Impacts of Artificial Intelligence on real-life problems

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Abstract

The science and engineering of making intelligent machines, especially intelligent computer programs. Artificial Intelligence (AI) is a branch of science which deals with helping machines find solutions to complex problems in a more human-like fashion. This generally involves borrowing characteristics from human intelligence, and applying them as algorithms in a computer friendly way. This paper presents the impacts of artificial intelligence on various real-life approaches.

Keywords: *Artificial intelligence, impact, real-life problems.*

1. Introduction

According to the father of Artificial Intelligence John McCarthy, a more or less flexible or efficient approach can be taken depending on the requirements established, which influences how artificial the intelligent behavior appears.AI research is highly technical and specialized, and is deeply divided into subfields that often fail to communicate with each other. Some of the division is due to social and cultural factors: subfields have grown up around particular institutions and the work of individual researchers. AI research is also divided by several technical issues. Some subfields focus on the solution of specific problems. Others focus on one of several possible approaches or on the use of a particular tool or towards the accomplishment of particular applications.

The central problems (or goals) of AI research include reasoning, knowledge, planning, learning, natural language processing (communication), perception and the ability to move and manipulate objects. General intelligence is still among the field's long-term goals. Currently popular approaches include statistical methods, computational intelligence and traditional symbolic AI. There are a large number of tools used in AI, including versions of search and mathematical optimization, logic, methods based on probability and economics, and many others [1][2]. The AI field is interdisciplinary, in which a number of sciences and professions converge, including computer science, mathematics, psychology, linguistics, philosophy and neuroscience, as well as other specialized fields such as artificial psychology.

2. Applications of Artificial Intelligence

2.1 Heuristic classification

One of the most feasible kinds of expert system given the present knowledge of AI is to put some information in one of a fixed set of categories using several sources of information [3][4]. An example is advising whether to accept a proposed credit card purchase. Information is available about the owner of the credit card, his record of payment and also about the item he is buying and about the establishment from which he is buying it.

2.2 Expert systems

A "knowledge engineer" interviews experts in a certain domain and tries to embody their knowledge in a computer program for carrying out some task. How well this works depends on whether the intellectual mechanisms required for the task are within the present state of AI. When this turned out not to be so, there were many disappointing results. One of the first expert systems was MYCIN in 1974, which diagnosed bacterial infections of the blood and suggested treatments. It did better than medical students or practicing doctors, provided its limitations were observed. Namely, its ontology included bacteria, symptoms, and treatments and did not include patients, doctors, hospitals, death, recovery, and events occurring in time. Its interactions depended on a single patient being considered. Since the experts consulted by the knowledge engineers knew about patients, doctors, death, recovery, etc., it is clear that the knowledge engineers forced what the experts told them into a predetermined framework. In the present state of AI, this has to be true. The usefulness of current expert systems depends on their users having common sense [5].

2.3 Game playing

You can buy machines that can play master level chess for a few hundred dollars. There is some AI in them, but they play well against people mainly through brute force computation--looking at hundreds of thousands of positions. To beat a world champion by brute force and known reliable heuristics requires being able to look at 200 million positions per second.

Just getting a sequence of words into a computer is not enough. Parsing sentences is not enough either. The computer has to be provided with an understanding of the domain the text is about, and this is presently possible only for very limited domains.

2.4 Computer vision

The world is composed of three-dimensional objects, but the inputs to the human eye and computers' TV cameras are two dimensional. Some useful programs can work solely in two dimensions, but full computer vision requires partial three-dimensional information that is not just a set of two-dimensional views. At present there are only limited ways of representing three-dimensional information directly, and they are not as good as what humans evidently use.

2.5 Speech recognition

In the 1990s, computer speech recognition reached a practical level for limited purposes. Thus United Airlines has replaced its keyboard tree for flight information by a system using speech recognition of flight numbers and city names. It is quite convenient. On the other hand, while it is possible to instruct some computers using speech, most users have gone back to the keyboard and the mouse as still more convenient.

2.6 Automated reasoning

It is an area of computer science and mathematical logic dedicated to understanding different aspects of reasoning. The study of automated reasoning helps produce computer programs that allow computers to reason completely, or nearly completely, automatically. Although automated reasoning is considered a sub-field of artificial intelligence, it also has connections with theoretical computer science, and even philosophy. The most developed subareas of automated reasoning are automated theorem proving (and the less automated but more pragmatic subfield of interactive theorem proving) and automated proof checking (viewed as guaranteed correct reasoning under fixed assumptions). Extensive work has also been done in reasoning by analogy induction and abduction.Automated reasoning can also be thought of as a branch of the enterprise "computerizing math-emetics". That is a larger enterprise, in that there is more to mathematics than proving theorems. For example, making complicated calculations is mathematics, but it is not the same activity as proving theorems, although a proof may include a calculation. In fact, a proof can consist entirely

Of a calculation, but that is usually not a very interesting or beautiful proof, though it can be if there is something unexpected about the calculation. Normally though, a calculation proceeds "mechanically" according to a certain

method that is usually used for that kind of problem, and it isn't really very surprising that such things can be done by computer. We distinguish numerical calculations and symbolic calculations. The latter include algebra and calculus, as well as some more specialized kinds of calculations, for example in number theory. Today, in 2006, there are several good general-purpose programs for symbolic and numerical calculations and many special-purpose ones as well. The subject of symbolic computation has its own journals and conferences. However, this is not automated deduction.

There will be big winners and losers as collaborative technologies, robots and artificial intelligence transform the nature of work. Societies will face further challenges in directing and investing in technologies that benefit humanity instead of destroying it or intruding on basic human rights of privacy and freedom of access to information.

