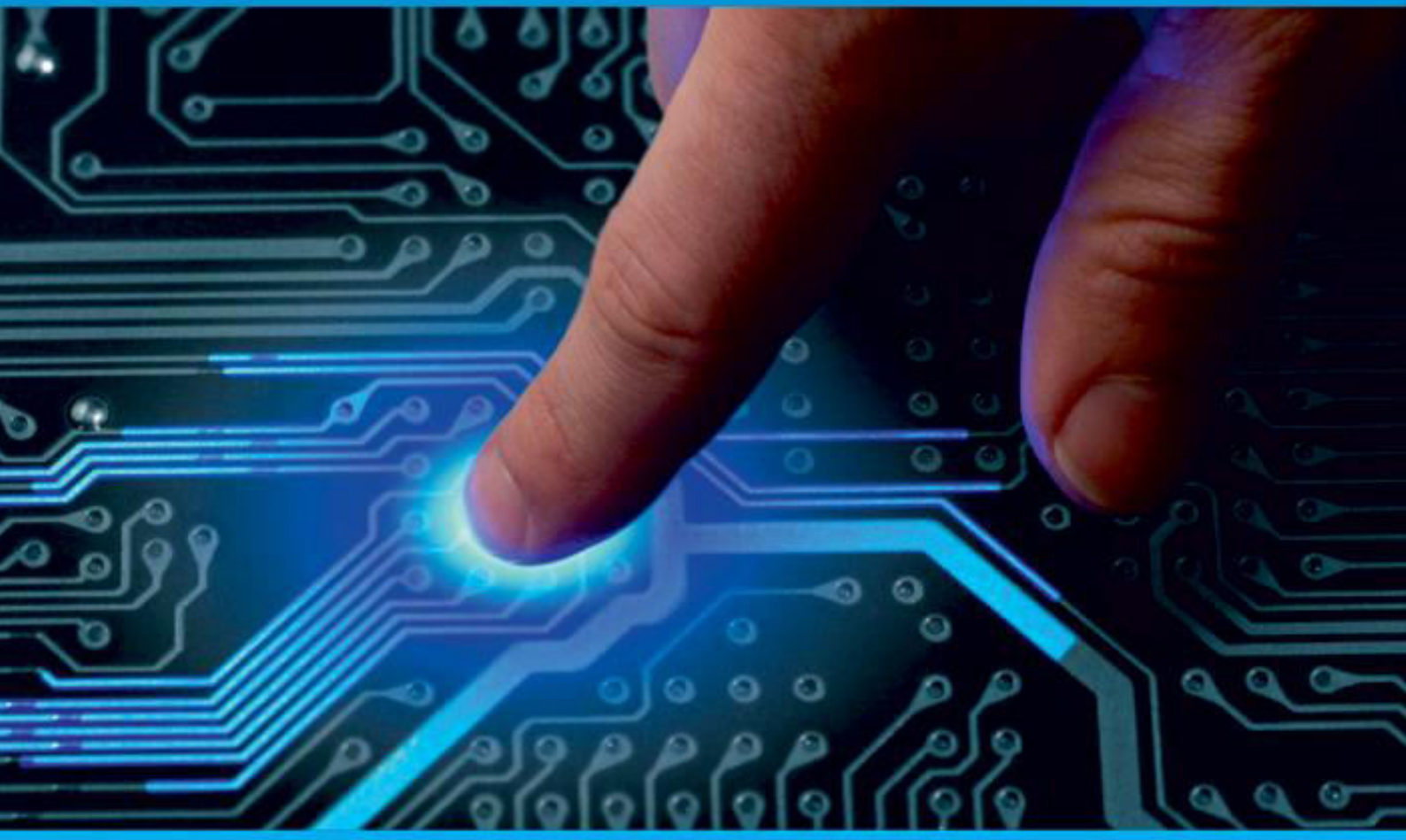
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 9, September 2022

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.165

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165

|| Volume 10, Issue 9, September 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1009013 |

