Inspira- Journal of Modern Management & Entrepreneurship (JMME)
ISSN : 2231–167X, GIF: 2.7282, CIF: 5.647, Volume 10, No. 01, January, 2020, pp. 25-29

ARTIFICIAL INTELLIGENCE IN CUSTOMER RELATIONSHIP MANAGEMENT

Dr. Sunil Kanoongo*
Chandrakanta**

ABSTRACT

In this paper, it has been tried to explain Artificial intelligence in Customer relationship management in order to create and manage the relationship between organizations and their customers. The paper goes on to give an overview of AI techniques which is mostly used in CRM and benefits of AI in CRM. AI enables organization's user to discover, predict, recommend, and automate of business processing. Results are improved customer relationship, sustainable competitive advantages and reduced costs of the organization.

KEYWORDS: *Customer Relationship Management (CRM), Artificial Intelligence (AI).*

————————————

Introduction

In this century lots of new technology, innovation and development are going on day by day, one thing which definitely raises our attention is called Artificial Intelligence. AI is the ability of a robot or computer performs intelligent action. AI is the human intelligence processes by computer systems, machines. AI is ordinarily used to the project of developing systems done with the human's specialty intellectual processes, such as discover meaning, learn from experience, the skill to reason, or generalize. These processes cover lesson means the acquisition of knowledge and norm for using the knowledge, reasoning means using the rules to reach goals or sure self-correction, and conclusions. Machine vision, expert systems, and speech recognition are applications of AL.

Since the rising of the digital computer, it has been proof computers can be programmed to carry out very difficult tasks, for example, playing chess with great adroitness. Nowadays AI a crucial part of the technology filed, Challenging problems solve by AL.

AL is a discipline on how to create machine and programing that are adequate in intelligent behavior. AI is the subject of optimism but also AL bear shocking failure. AI define by AI researchers as "the design and study of intelligent agents", in which an agent is a system that cognizes its environment and takes a move that increases its success chances. AI research is genius and highly technical.

Historical Perspective of Artificial Intelligence

Charles Babbage and Ada Lovelace (1822–1859) was the earliest work on a device based on programmable mechanical calculating. Karel Capek (1923), introduced the word "robot" to the English language, and a play named "Rossum's universal robots". Warren Sturgis McCulloch and Walter Pitts (1943), publish of most impressive work "a logical calculus of the ideas immanent in nervous activity" which is base for artificial neural networks. Alan Turing (1950), was first introduced a Turing test to the world, his paper publishes in Mind, machine intelligence measure by Turing test.

* Associate Professor, Maharshi Dayanand Saraswati University, S.M.M. Govt. Girls. College, Bhilwara, Rajasthan, India.

** Research Scholar, Maharshi Dayanand Saraswati University, S.M.M. Govt. Girls. College, Bhilwara, Rajasthan, India.

Claude Shannon (1950), known as “the father of information theory”, and published detailed estimates, analysis of chess, he introduced “Shannon number”. Isaac Asimov (1950), introduce the term “three laws of robotics” it’s is a set of rules of robots ethics. John McCarthy (1956), was computer scientist, known as the father if AL, he was the first time coined name artificial intelligence in second Dartmouth conference, John McCarthy (1958), was created the Lisp programming language in Massachusetts institute of technology. Danny Bobrow (1964), thesis at Massachusetts Institute of technology shows “computers can know the natural language to solve algebra word problems properly”. Joseph Weizenbaum (1965), develop ELIZA at MIT computer science and artificial intelligence laboratory, and natural language processing computer program that converts a dialogue in the English language.

Scientists (1969), at Stanford Research Institute: introduced first mobile robot “Shakey the Robot” proof mix being motion, feeling and problem-solving. The assembly robotics group (1973), introduce Freddy Robot at the University of Edinburgh, Freddy using in scene perception to assemble and locate models. In the 20th century, Hans Moravec built the first autonomous vehicle The Stanford Cart, at Stanford AI lab, which is computer-controlled. Harold Cohen (1985), introduce “AARON’ the autonomous drawing program designed to making art self-control, Garry Kasparov (1997), machine the deep blue chess (IBM) defeats the world chess champion. Blue Brain (2005), is a Swiss project to molecular detail for study the brain. Google (2009), builds a self-driving car. TuomasSandholm (2017), designed Libratus. Libratus is a computer program which is based on an artificial intelligence designed to play poker.

Application of Artificial Intelligence

- **Problem Solving**

In artificial intelligence Problem solving describe as a systematic search by a range of possible works in order to reach a goal or solution.

- **Expert Systems**

In AL expert systems is copy the decision-making ability of human being. Expert systems output is reasoning, advising and explanation.

- **Vision Systems**

Vision systems understand, explain, and incorporation visual input on the computer.

- **Gaming**

AI plays a vital role in strategy games. In strategy games, a machine can think numbers based on heuristic intelligence.

- **Speech Recognition**

It is competent in hearing and understands the sentences and their meanings. It can carry different language, cant words, noise in the background, etc.