3. What is changing?

3.1 Computing

- Cloud serviceswill interpret aggregated datasets against **patterns** to anticipate tasks, activities, and events.
- Advances in the sheer power of computers will lead to artificial intelligence that becomes progressively smarter.
- Virtual connectivity will enable integration of relevant computing resources to provide users with integrated and seamless services.
- Developments in cloud services will transition computing from a physical experience to a virtual one available to any user via a simple device operating on ubiquitous networks with seamless connectivity.
- Big Data will provide context-awareness capabilities.
- Developments in cloud computingwill transition computing from a physical experience to a virtual one available to any user via a simple device operating on ubiquitous networks with seamless connectivity.
- Boundaries between applications and services will be blurred to a high degree.
- Every item in will be equipped with a computing and communication core.
- Big Data pattern analysiswill take place in the background [6][7].

3.2 Surveillance

- Smart sensors, surveillance cameras, and eavesdropping devices integrated with identity recognition systems will allow law enforcement to track and capture or quarantine individuals who might otherwise cause harm to others in society.
- Organizations with mature security operations functions will often share intelligence, techniques, and process with one another
- Predictive analysis and real-time access to artificial intelligence and tasking in the field will be available on modern mobile devices.
- Users will be able to integrate physical world data and the logical world data to draw conclusions.
- To avoid overwhelming users with choices from the infinite combination of vehicle technologies**,** vehicle templates and capability modules will be evolved within the gaming environments.
- Advancements in the business intelligence field will provide tools that will help retailers better understand consumer behavior by examining behavioralpatterns and overall trends.

3.3 Social

- Societies will face challenges in realizing technologiesthat benefit humanity instead of destroying and intruding on the human rights of privacy and freedom of access to information.
- Surging capabilities of robots and artificial intelligence will see a range of current jobs supplanted.
- Professional roles such as doctors, lawyers and accountants could be replaced by artificial intelligence by the year 2025.
- Low-skill workers will reallocate to tasks that are non-susceptible to computerization.

- All the risks will arise out of human activity from certain technological development in this technology, synthetic biology, nano techno and artificial intelligence**.**

3.4 Business

- There will be big winners and losers as collaborative technologies, robots and artificial intelligence transform the nature of work.
- Data expertise is at least as important and will become exponentially more important.
- The role of a senior manager in a deeply data-driven world is going to shift.
- Information hoarders will slow the pace of their organizations and forsake the power of artificial intelligence while competitors exploit it.
- Judgments about consumers and potential consumers will be made instantaneously.
- Many organizations will put cyber security on par with other intelligence and defense priorities.
- Open source information and artificial intelligence collection will provide opportunities for global technological parity.
- In the future, predictive analytics and artificial intelligence could play an even more fundamental role in content creation.

4. Will society realize the importance of AI?

The basic premise of super intelligent machines who have different priorities than their creators has been in public consciousness for many decades. Arguably even *Frankenstein*, published in 1818, expresses this basic idea, though more modern forms include *2001: A Space Odyssey* (1968), *The Terminator* (1984), *I, Robot* (2004), and many more. As AI progresses, I find it hard to imagine that mainstream society will ignore the topic forever. Perhaps awareness will accrue gradually, or perhaps an AI Sputnik moment will trigger an avalanche of interest. Stuart Russell expects that

Just as nuclear fusion researchers consider the problem of *containment* of fusion reactions as one of the primary problems of their field; it seems inevitable that issues of control and safety will become central to AI as the field matures. Probably most people in Western countries have at least heard of these ideas if not watched or read pieces of fiction on the topic.So why do most people, including many of society's elites, ignore strong AI as a serious issue? One reason is just that the world is really big, and there are many important (and not-so-important) issues that demand attention. Many people think strong AI is too far off, and we should focus on nearer-term problems. In addition, it's possible that science fiction itself is part of the reason: People may write off AI scenarios as "just science fiction," as I would have done prior to late 2005. (Of course, this is partly for good reason, since depictions of AI in movies are usually very unrealistic.) Often, citing Hollywood is taken as a thought-stopping deflection of the possibility of AI getting out of control, without much in the way of substantive argument to back up that stance. For example: "let's please keep the discussion firmly within the realm of reason and leave the robot uprisings to Hollywood screenwriters."

I think it's likely that issues of AI policy will be debated heavily in the coming decades, although it's possible that AI will be like nuclear weapons -- something that everyone is afraid of but that countries can't stop because of arms-race dynamics. So even if AI proceeds slowly, there's probably value in thinking more about these issues well ahead of time, though I wouldn't consider the counterfactual value of doing so to be astronomical compared with other projects in part because society will pick up the slack as the topic becomes more prominent.I am not sure the famous British theoretical physicist Stephen Hawking does irony but it was somewhat ironic that he recently welcomed the arrival of the smarter predictive computer software that controls his speech by warning us that:

The development of full artificial intelligence could spell the end of the human race.

Of course, Hawking is not alone in this view. The serial entrepreneur and technologist Elon Musk also warned last year that. We should be very careful about artificial intelligence. If I had to guess at what our biggest existential threat is, it’s probably that.Both address an issue that taps into deep, psychological fears that have haunted mankind

for centuries. What happens if our creations eventually cause our own downfall? This fear is expressed in stories like Mary Shelley's Frankenstein.

4.1 The AI threat to society

Hollywood has provided many memorable visions of the threat AI might pose to society, from Arthur C. Clarke's 2001: A Space Odyssey through Robocop and Terminator to recent movies such as Her and Transcendence, all of which paint a dystopian view of a future transformed by AI [8][9].

4.2 Other risks to society

There are also more imminent dangers facing mankind such as climate change or the ongoing global financial crisis. These need immediate attention [10]. The Future of Humanity Institute at the University of Oxford has a long list of threats besides AI that threaten our society including:

- Overpopulation.
- Resource depletion
- Nano Technology

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