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Philosophy, Requirements and Technologies of Artificial Intelligence

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***Abstract*: Artificial intelligence is a very wide topic to talk about. It is a mapping of the human brain into a computer, to make computers intelligent and predict things. For instance it is mainly used for data representation and data manipulation and pure computer logic to solve and reduce and upgrade the current problems that we are facing. Within the intersection of these issues lies mechanized intelligence.**

Already, robot expert systems are taking over many jobs in industries that are dangerous for or beyond human ability. I highlight that the potential applications of artificial Intelligence are abundant. In this paper we are going to discuss the pros and cons of AI (artificial intelligence) in the present and upcoming technologies. It will also give some information about technologies required in AI and the future of it.

Keywords: Artificial Intelligence, Technologies, Philosophy

I. HISTORY & PHILOSOPHY

The idea of inanimate objects coming to life as intelligent beings has been around for a long time. The ancient Greeks had myths about robots, and Chinese and Egyptian engineers-built automatons.

The beginnings of modern AI can be traced to classical philosophers' attempts to describe human thinking as a symbolic system. But the field of AI wasn't formally founded until 1956, at a conference at Dartmouth College, in Hanover, New Hampshire, where the term "**artificial intelligence**" was coined. After several reports, research and government funding the journey of artificial intelligence wasn't simple; it faced a drop off from the period 1974-1980 that became known as "AI Winter". The field was also revived in 1980 by the British government then again faced a major winter for the period of 1987-1993. 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. In fact, some scientists now plan to develop an updated version of the test. But the field of AI has become much broader than just the pursuit of true, humanlike intelligence.

II. TECHNOLOGIES AND INTRODUCTION TO ARTIFICIAL INTELLIGENCE

Artificial intelligence and its subtopics like deep learning, machine learning and neural networks are used to solve a real-world problem using the following technologies:

A. Machine Learning

Which is used to make the machine understand the code. The main aim is to develop techniques that enable the computer to learn. They are currently developed for prediction and act as an audience management tool

B. Natural Language Generation (NGL)

NGL is the process of producing meaningful phrases and sentences in the form of natural language from some internal representation. It involves text planning, sentence planning, text realization.

C. Speech Recognition

Siri, Alexa, Google Assistant are the best examples for speech recognition. Artificial intelligence is used here to understand and interact with the voice response of human language by devices.

D. Deep Learning Platform

Deep Learning is used to mimic working of the human brain in processing data for use in decision making.

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E. Biometrics

This technology is used to identify and analyze the human attributes and physical features of a body's shape and form.

F. Robotic Process Automation

It uses scripts and mimics the human process and is fed to a robot to complete it effectively.

G. Cyber Defense

It acts as a firewall that detects, prevents and provides timely support to fight against any threat which is yet to affect information and infrastructure.

H. Content Writing

AI helps in content writing such as articles, blogs, reports by suggesting possible words that suit well for sentences and also provide spell correction and grammatical mistakes to their online world.

I. Emotion Recognition

The technology is used to let the software scan the human face using high level image processing and audio processing and now at the point where researchers have found advanced technologies we can also detect "micro expressions", even complex body language and vocal accent that reveals a person's feelings.

J. Image Recognition

As you have heard of software that differentiate between objects in images and videos, they are made using artificial intelligence.

K. Marketing Automation

Marketing automation enables companies to increase engagement and improve performance to grow income faster. It uses software to automate client segmentation, data integration, and campaign management, and streamlines repeated tasks, providing vital minds to get back to doing what they do best.

L. Reinforcement Learning

Reinforcement learning is an area of Machine Learning. It is about taking suitable action to maximize reward in a particular situation. It is employed by various software and machines to find the best possible behavior or path it should take in a specific situation. Reinforcement learning differs from supervised learning in a way that in supervised learning the training data has the answer key with it so the model is trained with the correct answer itself whereas in reinforcement learning, there is no answer but the reinforcement agent decides what to do to perform the given task. In the absence of a training dataset, it is bound to learn from its experience.