Future of Artificial Intelligence – A Review

V.C.Bagal, R.S.Shetty

Assistant Professor, K.K.Wagh Institute of Engineering Education and Research, Hirabai Haridas Vidyanagri, Amruthdham, Panchavati, Nashik, Maharashtra, India

Student, K.K.Wagh Institute of Engineering Education and Research, Hirabai Haridas Vidyanagri, Amruthdham, Panchavati, Nashik, Maharashtra, India

ABSTRACT: Artificial intelligence is exhibited by artificial entity, a system which is generally assumed to be a computer. AI systems are now in routine use in economics, medicine, engineering and the military, as well as being built into many common home computer software applications, traditional strategy games like computer chess and other video games. I tried to explain the brief ideas of AI and its application in various fields. It cleared the concept of computational and conventional categories. It includes various advanced systems such as Neural Network, Fuzzy Systems and Evolutionary computation. AI is used in typical problems such as Pattern recognition, Natural language processing and more. This system is working throughout the world as an artificial brain. Intelligence involves mechanisms, and AI research has discovered how to make computers carry out some of them and not others. If doing a task requires only mechanisms that are well understood today, computer programs can give very impressive performances on these tasks. Such programs should be considered ``somewhat intelligent''. It is related to the similar task of using computers to understand human intelligence. We can learn something about how to make machines solve problems by observing other people or just by observing our own methods. On the other hand, most work in AI involves studying the problems the world presents to intelligence rather than studying people or animals. AI researchers are free to use methods that are not observed in people or that involve much more computing than people can do. We discussed conditions for considering a machine to be intelligent. We argued that if the machine could successfully pretend to be human to a knowledgeable observer then you certainly should consider it intelligent

KEYWORDS: Artificial intelligence, machine learning, automation, robotics, healthcare

I. INTRODUCTION

Artificial intelligence is a branch of science which deals with helping machines find solution 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. A more or less or flexible or efficient approach can be taken depending on the requirements established, which influences how artificial intelligent behavior appears. Artificial intelligence is generally associated with computer science, but it has many important links with other fields such as math, psychology, cognition , biology and philosophy , among many others . Our ability to combine knowledge from all these fields will ultimately benefit our progress in the quest of creating an intelligent artificial being. AI is mainly concerned with the popular mind with the robotics development, but also the main field of practical application has been as an embedded component in the areas of software development which require computational understandings and modeling such as finance and economics, data mining and physical science. AI in the field of robotics is trying to make a computational model of human thought processes. It is not enough to make a program that seems to behave the way human do. You want to make a program that does it the way humans do it .

II. RELATED WORK

The intellectual roots of ai, and the concept of intelligent machines, may be found in greek mythology. intelligent artifacts appear in literature since then, with real mechanical devices actually demonstrating 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 intellectual tasks.

1950s: The beginnings of artificial intelligence (ai) research with the development of the electronic computer in 1941 and the stored program computer in 1949 the condition for research in artificial intelligence is given, still the observation of a link between human intelligence and machines was not widely observed until the late in 1950. the first

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165

|| Volume 10, Issue 9, September 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1009013 |

working ai programs were written in 1951 to run on the ferranti mark i machine of the university of manchester (uk): a checkers-playing program written by christopherstrachey and a chess-playing program written by dietrichprinz. the person who finally coined the term artificial intelligence and is regarded as the father of the of ai is john mccarthy. in 1956 he organized a conference "the dartmouth college summer ai conference research project on artificial intelligence" to draw the talent and expertise of others interested in machine intelligence of a month of brainstorming. in the following years. ai research centers began forming at the carnegiemellon university as well as the massachusetts institute of technology (mit) and new challenges were faced: 1) the creation of systems that could efficiently solve problems by limiting the search. 2) the construction of systems that could learn by themselves.

