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A BRIEF ABOUT MACHINE INTELLIGENCE

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ABSTRACT

AI is the science and engineering of making intelligent machine, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to contain itself methods that are biologically observable while no consensual definition of Artificial Intelligence (AI) exists. AI is broadly characterized as the study of computation that allow for perception, reason and action. This paper examines features of artificial intelligence, introduction, history, application, Future of AI .

KEYWORDS: AI, Consensual, Expert system

INTRODUCTION

The intelligence of machines and the branch of computer science that aims to create it, "The study and design of intelligent ". Some say it's putting the human mind into computers. The computational part of the ability the achieve goals in the world . We do not yet fully understand what intelligence consist of. It is the study of the ideas which enable computers to do the things that make people seem intelligent. The central principles of artificial intelligence include such as reasoning , planning, learning, perception and the ability manipulate objects. It is engineering of making in machines ,especially in the computer programs. Computers with the ability to mimic or duplicate the function of the human brain. Artificial intelligence is the study of how computers systems can simulate intelligent processes such as learning , reasoning and understanding symbolic information in context.

The implications and benefits of understanding the brain are many. In addition to advances in the treatment of brain injuries and diseases and advancements in communications technology and computer simulations, understanding the brain will allow the design of intelligent machines with even more significant societal impacts. Already, machines that compute, perform voice or facial recognition, respond to human prompts, and sense and monitor human activity are routine in today's society. The future capabilities of these machines—the limits and extremes of their "intelligence" and their ability to replicate human thinking—are dependent upon the engineer's insight into human intelligence and the workings of the human brain.

So we can say "Artificial Intelligence" is of machine and the branch of computer science which aims to create it. The computational part of the ability to achieve goal in the world.

HISTORY

The modern history of AI can be traced back to the year 1956, when JOHN MCCARTHY proposed the term as the topic for a conference held at Dartmouth College. In 1960s & 1970s the focus of AI research was primarily on the developments KBS or expert systems. "Machines will be capable, within 20 year, of doing any work a man can do." Two year later, MIT research MARVIN MINSKY predicted, "within a generation the problem of creating artificial intelligence will substantially be solved." artificial intelligence innovator HERBERT SIMON, 1965.

COMPARISION BETWEEN HUMAN AND COMPUTER INTELLIGENCE

Normal humans have the same intellectual mechanisms and that difference in intelligence are related to "Quantitative biochemical and physiological conditions ", but computer programs have plenty of speed and memory but there abilities correspond to the intellectual mechanism that program designers understand well enough to put in programs.



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Whenever people do better than computers on some task or computers use a lot of computation to do as well as people, this demonstrates that the program designers. Lack understanding of the intellectual mechanisms required to do the task efficiently.

AI METHODS

AI method can be divided into two broad categories-

- (a) Symbolic AI, which focuses on the development of knowledge based systems(KBS);
- (b) Computational intelligence ,which includes such method neural network (NN),fuzzy systems (FS),and evolutionary computing.

Knowledge based systems (KBS):

A KBS can be defined as a computer system capable of giving advice in a particular domain , utilizing knowledge provided by a human expert . A distinguishing feature of KBS lies in the separation behind the knowledge, which can be represented in a number of ways such as rules, frames , or cases, and the inference engine or algorithm which uses the knowledge based to arrive at a conclusion.

How does artificial intelligence work?

- There are many different approaches to AI. Some are obviously more suited than others in some cases.
- Over the past five decades.AI research has mostly been focusing on solving specific problems.
- Computers are fundamentally well suited to performing mechanical computation using fixed programmed rules.
- Artificial machines perform simple monotonous tasks efficiently and reliably, which humans are ill-suited to.
 - For more complex problems, things get more difficult unlike humans, computers have trouble understanding specific situations and adopting to new situations.
- Artificial intelligence aims to improve machine behavior in taking such complex tasks.

AI LITERATURE REVIEW

Goals:-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.

Deduction ,reasoning, problem solving:-

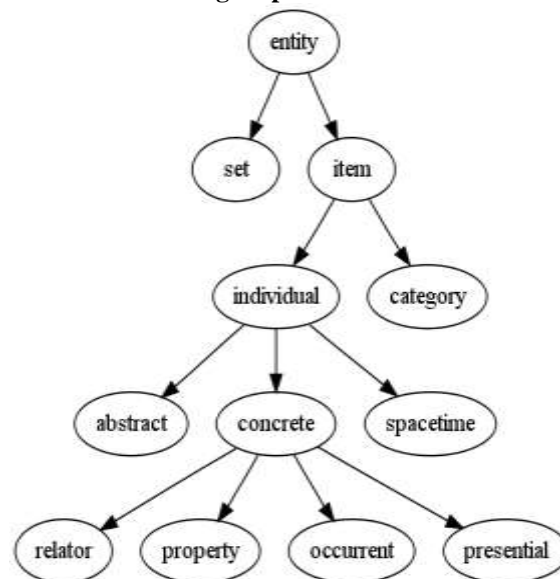
Early AI researchers developed algorithms that imitated the step-by-step reasoning that humans use when they solve puzzles or make logical deduction. By the late 1980s and 1990s, AI research had also developed highly successful methods for dealing with uncertain or incomplete information ,employing concepts from probability and economics.