- **Intelligent Robots**

Robots have various sensors, potential processors, and huge memory and they can easily adapt to the new environment. They have sensors to detect heat, light, pressure, temperature, sound, and movement. Robots show intelligence and capable of learning from mistakes.

- **Handwriting Recognition**

Handwriting recognition AL systems are reads written text and letters shape. AI has focused mostly on the following Factor of Intelligence: problem-solving, learning, language, perception and reasoning.

- **Learning**

Learning is one of the fundamental building blocks of AI. An AI program with the help of learning improves the knowledge by making scanning about its environment. AI learning processes focused on processing a collection of input-output pairs for a specific function and predicts the outputs for new inputs

- **Language**

A set of grammatical rules for instructing a computer to execute specific tasks. The language used to make various kinds of output. Languages used to create programs that implement specific algorithms. Lisp is the first computer language used for artificial intelligence.

- **Perception**

Perception is the scanned the environment by the medium of various real or artificial, sensory organs, and the scene is disorganized into separate objects in various relationships. The analysis is complicated because an object is different depending on the view, direction, and intensity of illumination.

- **Reasoning**

The reasoning is what we do when we take information that we are given, comparison with what we already know, and then again upon with a conclusion. Simple, while much of our ability to reason is innate, these skills can be taught and improved upon.

Artificial Intelligence in CRM

Customer Relationship Management has grown exponentially over the past decade. CRM is the most efficient way of creating and maintaining relationships with customers. Every organization can improve its CRM through the execution of AI. Traditional CRM is no longer sufficient to be emulative and successful. AI integrated CRM helps the organization to achieve goals, increase in lead conversion, and an increase in sales productivity. AI is a hot trending topic right now in the tech industry and many experts believe that AI is going to change the world.

According to a recent article in the MIT Technology Review, this will be the year that China emerges as a major player in the field of AI. Leaders of the tech industry in China have identified AI and machine learning as their next big areas of innovation. AI is now not only a science-based concept but also betterment each aspect of our lives. It is original and gently governs the technology, with the reason to make our lives easier and businesses operations more efficient. AI can only useful when it's labored or but also at least trying one time ape the human brain. Al procures best solutions which is remove "human error" that is oft believed inexcusable by customers. That's why AI lead the world of business, slowly slither next to CRM of company. In 2018 Gartner research that 20 percent of the business things will be instructed by machines. AI is the coming major billow of innovation, driven by progress in computing power, the potency to store a large quantity of data in the cloud at minimal cost, and easier access to advanced algorithms.

In other words, we can say an AI is having computer systems to understand and play intelligent tasks like humans such as learning from experience, reasoning, understanding language and discovering meaning. This task is helpful in making decisions, learning, an adaptation of process, and applying the process within the set of rules. AI will be more harmful and powerful than any past shift in technology. AI makes CRM smarter which is useful in forecasting about customers of the company. There is a huge demand for AI-powered systems that deliver greater intelligence as companies look to transform for the digital age, Enterprises need to decide the role of powered solutions AI to act as a consultant or autonomously or both.

AI as the application of software using CRM for Task automation, Situational Understanding, Predicting a course of action, Predicting a state of mind or need, And Detecting & alerting doing these in a faster, more accurate, and more cost-effective way versus humans doing it manually. All of this results in superior customer experience and better business results. Ultimately, AI lifts the burden of social activities off the shoulders of the employees and let them focus on building a relationship with customers. Salesforce, Oracle, SAP, and other AI software are useful in organization CRM. Al is beneficiary for Al organizations.

Famous Artificial Intelligence Techniques Used in CRM

- **Predictive Analytics**

Predictions about future events are based on historical data. A practical application of Al finds the best time to engage the customer and the best medium to engage the customer.

- **Machine Learning**

Having the structured data is vital but that doesn't radically mean better decision making. The core driver of AI keeps learning from company CRM large data and introduces intelligent insights to assist human decision making.

- **Natural Language Processing**

The application enables to find patterns in big data including unstructured data like email text, response templates or meeting notes. Know emails that need to be a reply and auto-draft the response, categorize emails by the occasion.

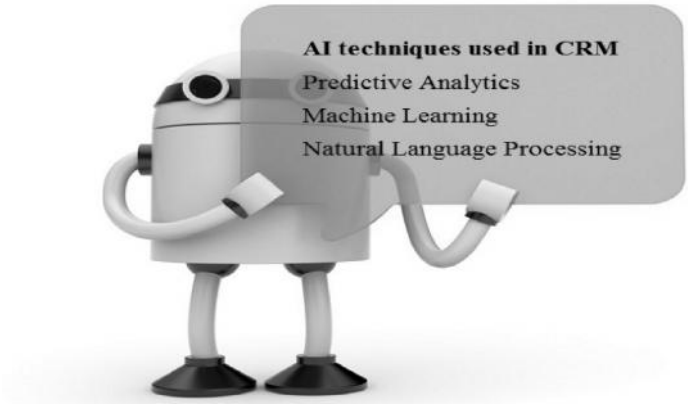

Figure 1: AI Techniques Used in CRM

Benefits of Artificial Intelligence in CRM

- **Knowing of Customers**

Today companies have the burden of data and information about customers which is maintained by CRM departments. AI can analyze a large number of data from all kinds of sources like various databases, social networks, etc., CRM assistance in finding out customer behavior, which is served in understand customers are more profitable for the company. This data help in understand customers better and improve marketing strategies, target campaigns more effectively.

