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Artificial Intelligence in Various Domains

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ABSTRACT: Artificial Intelligence is a way to make computers and robots think same like human beings. Artificial Intelligence is approach of how the manlike think, decide and work on the problems to solve them and this approach leads us to the AI software system. AI is the branch of computer science which approach the technology in such a way that it automates the work done by the human brain. AI has been the part of computer science field form last 20 years as a tool in various applications like health care, security, weather forecasting etc. Artificial intelligence and its techniques are applied to the large amount of data, algorithms and data sciences. Sometimes, the user fail to understand, grasp the concepts and lacks the knowledge and skills required to get easy with this technology. However, it is difficult to find the reason behind the system software and hardware crash because AI is managed by algorithms and machines. Therefore, it enables the user to make changes or even make possible for them to construct their own algorithms. Artificial intelligence is one of the vital drivers of the industry in encouraging the inclusion of emerging technologies. AI has magnificently ungraded the manufacturing and service system performance. It needs huge expense to implement the system but there are some reasons that strongly support the adoption of AI such as internet of things, blockchain, cloud computing, big data and graphic processing unit. In this paper, we are extensively surveying the uses, applications and techniques of artificial intelligence. In this paper, we will discuss various application of Artificial Intelligence and Machine learning such as used in cancer detection, speech recognition, dengue detection etc.

KEYWORDS: Artificial Intelligence, Machine learning, Big data, techniques, applications.

I.INTRODUCTION

Artificial intelligence is the most demanded and useful branch of computer science. These days AI product are taken as feature in many products. Because of these techniques the overall quality and performance of the product increase. It can be used majorly by two things, Application Programming Interface (API) for software and Frontend for client. It selects the correct prototype that brings out the good conclusion by setting within the obtainable budget and training data. Customer trust are built by AI in most effective manner as it monitors the performance of the system.

AI delivers significant solutions to solve the problems or trouble faced by the society. It plays the major part in strategic games like Cricket, PUBG, etc., which are based on heuristic knowledge (means making the decision over large number of possible sets). Because of this wonderful language AI, it is possible to interact with its and understanding the natural languages so n by us. Speech Recognition is also the key application of AI where they understand the various language tone, background disturbances and identifies the vary in the client's voice due to health disturbances. AI also helps in identifying the fraud detection. For instance, captcha.

AI gadgets are also capable to analyse handwritten text, identify the letters shape and translate it into changeable text. Robotics application of AI where robots can perform the task given by individuals. Artificial Neural network(ANN) is implemented as the decision supporting system in Health Centre with the aim of diagnosis process such as concept processing technology used in EMR software.

Human Resources and recruiting professionals can also use AI in three approaches. These are in selecting/screening



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the ranked candidates with their resumes from the pool, use of job coordinating platforms to predict candidate success in given roles, and automation of repetitive communication tasks.

Heuristic search is utilised by telecommunications companies in the management of their workforce. AI can also use in developing Water Quality Intelligence among sensor technologies. AI also helps entertainment applications to know the end-user likes and dislikes by analysing user activities and showing results accordingly. It uses Machine Learning(ML) algorithms to make this possible. For example, Amazon and Netflix.

Artificial Intelligence seeks to explain, through computation process, all the view of human intelligence. It is capable to connect with environment using sensors and is potential to make decisions without human intervention. It can be seen as an individual property or quality that can be different from all other properties of an individual. Artificial intelligence can be observed in the actions or the potential to perform certain tasks. The primary approach to artificial intelligence is called classical AI or symbolic AI.

In these primary approaches it is predicted that each process in which either a person or machine participation can be conveyed by symbols which are adjustable according to the set of predefined rules. AI is implemented to the experimental or theory applications of a computer's volume to perform identical to humans. AI capacity is generally bifurcated as either strong or weak AI. Strong Artificial Intelligence is a system that accurately solves the problems independently. And if we talk about weak Artificial Intelligence include modern working applications.

Artificial Intelligence is beneficial only when it makes contributions to society. AI has taken the credit-scoring into a new standard, allowing automation, high accuracy, and speed using both the concept of big data and AI algorithms.

1. To improve the management of financial assets artificial intelligence algorithms are used.
2. AI acts as a spy for financial sectors, to prohibit the fraud activities like money laundering.
3. AI is used to indicate select monetary data, and then to deliver it as reports, websites, newsletters, and articles.
4. Artificial intelligence can also be used to go ahead to enhance customer support.

II. SIGNIFICANCE OF THE SYSTEM

The paper mainly focuses on how artificial intelligence is used in various domains .The study of literature survey is presented in section III, analytical review is explained in section IV, section V, and section V discusses the future study and Conclusion.