1958:john mccarthy (massachusetts institute of technology or mit) invented the lisp programming language.[2]

1960:- By the middle of the 1960s, research in the u.s. was heavily funded by the department of defense and laboratories had been established around the world. ai's founders were profoundly optimistic about the future of the new field: herbertsimon predicted that "machines will be capable, within twenty years, of doing any work a man can do" and marvinminsky agreed, writing that "within a generation. by the 1960's, america and its federal government starting pushing more for the development of ai. the department of defense started backing several programs in order to stay ahead of soviet technology. theu.s. also started to commercially market the sale of robotics to various manufacturers. the rise of expert systems also became popular due to the creation of edwardfeigenbaum and robert k. lindsay'sdendral. dendral had the ability to map the complex structures of organic chemicals, but like many ai inventions, it began to tangle(?) its results once the program had too many factors built into it... the problem of creating 'artificial intelligence' will substantially be solved". the same predicament fell upon the program shrdlu which would use robotics through a computer so the user could ask questions and give commands in english. [2]

1980:- In the early 1980s, ai research was revived (renew, refresh) by the commercial success of expert systems, a form of ai program that simulated the knowledge and analytical skills of one or more human experts. by 1985 the market for ai had reached over a billion dollars. at the same time, japan's fifth generation computer project inspired the u.s and british governments to restore funding for academic research in the field. in the 1990s and early 21st century, ai achieved its greatest successes, albeit somewhat behind the scenes. artificial intelligence is used for logistics, data mining, medical diagnosis and many other areas throughout the technology industry. [2]

1990 :- Fom 1990s until the turn of the century, ai has reached some incredible landmarks with the creation of intelligent agents. intelligent agents basically use their surrounding environment to solve problems in the most efficient and effective manner. in 1997, the first computer (named deep blue) beat a world chess champion. in 1995, the vamp car drove an entire 158 km racing track without any help from human intelligence. in 1999, humanoid robots began to gain popularity as well as the ability to walk around freely. since then, ai has been playing a big role in certain commercial markets and throughout the world wide web. the more advanced ai projects, like fully adapting commonsense knowledge, have taken a back-burner to more lucrative industries. [2]

III. GOALS OF AI

The general problem of simulating (or creating) intelligence has been broken down into a number of specific sub-problems. These consist of particular traits or capabilities that researchers would like an intelligent system to display. The traits described below have received the most attention.

1. Deduction, reasoning, problem solving:- For difficult problems, most of these algorithms can require enormous computational resources most experience a "combinatorial explosion": the amount of memory or computer time required becomes astronomical when the problem goes beyond a certain size. The search for more efficient problem-solving algorithms is a high priority for AI research. Human beings solve most of their problems using fast, intuitive judgements rather than the conscious, step-by-step deduction that early AI research was able to model. AI has made some progress at imitating this kind of "sub-symbolic" problem solving: embodied agent approaches emphasize the importance of sensorimotor skills to higher reasoning; neural net research attempts to simulate the structures inside the brain that give rise to this skill; statistical approaches to AI mimic the probabilistic nature of the human ability to guess.

2. Knowledge representation:- Knowledge representation and knowledge engineering are central to AI research. Many of the problems machines are expected to solve will require extensive knowledge about the world. Among the things that AI needs to represent are: objects, properties, categories and relations between objects; situations, events, states and time; causes and effects; knowledge about knowledge (what we know about what other people know) and many other, less well researched domains. A representation of "what exists" is an ontology: the set of objects, relations, concepts and so on that the machine knows about. The most general are called upper ontologies, which attempt to provide a foundation for all other knowledge.

3. Planning:- Intelligent agents must be able to set goals and achieve them. They need a way to visualize the future and be able to make choices that maximize the utility (or "value") of the available choices. In classical planning problems,

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165

|| Volume 10, Issue 9, September 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1009013 |

the agent can assume that it is the only thing acting on the world and it can be certain what the consequences of its actions may be. However, if the agent is not the only actor, it must periodically ascertain whether the world matches its predictions and it must change its plan as this becomes necessary, requiring the agent to reason under uncertainty.