The languages used in artificial intelligence are:

1) *Python*- It is used for neural networks and development of NLP solutions thanks to its simple function library and more so ideal structure.
2) *JAVA* – It is not only appropriate for NLP and search algorithms but also for neural networks.
3) *C++* - It is appropriate for machine learning and neural networks.
4) *R* – It is used for Data Mining.
5) *LISP* - LISP, unlike most AI programming languages, is more efficient in solving specific as it adapts to the needs of the solutions a developer is writing. It is highly suitable in inductive logic projects and machine learning.
6) *PROLOG* - Prolog supports basic mechanisms such as pattern matching, tree-based data structuring, and automatic backtracking essential for AI programming. Other than its extensive use in AI projects, Prolog is also used for the creation of medical systems.

And there are other languages also used as per the requirement of the project.

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III.FIGURE

The data insights like data validation, governance, infrastructure, Preprocessing and any other data or statistical knowledge needed for the software Data Science is used in artificial intelligence.

Big Data helps companies analyze existing data and draw meaningful insights from the same which is further used in the creation of a product using artificial intelligence.

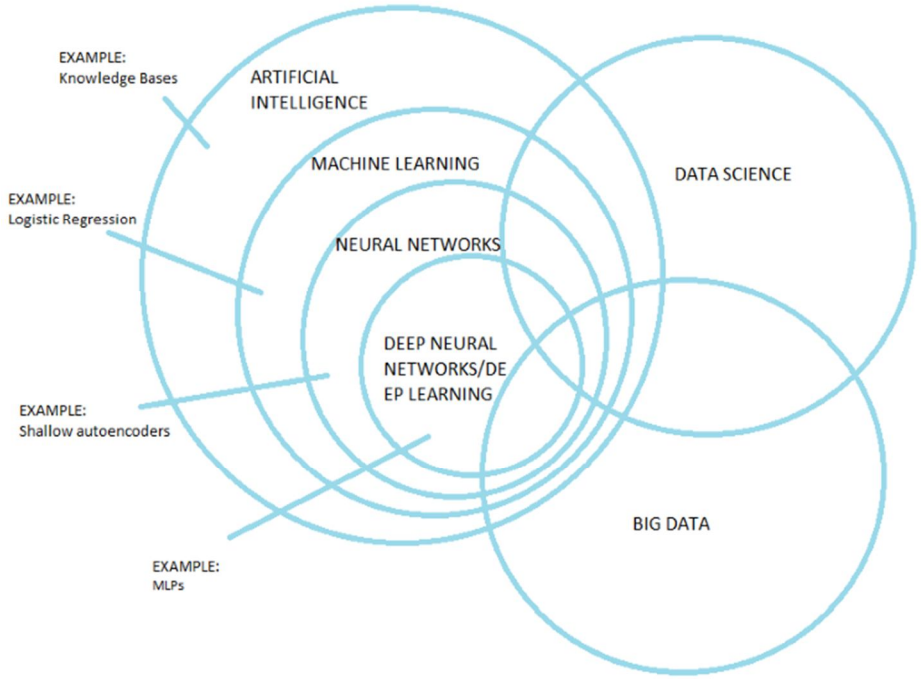

Fig. 1 Chart of introduction to artificial intelligence

IV.CURRENT SCENARIO

The field has been growing at a rapid rate over the past couple of years, and it often is somewhat hard to keep up with the subject, especially if you are not directly involved.

AI is not the new technology, it is a very broad concept and comprises a set of powerful technologies that are emerging under it like deep learning, Reinforcement Learning and Facial Recognition and many more. AI is trending these days and yes, it is the future. AI is helping us in every aspect from surgeries to criminal tracking from autonomous driving to space exploration like you name it and every industry is planning and implementing it, I don't think it is a threat if we can control it, but as a fact everything comes with its advantages and disadvantages. AI is able to answer more and more simple problems (face recognition, object recognition) and do so at a scale and cost that is very compelling. Following are top AI technologies that are currently ruling the industry like Natural Language Processing (NLP), Robotics Process Automation (RPA), Neural Networks, Biometrics, Machine Learning (ML) and Internet of Things (IoT).

V. FUTURE SCOPE

From self-driving cars to healthcare diagnosis, stock market analysis, and even things as insignificant as editing selfies, there's no doubt that artificial intelligence will play an increasingly larger role in day-to-day life as the future unfolds.

It may be a gradual shift as the capabilities of AI rise to the challenges that humans present, but rapid or gradual, the change is coming. As that change takes place, it will likely help to usher in an entirely new era of technology and human advancement in the process.

