

ARTIFICIAL INTELLIGENCE AND A ALGORITHM IN GAMING TECHNOLOGY

Nisha Babu¹, Priya Khilwani², Richa Nema³

^{1,2,3}Department of Information Technology, Lakshmi Narain College of Technology, Bhopal (India)

ABSTRACT

The world is excelling in its technical stratum and quest to find means to ease out human labor is prevalent. Artificial Intelligence is thus the most striking achievement in order to enhance the quality of work provided by humans. Moreover, through this humans are achieving efficiency and perfection, which were earlier seldom found due to obvious human errors. This paper focuses on the meaning and working of Artificial Intelligence. It also showcases the various areas of application in which AI has brought tremendous changes and growth.

Keywords- *Artificial intelligence, A* Algorithm, Database, Iteration, Neural Network.*

I. INTRODUCTION

Intelligence is the most distinguishing ability of human beings which enables them to gain as well as utilize knowledge and skills. Several attempts have been made in order to clone this trait as it would lead to a breakthrough in technology. John McCarthy, in 1956, coined the term “Artificial Intelligence”. Artificial intelligence suggests the creation of human-like intelligence and brain mechanism by artificial means. It emphasizes on how a human would approach a problem and channelize his brain towards the solution. Artificial Intelligence is a methodology behind creation of machines which greatly resemble humans on the basis of their thinking and analyzing capacity. Human brain functioning is the central logic behind this technology. It mainly focuses on problem solving capacity and technical framework of the brain keeping aside the emotional parameters which are covered under psychology.

Logical reasoning, problem analysis and solution, concept development and learning are the key features of artificial intelligence machines. AI offers efficient programming which is easily modifiable, readily accessible and provides generalized solutions which are highly consistent. However, modification in normal programs can lead to huge structural changes and also solutions are highly specific to the defined problems and not to a generalized problem set. AI is faster and cheap as well.

II. ARTIFICIAL INTELLIGENCE IN MULTIPLE STRATA

2.1 Robotics

Robots are the artificially designed intelligent machines which are created by the integration of mechanical, electrical and computer engineering in order to facilitate high functionality and efficiency for task performance. Robots are kept free from human emotions and thus are away from tiredness, boredom or exhaustion.

2.2 Fuzzy logic

This is a logic greatly based on the capacity of reasoning that a human mind has. Simple logic has either Yes or No.

However, fuzzy logic defines all the possibilities between TRUE or FALSE. It is used in hardware and software, control systems, networks etc.

2.3 Environment perceiving devices

A great contribution has been rendered by AI towards development of devices which can sense and see their surroundings and function accordingly. Earlier it was only possible to pre-feed the outcome of process thus resulting into static outcomes. But perception through AI has brought in dynamism and real-time analysis of problems and generation of solutions.

2.4 Accounting and auditing

AI has a prominent effect on accounting databases in avoiding most of the problems. Recently, the developments in AI have focused on the merging of text and numeric information along with symbolic information, text information is also required to understand the working environment. Artificial intelligent systems along with the accounting databases can allow in study of the huge amount of data even with indirect involvement of decision making team. Natural language interfaces provide the facility so that systems are user friendly. Apart from being user friendly, interfaces also include graphics and other forms of presentation. Predictive analytics allows for the automation of information gathering and the production of complex data, saving time and improving client services. AI provides the flexibility so that we can focus on the decision maker's needs. It also provides the facility to understand the accounting system and explore the transactions and determine the events of the system. The cognitive processes and knowledge models are also a concern of AI.

2.5 Medical science

Medical artificial intelligence is primarily concerned with the construction of AI programs that perform diagnosis and make useful therapies. Unlike medical applications based on different programming methods, such as purely statistical and probabilistic methods, medical AI programs are based on symbolic models of disease entities and their relationship to patient factors and clinical manifestations.

III. ARTIFICIAL INTELLIGENCE TECHNIQUES IN COMPUTER GAMES

The number of people playing games on computers has increased significantly over recent decades. Thus looking at the demand, games have also evolved and have gone through many changes throughout the generations, such as, storytelling, graphical enhancements, online multiplayer, voice acting, video game consoles. With the help of Artificial Intelligence, atmosphere, music, graphics, and amazing characters of the game are brought to life. Artificial intelligence is used to generate such versatile features in non-player characters (NPCs), that it seems to have human-like intelligence. The emergence of new and interesting game genres have prompted the use of many formal AI tools like finite state machines. Real-time strategy games implemented using AI with many objects, incomplete information, path finding problems, real-time decisions and economic planning, among other things but this faced many problems like hacks and cheats, broken path finding. Path finding is, as we get from the name itself, the method for determining the movement of a non-player character from one point to another, taking into

consideration the gaming world object for example trees, buildings. The main problem solved with the help of AI is making the NPC(non-player characters) adaptable to the game environment by guiding their motion and reflex actions, physical characteristics, language cues, and social skills. NPCs have to move in the gaming world in a sophisticated way that is, not getting in the way of cars, taking a possible shortest route to the destination to reach the final goal.

3.1 Methodology used in Gaming

The A* algorithm is the most common basic approach for computing a long-distance route for an NPC. Given a starting point and a destination point, the A* algorithm tries to find the optimal shortest path along the points connects. It step-wise studies the points in increasing distance from the starting point until the destination point is reached but in a way that is feasible. The algorithm uses an estimation component, which has to provide an estimate for the distance between the starting point and the destination point. A* is one of the most popular methods for finding the shortest path between two locations in a mapped area. The A* algorithm is fairly simple. There are two sets, FRINGE and CLOSED. Candidates waiting for being examined are kept in the set called FRINGE. Initially, the FRINGE set contains just one element: the first element. The CLOSED set contains those nodes that have been examined already. Initially, the CLOSED set is empty as no element is examined. Graphically, the FRINGE set act as the "frontier" and the CLOSED set act as the "interior" of the visited areas. Each node also keeps a pointer pointing to the parent node so that we can determine how it was found. After all the repetitions and the goal has been reached, the path is then provided by backtracking from the goal to start. Often this is done by backward iteration through the closed set, moving from the final goal node's parent node to each previous node's parent until the start is found.

IV. CONCLUSION

Artificial intelligence provides an analytical approach majorly concentrating on the basic concepts. Over the years, its growth has gained momentum and it is expected to grow enormously in the near future. This paper exhibits the main concept of Artificial Intelligence along with the various application fields of the same such as accounting, auditing, vision perception and medical areas. The paper focuses on A* algorithm which is one of the main methodologies of gaming through artificial intelligence. AI techniques are greatly used in gaming industry in order to facilitate graphics and make it more appealing. The evolution of artificial intelligence has tremendously changed the functioning of many industries in the globe.

REFERENCES

- [1] Avneet Pannu, Artificial Intelligence and its Application in Different Areas, International Journal of Engineering and Innovative Technology (IJEIT) Volume 4, Issue 10, April 2015
- [2] John D Funge, Artificial Intelligence for computer games : An introduction.
- [3] Wikipedia.org
- [4] <http://www.healthcentral.com/slideshow/8-ways-artificial-intelligence-is-affecting-the-medical-field>