III. LITERATURE SURVEY

Nitin et al,[1] brought forward a simple neural network model which can detect whether the patient has dengue or not , with the help of CBC test report. The data of that particular patient can be collected from the hospital. It has been seen that the proseed system has a quality of correctly classifying the unseen test cases as well. The proposed system has the accuracy of around 95%. As time is a vital factor in curing dengue, the system help the doctors to save many lives in shorter duration. As a future approach in this direction, the proposed system can be further extended by inaugurating more pattern recognition techniques for the process of classification and the introduction of locality specific factor.

Srivastava et al.,[2] proposed an architecture for enhancing the performance of the information retrieval by AI. The model proposed by Srivastava et al., automatically obtain the knowledge and smartly process the big data and retrieve the information according to the need. The drawback to symmetrically representing the data and matching it with requirements precisely has led to one of the application technique developed by artificial intelligence. Big data is a cluster of different data that is large in volume and still increasing with time. This data is no big in size that no data management tool can handle it proficiently. Big data require adequate strategies to handle it. This proposed model is in great help when we require rapid retrieval of information with high accuracy but the time required but it cannot be predicted. Information retrieving is associated with the search process where the user need to find the subset of the



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information from a large amount of data or knowledge which is relevant for him/her.

Anitha et al.,[3] proposed the model on cyber defence using artificial intelligence. AI helps in protecting against the cyber attacks. This proposed model helps in the defend of the intrusion and various network and cyber attacks. The major goal of this system is to unfold a framework on which numerous multitasking can be mapped. The artificial immune system detect threats against WSN. The major advantage of the proposed system is that it detects any suspicious activity happening in the server and decreases the network load to the server and there are two drawbacks to this model:

1. The sensors used in this system have many limitations in terms of design , function and storage.
2. As AI works on algorithms Hackers can also take help of AI to break the defence and develop the mutation virus that can change the structure of algorithm so, detection can be avoided.

Cancer is a threatening disease with low survival rate. The curing process is long and very expensive due to its high frequency and mortality rate. The accurate and earlier diagnosis of cancer is necessary for the patient's survival. AI has found popular application in the clinical cancer research. Artificial Intelligence has helped a lot in improving the diagnosis of cancer and improving the manlike health in future. Maysam et al.,[4] proposed a model of cancer prediction using Artificial Intelligence. It has become necessary for the new techniques that can correctly diagnose and predict the cancer. The data in this paper is from the patients suffering from the bladder cancer. This model is for three different ANN networks. The methods named averaging and voting are used in this proposed model. The performance of this model is measured by the following parameters like sensitivity, accuracy etc. The outputs show that the ANN methods gives better performance that other methods.

Sathya et al., [5] has proposed the model how AI has helped in speech recognition. When studying the artificial intelligence models, speech recognition is more accurate and makes it easier to identify and understand the human language. Moreover, speech recognition AI models are also used in voice recognition. Speech recognition is used in commercial, business and military purposes. This task is performed by the software named speech recognition engine. This engine works on audio signals and then humans and computers communicates. This model is in great help for for physically challenged people. This model is user friendly and perform the task in efficient manner. The drawback of this model is that we need to take care of environmental conditions.

E.Khanna et al., [6] proposed various black box techniques. His work marks out the AI use in black box testing. Black box testing is a testing software in which the functionalities of applications are tested without taking into the account the internal code , implementation details and internal paths. This type of testing mainly focuses on input and output of the software modules and it purely based on the software requirements and specifications. This type of testing is also known as behavioural testing. Modelling better test cases is very important in black box testing for high quality software. The disadvantage of this model is that it is challenging to design such model. The performance of these models are neither easy to understand as it does not provide an approximation of the importance of the factors in this model nor easy to understand how different factors interact.

Sheetal et al., [7] gives an overview of AI technology used in power systems. AI techniques are popular because it helps in resolving many issues related to power system like controlling, planning, forecasting etc. These AI techniques can face the difficult tasks created by the modern large power system with even more interconnections installed to meet the increasing load demands. The three major AI techniques that are used in modern power systems are Artificial Neural Networks, Fuzzy Logic System, and Expert System Techniques. AI helps in controlling continuous and sound supply of electricity. The dependability of the power was evaluated using deterministic method. The system is highly sound and responsive.



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Yaser et al., [8] gave an outline of use of machine learning in AI. ML is the subset of artificial Intelligence. ML refers to the system which can learn by themselves and get smarter and smarter with time without the intervention of humans. Now a days, almost all AI work involves ML because intelligent behaviour require considerable knowledge. In the proposed outline various machine learning algorithms are discussed which involves feature selection, dimension reduction and elimination of waste data. Algorithms like decision tree , regression, support vector machine etc are discussed in this model. The ML is divided into two levels : construction of base model and optimisation of parameter setting. The machine learning algorithms with artificial intelligence are used in face and pattern recognition, text classification, marketing etc. The algorithms like decision tree, regression, support vector machine etc are discussed in this model.

Ashish [9] proposed Bank cheque signature verification system based on AI. It verifies the electronic signature in banking application with the help of ANN (Artificial Neural Network) algorithm. In this algorithm numerous techniques are used to extract several parameters from the signature that are used for the verification of the signature. The extracted parameters are then given to trained neural network to detect whether the signature are real or fake. It helps in recognising the exact person and give more accuracy in the signature verification procedure.

