KIST COLLEGE OF MANAGEMENT

(Affiliated to Tribhuvan university)

Project Report

on

"Artificial Intelligence"

Under Supervision of

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Submitted To

TRIBHUVAN UNIVERSITY

Institute of Science and Technology

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KIST COLLEGE OF MANAGEMENT

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Institute of Science and Technology

"RealEstateNepal"

A Project Report

Submitted To

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ABSTRACT

Artificial intelligence is exhibited by artificial entity, a system 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 to 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.

INTRODUCTION :-

Artificial intelligence (AI) :-

Artificial intelligence (AI) is defined as intelligence exhibited by an artificial entity. Such a system is generally assumed to be a computer.

Although AI has a strong science fiction connotation, it forms a vital branch of computer science, dealing with intelligent behaviour, learning and adaptation in machines. Research in AI is concerned with producing machines to automate tasks requiring intelligent behavior. Examples include control, planning and scheduling, the ability to answer diagnostic and consumer questions, handwriting, speech, and facial recognition. As such, it has become a scientific discipline, focused on providing solutions to real life problems. 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.

History :-

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 behaviour 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.

1950 - 1960:-

The first working AI programs were written in 1951 to run on the Ferranti Mark I machine of the University of Manchester (UK): a draughts-playing program written by Christopher Strachey and a chess-playing program written by Dietrich Prinz.

1960 – 1970 :-

During the 1960s and 1970s Marvin Minsky and Seymour Papert publish *Perceptrons*, demonstrating limits of simple neural nets and Alain Colmerauer developed the Prolog computer language. Ted Shortliffe demonstrated the power of rule-based systems for knowledge representation and inference in medical diagnosis and therapy in what is sometimes called the first expert system. Hans Moravec developed the first computer-controlled vehicle to autonomously negotiate cluttered obstacle courses.

1980's ONWARDS :-

In the 1980s, neural networks became widely used with the back propagation algorithm, first described by Paul John Werbos in 1974. The 1990s marked major achievements in many areas of AI and demonstrations of various applications. Most notably Deep Blue, a chess-playing computer, beat Garry Kasparov in a famous six-game match in 1997.

Categories of AI :-

AI divides roughly into two schools of thought:

- Conventional AI.
- Computational Intelligence (CI).

Conventional AI :-

Conventional AI mostly involves methods now classified as machine learning, characterized by formalism and statistical analysis. This is also known as symbolic AI, logical AI, neat AI and Good Old Fashioned Artificial Intelligence (GOFAI).

Methods include:

- Expert systems: apply reasoning capabilities to reach a conclusion. An expert system can process large amounts of known information and provide conclusions based on them.
- Case based reasoning
- Bayesian networks
- Behavior based AI: a modular method of building AI systems by hand.

Computational Intelligence (CI) :-

Computational Intelligence involves iterative development or learning (e.g. parameter tuning e.g. in connectionist systems). Learning is based on empirical data and is associated with non-symbolic AI, scruffy AI and soft computing.

Methods include:

- Neural networks: systems with very strong pattern recognition capabilities.
- Fuzzy systems: techniques for reasoning under uncertainty, has been widely used in modern industrial and consumer product control systems.
- Evolutionary computation: applies biologically inspired concepts such as populations, mutation and survival of the fittest to generate increasingly better solutions to the problem. These methods most notably divide into evolutionary algorithms (e.g. genetic algorithms) and swarm intelligence (e.g. ant algorithms).

Typical problems to which AI methods are applied :-

- Pattern recognition
  - Optical character recognition
  - Handwriting recognition
  - Speech recognition
  - Face recognition

- Natural language processing, Translation and Chatter bots
- Non-linear control and Robotics
- Computer vision, Virtual reality and Image processing

- Game theory and Strategic planning

Other fields in which AI methods are implemented :-

- Automation.
- Cybernetics.
- Hybrid intelligent system.
- Intelligent agent.
- Intelligent control.
- Automated reasoning.
- Data mining.
- Behavior-based robotics.
- Cognitive robotics.
- Developmental robotics.
- Evolutionary robotics.
- Chatbot.
- Knowledge Representation.

American Association for Artificial Intelligence (AAAI) :-

Founded in 1979, the American Association for Artificial Intelligence (AAAI) is a nonprofit scientific society devoted to advancing the scientific understanding of the mechanisms underlying thought and intelligent behaviour and their embodiment in machines. AAAI also aims to increase public understanding of artificial intelligence, improve the teaching and training of AI practitioners, and provide guidance for research planners and funders concerning the importance and potential of current AI developments and future directions.

APPLICATIONS OF AI :-

❖ Game Playing :-

You can buy machines that can play master level chess for a few hundred dollars. There is some AI in them, but they play well against people mainly through brute force computation--looking at hundreds of thousands of positions.

❖ Speech Recognition :-

In the 1990s, computer speech recognition reached a practical level for limited purposes. Thus United Airlines has replaced its keyboard tree 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 to the keyboard and the mouse as still more convenient.

❖ Understanding Natural Language :-

Just getting a sequence of words into a computer is not enough. Parsing sentences 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 domains.

❖ Computer Vision :-

The world is composed of three-dimensional objects, but the inputs to the human eye and computer's TV cameras are two dimensional. Some useful programs can work solely in two dimensions, but full computer vision requires partial three-dimensional information that is not just a set of two-dimensional views. At present there are only limited ways of representing three-dimensional information directly, and they are not as good as what humans evidently use.

❖ Expert Systems :-

A ``knowledge engineer'' interviews experts in a certain domain and tries to embody their knowledge in a computer program for carrying out some task. How well this works depends on whether the intellectual mechanisms required for the task are within the present state of AI. One of the first expert systems was MYCIN in 1974, which diagnosed bacterial infections of the blood and suggested treatments. It did better than medical students or practicing doctors, provided its limitations were observed.

❖ Heuristic Classification :-

One of the most feasible kinds of expert system given the present knowledge of AI is to put some information in one of a fixed set of categories using several sources of information. An example is advising whether to accept a proposed credit card purchase. Information is available about the owner of the credit card, his record of payment and also about the item he is buying and about the establishment from which he is buying it (e.g., about whether there have been previous credit card frauds at this establishment).

Conclusion :-

We conclude that 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 work as an artificial human brain which have an unbelievable artificial thinking power.

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