IOSR Journal of Engineering (IOSR JEN) **www.iosrjen.org**
ISSN (e): 2250-3021, ISSN (p): 2278-8719
PP 71-73

Artificial Intelligence System

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Abstract: *The intelligence shown by artificial objects like machines/computer systems used in industries to make the work smartly is called Artificial Intelligence. The overall system is used to reduce manual efforts and get the things with accuracy and error free.While exploiting the power of the computer systems, the curiosity of human, lead him to wonder, "Can a machine think and behave like humans do?"Thus, the development of AI started with the intention of creating similar intelligence in machines that we find and regard high in humans.The terminology "Artificial Intelligence" was given by a Professor John McCarthy in 1956. However now-a-days, this is one of the major technology used in the industries. AI is accomplished by studying how human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems.AI will transform the relationship between people and technology, boosting our creativity and skills.So in nutshell, AI is constellation of technologies from machine learning to natural language processing that allows machines to sense comprehend, act and learn.*

Keywords: *Artificial Intelligence (AI).*

I. Introduction

Artificial intelligence is a science and technology based on disciplines such as Computer Science, Biology, Psychology, Linguistics, Mathematics, and Engineering. A major thrust of AI is in the development of computer functions associated with human intelligence, such as reasoning, learning, and problem solving.
Out of the following areas, one or multiple areas can contribute to build an intelligent system.

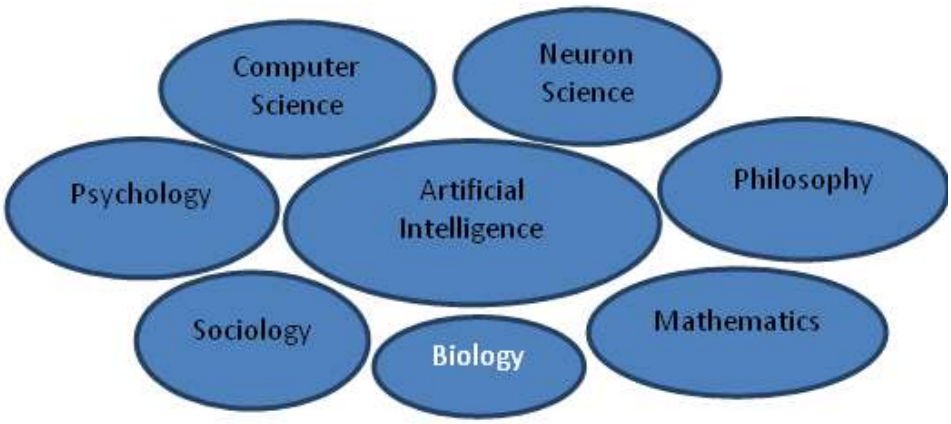

Figure 1: AI Contributors

II. Methodology

To Create Expert Systems − the systems which exhibit intelligent behavior, learn, demonstrate, explain, and advice its users.
To Implement Human Intelligence in Machines − Creating systems that understand, think, learn, and behave like humans.
A computer program with AI is capable of answering the generic questions/queries. These programs can be easily and quickly modifiable. It can be useful in many situations though it is incomplete or inaccurate. This elevate the speed of execution of the complex program it is equipped with.
AI is incorporated in variety of different technologies likes:

a. Automation: that makes system / process functioning automatically and without any human intervention. This is generally a program/scripts which are used to perform frequent tasks needs to be run by human. Majorly Robotics and automation on computer systems jobs.

b. Machine Learning (ML): the technology of getting computer to act without programming but through various algorithms like supervised learning where data sets are labeled in such a way that Patterns can be observed and detected. Also like unsupervised learning where data sets are not labeled but they are differentiate according to similarities or differences. And finally reinforcement learning where data sets are not labeled but after performing an actions /multiple tasks, AI system is giving feedback.

c. Machine Vision: This technology captures and analyzes visual information using camera and digital signal processing. It is used in a range of applications from signature identifications to medical image analysis.

d. Natural Language Processing: This technology is used for the processing of human language. One of the older and best known examples of NLP is SPAM detection which looks at the subject line and text of an email and decides if it's Junk. NLP tasks include text translation, speech recognition.

e. Robotics: this technology focused on design and manufacturing of Robots which are often used to perform tasks that are difficult for humans to perform or perform consistently. Few examples are used in assembly lines for car production or by NASA to move large objects in space.

III. Performance Evaluation

Artificial Intelligence systems has made its way in to number of areas like:

a. AI in Healthcare: This helps to improve patient outcomes and reducing costs. Companies are applying machine learning to make better and faster diagnoses than humans. It understands natural language and is capable of responding to questions asked of it. The system mines patient data and other available data sources to form a hypothesis, which it then presents with a confidence scoring schema. Other AI applications, a computer program used online to answer questions and assist customers, to help schedule follow-up appointments or aid patients through the billing process, and virtual health assistants that provide basic medical feedback.

b. AI in business: Robotic process automation is being applied to highly repetitive tasks normally performed by humans. Machine learning algorithms are being integrated into analytics and CRM platforms to uncover information on how to better serve customers. Automation of job positions has also become a talking point among academics and IT analysts.

c. AI in education: AI can automate grading, giving educators more time. AI can assess students and adapt to their needs, helping them work at their own pace. AI tutors can provide additional support to students, ensuring they stay on track. AI could change where and how students learn, perhaps even replacing some teachers.

d. AI in finance: AI in personal finance applications, collect personal data and provide financial advice. There are many websites or applications which collects personal data of the income source and based on individual income, suggests various investment plans/insurance plans and even calculate and suggests the person's eligibility for financial loans and their repayment strength.

e. AI in law: The discovery process, sifting through of documents, in law is often overwhelming for humans. Automating this process is a more efficient use of time. Startups are also building question-and-answer computer assistants that can sift programmed-to-answer questions by examining the taxonomy and ontology associated with a database.

f. AI in manufacturing: This is an area that has been at the forefront of incorporating robots into the workflow. Industrial robots used to perform single tasks and were separated from human workers, but as the technology advanced that changed.

IV. Conclusion

AI has been dominant in various fields such as −

a. Gaming − AI plays crucial role in strategic games such as chess, poker, tic-tac-toe, etc., where machine can think of large number of possible positions based on heuristic knowledge.

b. Expert Systems − There are some applications which integrate machine, software, and special information to impart reasoning and advising. They provide explanation and advice to the users.

c. Vision Systems − these systems understand, interpret, and comprehend visual input on the computer. For example,

- A spying aeroplane takes photographs, which are used to figure out spatial information or map of the areas.
- Doctors use clinical expert system to diagnose the patient.
- Police use computer software that can recognize the face of criminal with the stored portrait made by forensic artist.

d. Speech Recognition − Some intelligent systems are capable of hearing and comprehending the language in terms of sentences and their meanings while a human talks to it. It can handle different accents, slang words, noise in the background, change in human's noise due to cold, etc.

e. Handwriting Recognition − the handwriting recognition software reads the text written on paper by a pen or on screen by a stylus. It can recognize the shapes of the letters and convert it into editable text.

f. Intelligent Robots − Robots are able to perform the tasks given by a human. They have sensors to detect physical data from the real world such as light, heat, temperature, movement, sound, bump, and pressure. They have efficient processors, multiple sensors and huge memory, to exhibit intelligence. In addition, they are capable of learning from their mistakes and they can adapt to the new environment.

References

[1]. Websites related to AI education and tutorials.