Research paper on Artificial Intelligence

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ABSTRACT - Artificial Intelligence otherwise known as AI, it is the development and the theory of some computer systems which are able to undertake certain tasks which will normally need the intelligence of humans. The tasks that are normally in need of the human intelligence are the likes of translation of languages, making decisions recognition of speech among others. Good examples of these technologies that fall under the AI are; augmented reality, Virtual Assistants, and robots. On the other hand, employee productivity can also be called workforce productivity. Productivity is evaluated in terms of the output of employees within a given time.

AI systems are capable of adapting their behaviour to a certain degree by analysing the effects of previous actions and working autonomously.

INTRODUCTION

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

AI manifests in a number of forms. A few examples are:

- Chatbots use AI to understand customer problems faster and provide more efficient answers
- Intelligent assistants use AI to parse critical information from large free-text datasets to improve scheduling
- Recommendation engines can provide automated recommendations for TV shows based on users' viewing habits

AI is much more about the process and the capability for superpowered thinking and data analysis than it is about any particular format or function. Although AI brings up images of high-functioning, human-like robots taking over the world, AI isn't intended to replace humans. It's intended to significantly enhance human capabilities and contributions. That makes it a very valuable business asset.

Artificial intelligence allows machines to model, and even improve upon, the capabilities of the human mind. From the development of self-driving cars to the proliferation of smart assistants like Siri and Alexa, AI is a growing part of everyday life. As a result, many tech companies across various industries are investing in artificially intelligent technologies.

WHAT ARE 4 TYPES OF AI?

Artificial intelligence can be categorized into one of four types.

- **Reactive AI** uses algorithms to optimize outputs based on a set of inputs. Chess-playing AIs, for example, are reactive systems that optimize the best strategy to win the game. Reactive AI tends to be fairly static, unable to learn or adapt to novel situations. Thus, it will produce the same output given identical inputs.
- **Limited memory AI** can adapt to past experience or update itself based on new observations or data. Often, the amount of updating is limited (hence the name), and the length of memory is relatively short. Autonomous vehicles, for example, can "read the road" and adapt to novel situations, even "learning" from past experience.
- **Theory-of-mind AI** are fully-adaptive and have an extensive ability to learn and retain past experiences. These types of AI include advanced chat-bots that could pass the Turing Test, fooling a person into believing the AI was a human being. While advanced and impressive, these AI are not self-aware.
- **Self-aware AI**, as the name suggests, become sentient and aware of their own existence. Still in the realm of science fiction, some experts believe that an AI will never become conscious or "alive".

WHAT IS NATURAL LANGUAGE PROCESSING (NLP)?

Natural Language Processing (NLP) makes it possible for computers to understand the human language. Behind the scenes, NLP analyzes the grammatical structure of sentences and the individual meaning of words, then uses algorithms to extract meaning and deliver outputs.

In a nutshell, the goal of Natural Language Processing is to make human language – which is complex, ambiguous, and extremely diverse – easy for machines to understand.

WHAT IS AN AI ALGORITHM?

Essentially, an AI algorithm is an extended subset of machine learning that tells the computer how to learn to operate on its own. In turn, the device continues to gain knowledge to improve processes and run tasks more efficiently. The more we interact with it, the greater it gets at being able to notice your individual preferences.

HISTORY OF ARTIFICIAL INTELLIGENCE

The academic roots of AI, and the concept of intelligent machines, May be found in Greek Mythology. Intelligent artifacts appear in journalism since then, with real mechanical devices actually indicating behavior with some degree of intelligence. After modern computers became available following World War-II, it has become possible to create programs that perform difficult academic tasks.
The study of logic led directly to the discovery of the programmable digital electronic computer, based on the work of mathematician Alan Turing and others. Turing's theory of calculation suggested that a machine, by shuffling symbols as simple as "O" and "1", could replicate any conceivable (imaginable) act of mathematical assumption.
This, along with simultaneous discoveries in neurology, information theory and cybernetics, inspired a small group of researchers to begin to seriously think the possibility of structure an electronic brain.
After several reports criticizing progress in AI, government funding and interest in the field dropped off – a period from 1974–80 that became known as the "AI winter." The field later revived in the 1980s when the British government started funding it again in part to compete with efforts by the Japanese.

The field experienced another major winter from 1987 to 1993, coinciding with the collapse of the market for some of the early general-purpose computers, and reduced government funding.