- **Decreasing Paperwork**

In the competitive market, companies are seeking new ways of gaining customers, as well as retain the existing ones. For these companies want much mental stress and a lot of time to work the tasks like manual customer data input, managing invoices, scheduling meetings, responding to emails, regulating deliveries, etc. Artificial intelligence can help employees free up from their routine activities. For business development AI directly take, examine and conclude information from company documents, email and calendars.

- **Improving Sales Efficiency**

AI can be very helpful in marketing strategy. And marketing strategy is most effective when targeted well and executed at the right time. AI not only effectively division customers based on their behavior and history but also can manage customers harmony. AI for CRM can also search for the best time for interplay with different customers and send reminders to get in touch with them. It naturally increases the creativeness of staff, successfully closed deals and make deeper relationships with customers.

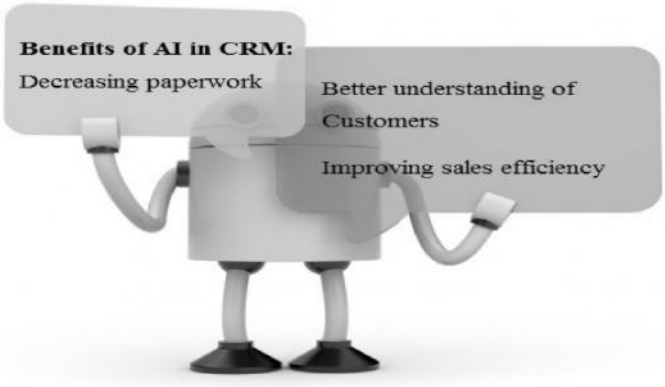

Figure 2: Benefits of AI in CRM

Conclusion

With rapid technology change, Artificial Intelligence enhances CRM capabilities soon. AI not only makes CRM smarter but also help organizations to improve productivity. AI in CRM enables CRM personnel to discover new ideas about customers, faster and more easily, predicts likely outcomes to power smarter decision making, recommends best next steps in a sales process, a customer service, And automates workflows so you can focus on building relationships with every customer. So in organizational CRM AI has performed many tasks like skills of reasoning, planning of organization and behavior of learning.

References

- ✓ Brady, J. M. (1985). Artificial Intelligence and Robotics. Artificial Intelligence, London: Chapman Hall, 26 (1), 137-185.
- ✓ Buchanan, B. G. (2005). A (Very) Brief History of Artificial Intelligence. Ai Magazine, 26 (4), 53-60.
- ✓ Choy, K. L., Lee, W. B., & Lo, V. (2003). Design of an intelligent supplier relationship management system: A hybrid case based neural network approach. Expert Systems with Applications, 24 (2), 225–237.
- ✓ Crevier, D. (1993). AI: The Tumultuous History of the Search for Artificial Intelligence. New York: Basic Books.
- ✓ Kurzweil, R. (1990). The Age of Intelligent Machines. Cambridge, Massachusetts: MIT Press.
- ✓ Newell, A. (1982). The knowledge level. Artificial Intelligence, 18 (1), 82-127.
- ✓ Ngai, E., Xiu, L., & Chau, D. (2009). Application of data mining techniques in customer relationship management: A literature review and classification. Expert Systems with Applications, 36(2), 2592-2602.
- ✓ Norvig, P., & Russell S. j. (2002). Artificial Intelligence: A Modern Approach. New Jersey, Prentice Hall: Upper Saddle River.
- ✓ Premkumar, G.P. (2000). Inter organization systems and supply chain management: An information processing perspective. Information Systems Management 17 (3), 56- 69.
- ✓ Russell, S. J., & Norvig, P. (2003). Artificial Intelligence: A Modern Approach (2nd Ed.). New Jersey, Prentice Hall: Upper Saddle River.
- ✓ Webber, B. L., & Nilsson, N. J. (1981). Readings in Artificial Intelligence. San Mateo,California: Morgan Kaufmann,
- ✓ Winston, P. H. (1992). Artificial Intelligence (3nd Ed.). Reading,Massachusetts: Addison-Wesley.
- ✓ Xu, M., & Walton, J. (2005). Gaining customer knowledge through Analytical CRM. Industrial Management and Data Systems, 105(7), 955-971.
- ✓ Yuan, S.T., & Chang, W.L. (2001). Mixed-Initiative Synthesized Learning Approach for Web Based CRM. Expert Systems with Applications, 20 (2), 187-200.

♦❐♦