4. Natural language processing:- Natural language processing gives machines the ability to read and understand the languages that humans speak. A sufficiently powerful natural language processing system would enable natural language user interfaces and the acquisition of knowledge directly from humanwritten sources, such as Internet texts. Some straightforward applications of natural language processing include information retrieval (or text mining) and machine translation. A common method of processing and extracting meaning from natural language is through semantic indexing. Increases in processing speeds and the drop in the cost of data storage makes indexing large volumes of abstractions of the users input much more efficient.

5. Motion and manipulation:- The field of robotics is closely related to AI. Intelligence is required for robots to be able to handle such tasks as object manipulation and navigation, with sub-problems of localization (knowing where you are, or finding out where other things are), mapping (learning what is around you, building a map of the environment), and motion planning (figuring out how to get there) or path planning (going from one point in space to another point, which may involve compliant motion - where the robot moves while maintaining physical contact with an object)

6. Perception:- Machine perception is the ability to use input from sensors (such as cameras, microphones, sonar and others more exotic) to deduce aspects of the world. Computer vision is the ability to analyze visual input. A few selected sub problems are speech recognition facial recognition and object recognition.

7. Social intelligence:- Affective computing is the study and development of systems and devices that can recognize, interpret, process, and simulate human affects. It is an interdisciplinary field spanning computer sciences, psychology, and cognitive science While the origins of the field may be traced as far back as to early philosophical inquiries into emotion. A motivation for the research is the ability to simulate empathy. The machine should interpret the emotional state of humans and adapt its behavior to them, giving an appropriate response for those emotions. Emotion and social skills play two roles for an intelligent agent. First, it must be able to predict the actions of others, by understanding their motives and emotional states. (This involves elements of game theory, decision theory, as well as the ability to model human emotions and the perceptual skills to detect emotions.) Also, in an effort to facilitate human-computer interaction, an intelligent machine might want to be able to display emotions—even if it does not actually experience them itself—in order to appear sensitive to the emotional dynamics of human interaction.

8. General intelligence:- Most researchers think that their work will eventually be incorporated into a machine with general intelligence (known as strong AI), combining all the skills above and exceeding human abilities at most or all of them. A few believe that anthropomorphic features like artificial consciousness or an artificial brain may be required for such a project. Many of the problems above may require general intelligence to be considered solved

IV. AREAS FOR AI IMPLEMENTATION

Automation:- Automation is the use of machines, control systems and information technologies to optimize productivity in the production of goods and delivery of services. The correct incentive for applying automation is to increase productivity, and/or quality beyond that possible with current human labor levels so as to realize economies of scale, and/or realize predictable quality levels. automation greatly decreases the need for human sensory and mental requirements while increasing load capacity, speed, and repeatability.

Cybernetics:- Cybernetics in some ways is like the science of organization, with special emphasis on the dynamic nature of the system being organized. The human brain is just such a complex organization which qualifies for cybernetic study. It has all the characteristics of feedback, storage, etc. and is also typical of many large businesses or Government departments. Cybernetics is that of artificial intelligence, where the aim is to show how artificially manufactured systems can demonstrate intelligent behavior. •

Hybrid intelligent system :- Hybridization of different intelligent systems is an innovative approach to construct computationally intelligent systems consisting of artificial neural network, fuzzy inference systems, rough set, approximate reasoning and derivative free optimization methods such as evolutionary computation, swarm intelligence, bacterial foraging and so on. The integration of different learning and adaptation techniques, to overcome individual limitations and achieve synergetic effects through hybridization or fusion of these techniques, has in recent years contributed to a emergence of large number of new superior class of intelligence known as Hybrid Intelligence

Intelligent agent:- In artificial intelligence, an intelligent agent (IA) is an autonomous entity which observes through sensors and acts upon an environment using actuators (i.e. it is an agent) and directs its activity towards achieving goals.

Intelligent control:- Intelligent Control or self-organizing/learning control is a new emerging discipline that is designed to deal with problems. Rather than being model based, it is experiential based. Intelligent Control is the amalgam of the

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165

|| Volume 10, Issue 9, September 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1009013 |

disciplines of Artificial Intelligence, Systems Theory and Operations Research. It uses most recent experiences or evidence to improve its performance through a variety of learning schemas, that for practical implementation must demonstrate rapid learning convergence, be temporally stable, and be robust to parameter changes and internal and external disturbances.