But research began to pick up again after that, and in 1997, IBM's Deep Blue became the first computer to beat a chess champion when it defeated Russian grandmaster Garry Kasparov. And in 2011, the computer giant's question-answering system Watson won the quiz show "Jeopardy!" by beating reigning champions Brad Rutter and Ken Jennings.

This year, the talking computer "chatbot" Eugene Goostman captured headlines for tricking judges into thinking he was real skin-and-blood human during a Turing test, a competition developed by British mathematician and computer scientist Alan Turing in 1950 as a way to assess whether a machine is intelligent.

But the accomplishment has been controversial, with artificial intelligence experts saying that only a third of the judges were fooled, and pointing out that the bot was able to dodge some questions by claiming it was an adolescent who spoke English as a second language.

IS ARTIFICIAL INTELLIGENCE (AI) A THREAT TO HUMANS

If we focus on what's possible today with AI, here are some of the potential negative impacts of artificial intelligence that we should consider and plan for:

Change the jobs humans do/job automation: AI will change the workplace and the jobs that humans do. Some jobs will be lost to AI technology, so humans will need to embrace the change and find new activities that will provide them the social and mental benefits their job provided.

Political, legal, and social ramifications: As Bostrom advises, rather than avoid pursuing AI innovation, "Our focus should be on putting ourselves in the best possible position so that when all the pieces fall into place, we've done our homework. We've developed scalable AI control methods, we've thought hard about the ethics and the governments, etc. And then proceed further and then hopefully have an extremely good outcome from that." If our governments and business institutions don't spend time now formulating rules, regulations, and responsibilities, there could be significant negative ramifications as AI continues to mature.

AI-enabled terrorism: Artificial intelligence will change the way conflicts are fought from autonomous drones, robotic swarms, and remote and nanorobot attacks. In addition to being concerned with a nuclear arms race, we'll need to monitor the global autonomous weapons race.

THE FUTURE: AI's IMPACT IS EVERYWHERE

Some sectors are at the beginning of AI. Regardless, the impact of artificial intelligence on our present-day lives is hard to ignore:

1. **Education:** Textbooks will get digitized or gotten already with the help of AI. Early-stage virtual instructors support human instructors, and facial analysis measures students' emotions to help determine who's struggling and better tailor the experience to their individual needs.
2. **Healthcare:** In the comparatively **open AI** field of healthcare, drug discovery is sped up and streamlined, diseases are more quickly and accurately diagnosed, virtual nursing assistants monitor patients, andbig data analysis helps create a more accurate patient experience.
3. **Transportation:** Although it could take more time to perfect AIs for transportation, autonomous cars will one day transport us from place to place.
4. **Manufacturing:** AI-powered robots work beside humans to perform a limited range of tasks like stacking and predictive

analysis, assembly, and sensors to keep equipment running smoothly.

5. **Media:** Journalism is providing AI, too, and will continue to benefit from it.

APPLICATIONS OF AI

Artificial Intelligence has various applications in today's society. It is becoming essential for today's time because it can solve complex problems with an efficient way in multiple industries, such as Healthcare, entertainment, finance, education, etc. AI is making our daily life more comfortable and fast.
Following are some sectors which have the application of Artificial Intelligence:

1. AI in Healthcare
   - In the last, five to ten years, AI becoming more advantageous for the healthcare industry and going to have a significant impact on this industry.
   - AI can help doctors with diagnoses and can inform when patients are worsening so that medical help can reach to the patient before hospitalization.

2. AI in Gaming
   - AI can be used for gaming purpose. The AI machines can play strategic games like chess, where the machine needs to think of a large number of possible places.