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 judgments 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 sensory motor 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.

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 thing that AI needs to represent are: object properties, categories and relation between object, situations, events, states and time, causes and effects, knowledge about knowledge about knowledge(what we know about what other people know);and many other, less well researched domain. 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 onto logics ,which attempt to provide a foundation for all other knowledge.

Among the most difficult problems in knowledge representation are:-



An ontology represents knowledge as a set of concepts within a domain and the relationships between those concepts

Default reasoning and the qualification problem:-

Many of the things people know take the form of “working assumptions.” For example, if a bird comes up in conversation, people typically picture an animal that is fist sized ,sings, and files. None of these things are true about all birds. John McCarthy identified this problem in 1969 as the qualification problem: for any commonsense rule that AI researchers care to represent, there tend to be a huge number of exceptions. Almost nothing is simply true or false in the way that abstract logic requires. AI research has explored a number of solutions to this problem.

The breadth of commonsense knowledge .The number of atomic facts that the average person knows is astronomical. Research projects that attempt to build a complete knowledge base of commonsense knowledge (e.g., CYC) require enormous amounts of laborious ontological engineering-they must be built, by hand, one complicated concept at a time. A major goal is to have the computer understand enough concepts to be able to learn by reading from sources like the internet, and thus be able to add to its own ontology. The sub symbolic form of some commonsense knowledge. Much of what people know is not represented as “facts” or “statements” that they could express verbally. For example, a chess master will avoid a particular chess position because it position because it “feels too exposed” or an art critic can take one look at a statue and instantly realize that it is a fake. These are intuitions or tendencies that are represented in the brain non-consciously and sub-symbolically . Knowledge like this informs, supports and provides a context for symbolic, conscious knowledge. As with the related problem of sub-symbolic reasoning , it is hoped that situated AI , computational intelligence, or statistical AI will provide ways to represent this kind of knowledge.

Planning:-

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

A hierarchical control system is a form of control system in which a set of devices and governing software is arranged in a hierarchy.



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EVALUATING PROGRESS

In 1950, Alan Turing proposed a general procedure to test the intelligence of an agent now known as the Turing test. This procedure allows almost all the major problems of artificial intelligence to be tested. However, it is a very difficult challenge and at present all agents fail.

Artificial intelligence can also be evaluated on specific problems such as small problems in chemistry, handwriting recognition and game playing. Smaller problems provide more achievable goals and there are an ever-increasing number of positive results.

APPLICATIONS

- Game playing- This prospered greatly with the Digital Revolution, and help introduce people, especially children to a life of dealing with various type of AI .
- Speech recognition- In the 1990s computer speech recognition reached a practical level for limited purposes. Thus United Airlines has replaced its keyboard 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 on the keyboard and the mouse as still more convenient.
- Understanding natural language-The computer has to be provided with a understanding of the domain the text is about and this is presently possible only for very limited domains. Just getting a sequence of words into a computer is not enough. Passing sentence 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 domain.
- Telecommunication-Many telecommunication companies make use of heuristic search in the management of their workforces. For example BT group has deployed heuristic search in a scheduling application that provides the work schedules of 20000 engineers.
- Robotic systems- Use computer automation and mechanical equipments.

ADVANTAGES OF AI

- It can help improve our way of life .
- Use robots for heavy construction ,military benefits ,or even for personal assistance at private homes.
- There will be less injuries and stress to use human beings .
- Can complete task faster than a human can most likely.
- To discover unexplored things .i.e. outer space
- Less errors and defects.
- Functions is infinite.

DISADVANTAGES OF AI

- Lacks the “human touch”
- Has the ability to replace.
- Can malfunction and do the opposite of what they are programmed to do.

FUTURE OF AI

- In the next ten years technologies in narrow fields such as speech recognition will continue to improve and will reach human levels.
- In ten year AI will be able to communicate with humans in unstructured English using text or voice , navigate in an unprepared environment and will have some rudimentary common sense.
- System that do not possess self-awareness and sentience will at best always be very brittle
- The early years of the 21st century should see dramatic strides forward in this area however.
- However the field of artificial consciousness remains in its infancy.



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CONCLUSION

In this paper we want to provide a case study about AI. It is mainly the branch of science and used to solve majority of the problem or to achieve the sure that development in this field of computer science will change the complete scenario of the world. Now it is the responsibility of creamy layer of engineers to develop this field.

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