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VI. CONCLUSION

To be conclusive artificial intelligence has covered fields like reinforcement learning, image and emotion recognition, market automation, content writing and many more at present. The present AI is known as "NARROW AI" if we succeed to reach the stage of artificial general intelligence (AGL) then we would be able to do things that are beyond a normal human capability. Artificial intelligence will play a major role in the future of the world.

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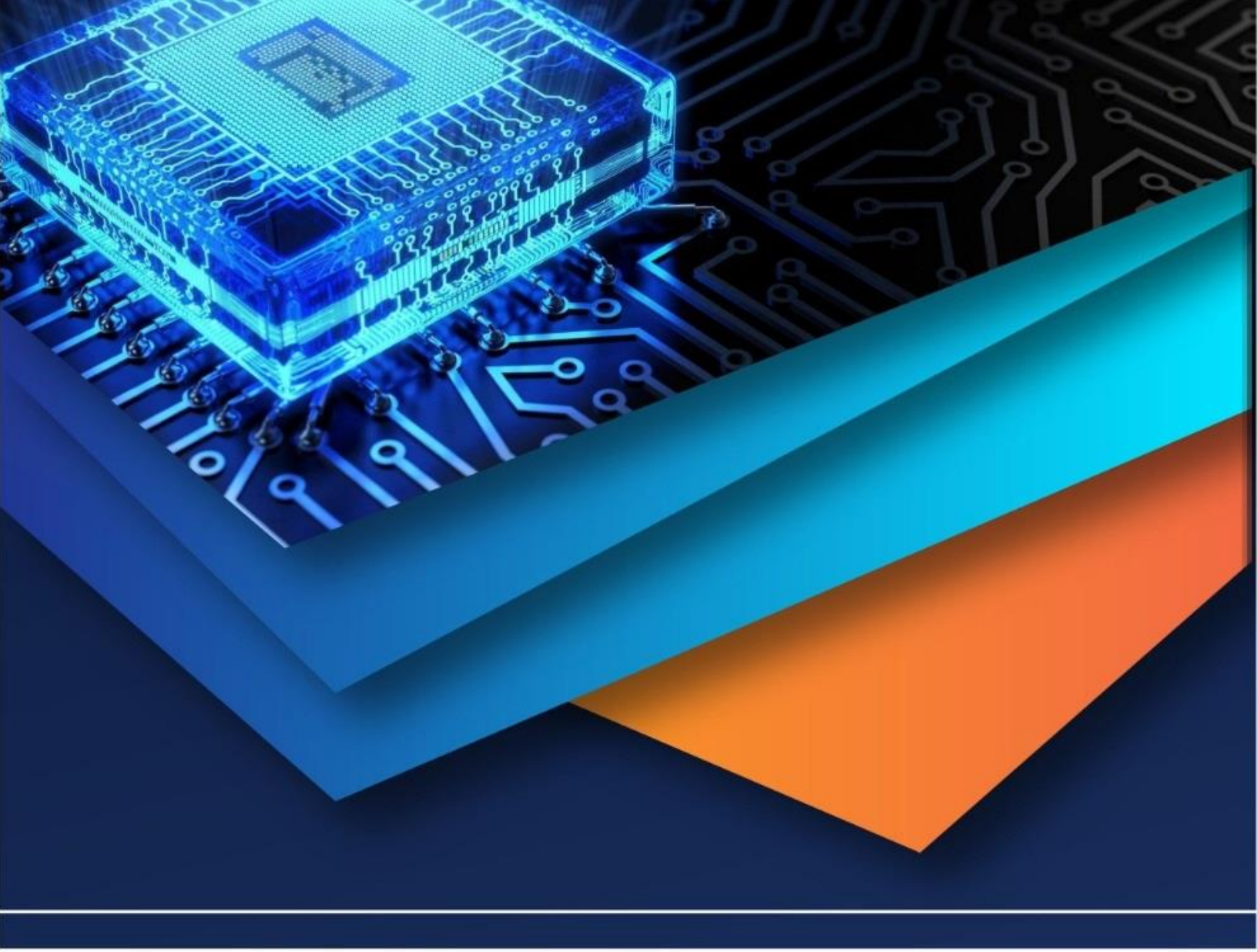

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