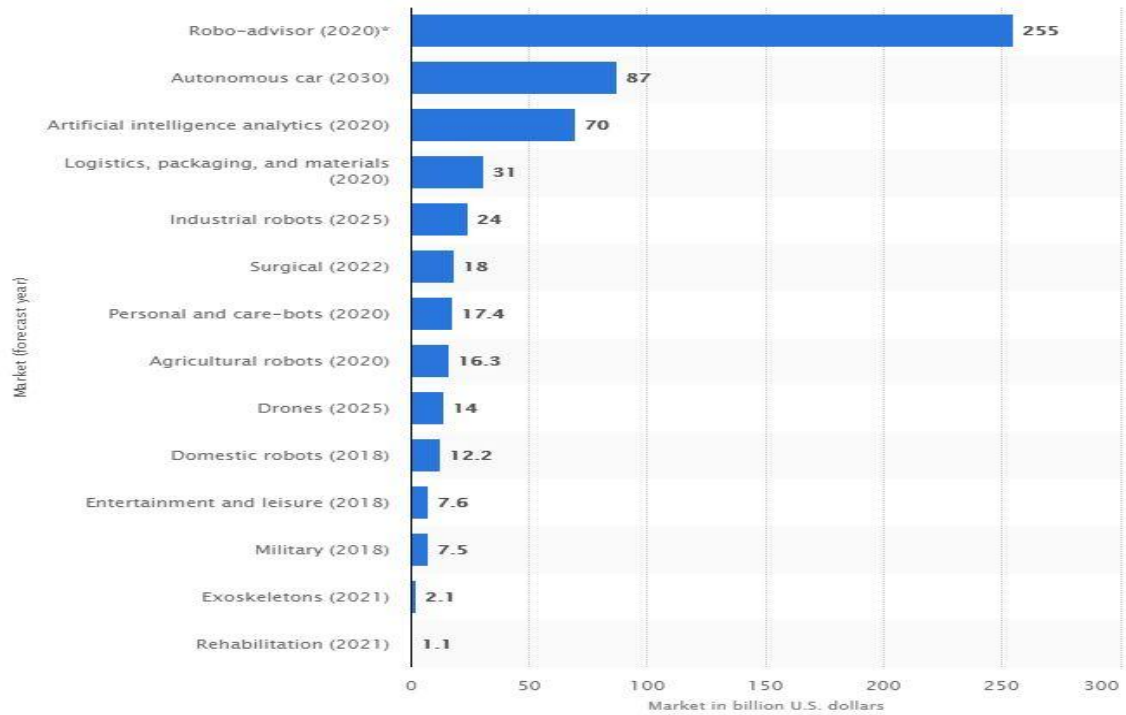
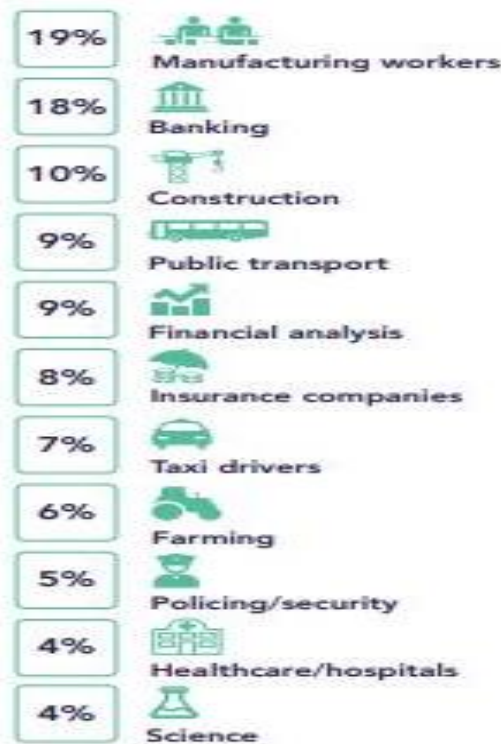


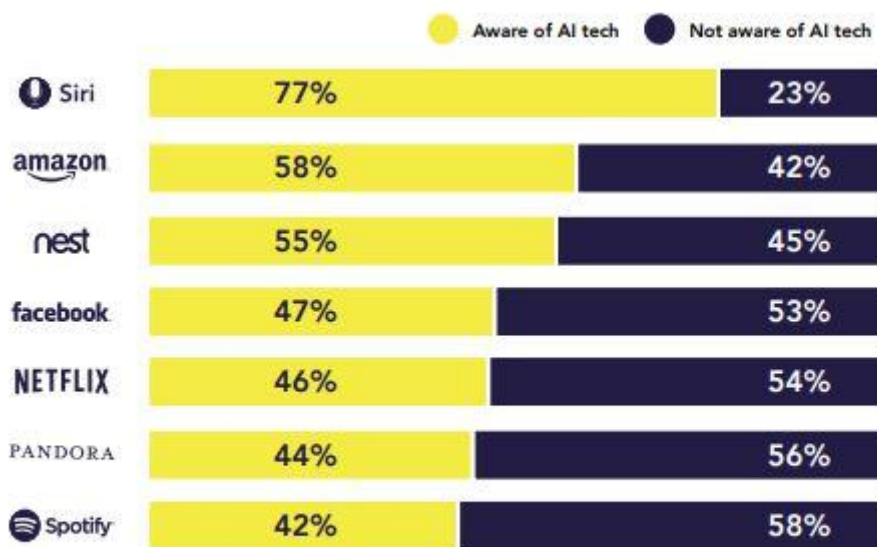
Figure 2



Which of these job sectors do you feel are most under threat from AI machines? Please select the three you feel are most under threat.

Source: Arm Ltd

Figure 3



Were you aware that some/all of the following applications use AI-style technologies? (Choose all that you are aware of)

Source: Arm Ltd

AI : Friend or Foe ?

The real impact facing by humans is the unemployment caused by AL; since a machine can think-work like human, it is replacing them. Resulting in loss of job and economic displacement of workers. Another problem is that we are depending too much on technology thus we are losing the skills being replaced by technology. Like we used to solve complex calculations on finger tips but now we use calculator and don't even bother to think over the problem to do it without machine.

There are obvious problems here. A system is only as good as the data it learns from. Take a system trained to learn which patients with pneumonia had a higher risk of death, so that they might be admitted to hospital. It inadvertently classified patients with asthma as being at lower risk. This was because in normal situations, people with pneumonia and a history of asthma go straight to intensive care and therefore get the kind of treatment that significantly reduces their risk of dying. The machine learning took this to mean that asthma + pneumonia = lower risk of death.

Conclusion

Als are at work wherever you look, in industries from finance to transportation, monitoring the share market for suspicious trading activity or assisting with ground and air traffic control. They even help to keep spam out of your inbox. And this is just the beginning for artificial intelligence. As the technology advances, so too does the number of applications.

But since the data that we feed Als might be imperfect, we should not expect perfect answers all the time. Recognizing that is the first step in managing the risk. Decision-making processes built on top of Als

need to be made more open to scrutiny. Since we are building artificial intelligence in our own image, it is likely to be both as brilliant and as flawed as we are. Although technology is very useful if it is in safe hands. Spending too much money and time on AI is good but we should prepare ourselves for its failure, there should be some policies and regulations to cope up its dark side.

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