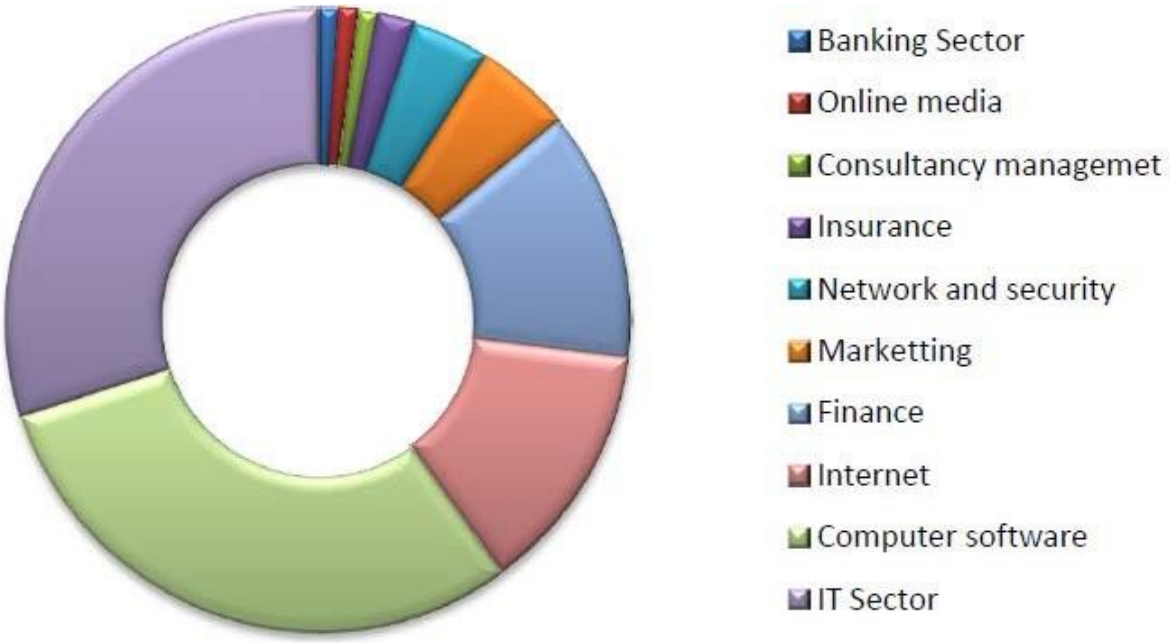
3. AI in Finance
   - AI and finance industries are the best matches for each other. The finance industry is implementing automation, chatbot, adaptive intelligence, algorithm trading, and machine learning into financial processes.

4. AI in Data Security
   - The security of data is crucial for every company and cyber-attacks are growing very rapidly in the digital world. AI can be used to make your data more safe and secure. Some examples such as AEG bot, AI2 Platform,are used to determine software bug and cyber-attacks in a better way.

5. AI in Social Media
   - Social Media sites such as Facebook, Twitter, and Snapchat contain billions of user profiles, which need to be stored and managed in a very efficient way. AI can organize and manage massive amounts of data. AI can analyze lots of data to identify the latest trends, hashtag, and requirement of different users.

6.AI in Robotics:
   - Artificial Intelligence has a remarkable role in Robotics. Usually, general robots are programmed such that they can perform some repetitive task, but with the help of AI, we can create intelligent robots which can perform tasks with their own experiences without pre-programmed.

7.AI in E-commerce
   - AI is providing a competitive edge to the e-commerce industry, and it is becoming more demanding in the e-commerce business. AI is helping shoppers to discover associated products with recommended size, color, or even brand.



Conclusion

First, we should be prepared for a change. Our conservative ways stand in the way of progress. AI is a new step that is very helpful to the society. Machines can do jobs that require detailed instructions followed and mental alertness. AI with its learning capabilities can accomplish those tasks but only if the worlds conservatives are ready to change and allow this to be a possibility.

Secondly, we must be prepared to learn about the capabilities of AI. The more use we get out of the machines the less work is required by us. In turn less injuries and stress to human beings. Human beings are a species that learn by trying, and we must be prepared to give AI a chance seeing AI as a blessing, not an inhibition.

Finally, we need to be prepared for the worst of AI. Something as revolutionary as AI is sure to have many kinks to work out. There are so many things that can go wrong with a new system so we must be as prepared as we can be for this new technology.

AI programs can outperform human experts. Now the great challenge of AI is to find ways of representing the commonsense knowledge and experience that enable people to carry out everyday activities such as holding a wide-ranging conversation, or finding their way along a busy street.

However, even though the fear of the machines are there, their capabilities are infinite Whatever we teach AI, they will suggest in the future if a positive outcome arrives from it. AI are like children that need to be taught to be kind, well mannered, and intelligent. If they are to make important decisions, they should be wise. We as citizens need to make sure AI programmers are keeping thingson the level. We should be sure they are doing the job correctly, so that no future accidents occur.

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