Automated reasoning:- The study of automated reasoning helps produce software that allows 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.

Data mining:- Data mining (the analysis step of the "Knowledge Discovery in Databases" process, or KDD), an interdisciplinary subfield of computer science, is the computational process of discovering patterns in large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics, and database systems. The overall goal of the data mining process is to extract information from a data set and transform it into an understandable structure for further use.

Behavior-based robotics:-Behavior-based robotics is a branch of robotics that bridges artificial intelligence (AI), engineering and cognitive science. Its dual goals are: • To develop methods for con- trolling artificial systems, ranging from physical robots to simulated ones and other autonomous software agents • To use robotics to model and understand biological sys- tems more fully, typically, animals ranging from insects to humans. Cognitive robotics.

Developmental robotics:- Developmental Robotics (DevRob), sometimes called epigenetic robotics, is a methodology that uses metaphors from neural development and developmental psychology to develop the mind for autonomous robots. The program that simulates the functions of genome to develop a robot's mental capabilities is called a developmental program.

Evolutionary robotics:- Evolutionary robotics (ER) is a methodology that uses evolutionary computation to develop controllers for autonomous robots • Chatbot:- Chatterbot, a chatter robot is a type of conversational agent, a computer program designed to simulate an intelligent conversation with one or more human users via auditory or textual methods. Internet Relay Chatbot, a set of scripts or an independent program that connects to Internet Relay Chat as a client, and so appears to other IRC users as another user.

Knowledge representation:- Knowledge representation (KR) is an area of artificial intelligence research aimed at representing knowledge in symbols to facilitate inference from those knowledge elements, creating new elements of knowledge. The KR can be made to be independent of the underlying knowledge model or knowledge base system (KBS) such as a semantic network.

V. CONCLUSION

Artificial intelligence allows machines to work efficiently. If the machine could successfully pretend to be human to a knowledgeable observer then you certainly should consider it intelligent. AI systems are now in routine use in various field such as economics, medicine, engineering and the military, as well as being built into many common home computer software applications, traditional strategy games etc. AI is an exciting and rewarding discipline. AI is branch of computer science that is concerned with the automation of intelligent behavior. The revised definition of AI is - AI is the study of mechanisms underlying intelligent behavior through the construction and evaluation of artifacts that attempt to enact those mechanisms. So it is concluded that it works as an artificial human brain which have an unbelievable artificial thinking power.

REFERENCES

[1] Peter Norvig; Stuart Russell, “Artificial Intelligence: A Modern Approach".

[2] Sally Goldman; Yan Zhou, "Enhancing Supervised Learning with Unlabeled Data", Department of Computer Science, Washington University, St.Louis, MO 63130 USA.

[3] NiklasLavesson,"Evaluation and Analysis of Supervised Learning Algorithms and Classifiers", Blekinge Institute of Technology Licentiate Dissertation Series No 2006:04, ISSN 1650-2140, ISBN 91-7295-083-8

[4] ZoubinGhahramani, "Unsupervised Learning", Gatsby Computational Neuroscience Unit, University College Lond Unsupervised”, “Genetic Learning Algorithms”, “Reinforcement Learning and Control", Department of Computer Science, Stanford University,450 Serra Mall, CA 94305, USA.

[5] Girish Kumar jha, "Artificial Neural Networks and its applications" international journal of computer science and issues 2005.

[6] George F Ludger “Artificial Intelligence - Structures and strategies for complex problem solving” 5th Edition, Pearson, 2009.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165

|| Volume 10, Issue 9, September 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1009013 |

[7] http://insight.zdnet.co.uk/hardware/emergingtech/
[8] T.S. Anantharman, M.S. Campbell, F.-h. Hsu, Singular extensions: Adding selectivity to brute-force searching, Artificial Intelligence 43 (1) (1990) 99–110. Also published in: ICCA J. 11 (4) (1988) 135–143

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.165

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details