Gurwinder et .al.,[10] proposed the use of AI in Automated Licensed Number Plate Recognition(ALNPR). System can be used for applications such as travel time measurements, vehicle classification, route choice observations, through traffic surveys etc. The installation would help in improving the incident detection and traffic state for operations on the urban roads. It can be used to enhance traffic control systems. The system would provide information related to travel patterns. Its implementation can help in detecting the stolen vehicles, checking off vehicles at posts, toll plazas , barriers and other entry points. The algorithm used in neural network is based on genetic algorithms. When compared this to conventional techniques, the techniques based on neural network detects the image fast and techniques based on fuzzy logic produces more accurate output.

Sang-Hui et .al,[11] proposed EMG (**Electromyography**) pattern recognition system using AI techniques. EMG is the electrodiagnostic medicine technique which evaluates and records the electrical activity of skeletal muscles. EMG carried out using the instrument **electromyograph** to produce the record called **electromyogram**. This instrument detects electric potential generated my muscles cells when these cells are electrically activate. Using decision algorithm in AI , it can detect the motion command in the muscle cells The advantage of this system over other techniques is that it produces almost accurate result within less computation of time using little subject training and extracted feature parameters. For more accurate and exact EMG pattern identification further work is recommended and has to enhance the decision algorithm with the collected proofs.

Yakubu [12] proposed the work on the role of cyber security and Human technology in the field of digital transformation which mainly put the light on the models of security management. This model leads to the maintenance of security on the existing cyber infrastructure. He gave the procedure for both practical and theoretical analysis based on the cyber security models that are selected for the use. This model does the evaluation of the analysis and return back the understanding of the configuration. Along with it, it also state the desired and undesired configuration. In addition, this framework model allows the change in the configuration in dynamic and agile cyber infrastructure environment with respect to the properties like expected availability.

IV. ANALYTICAL REVIEW

A subset of AI machine learning is known as Natural Language Processing (NLP) permit machines to organise and acknowledge human communication. Text analysis, or text mining, uses NLP to break down text (from documents, social media, internal communications, etc.) and exhibit insights. Because it helps in reading open-ended, unstructured text data, text analysis goes far away statistics and numerical values, into the qualitative results. Text analysis not only answers “What is happening?” but also assist you find out “Why it’s happening?”



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More specifically you can utilise text analysis to detect sentiments and concept in your data and extract keywords, names, specifications, etc. It is done using Sentiment Analysis. It is also called as Opinion mining which uses NLP to automatically categorise text by polarity of opinion (positive, negative, and neutral). It's capable to process large amounts of text data from almost any source to know and acknowledge the feeling and emotion of the writer.

Using this analysis, you can ask open-ended questions in customer surveys so you can analyse responses in much better manner than a simple Yes/No or multiple choice.

AI can be used in many ways. Some of them are :

1. **AI in Science and Research** : It's making lots of betterment in the scientific sector. Artificial Intelligence can handle large amount of data and processes it quicker than human minds. This makes it better for research where the sources handle high data volumes. It finds an ingredient of toothpaste that can cure a dangerous disease like Malaria. Imagine an ordinary substance present in a daily used item that can treat Malaria; it's a significant innovation, no doubt.
2. **AI in Cyber Security**: Cybersecurity is one more field that's profiting from AI. As organisations are transferring their data to IT networks and cloud, the threat of hackers is becoming more important. To retain their data and resources secure, organisations are making huge investments in cybersecurity. The future scope of AI in cybersecurity is drizzling. Many institutions are using AI-based solutions to automate the routine processes present in cybersecurity.
3. **AI in home** : AI has found exceptional place in people's dwelling in the form of Smart Home Assistants. Amazon Echo and Google Home are most desired smart home devices that let you perform various tasks with just voice commands. You can order foodstuff, play music, or even switch on/off the lights in your living room with just a few voice commands. Both depend on Voice Recognition technologies, which are a result of AI. They persistently learn from the commands of their users to know them well and become more efficient. You can utilise these smart assistants for various tasks such as:

- * Playing a song

- * Asking a question

- * Buying something online

- Opening an app
There's a lot of room left for improvement, but surely, the scope of AI in the smart home sector is fruitful.

V. CONCLUSION AND FUTURE WORK

The target of the literature survey is to produce a broad review of the key technologies and the issues to its dissimilar disciplines. Huge number of promises like solutions and optimisation for various types of problem statements are contributed by AI. However, AI gives up key outlook and experimental questions of ethics and administration which plays a significant role with enlarged acquisition of the technologies. AI assure some of the stress between efficiencies, and the complaints pointed to by those advocating higher consideration in its acceptance may appear inappropriate, here the crucial objective is finding the points of conflict, so that we are proficient to re-examine some of the legal which are already exist and regulatory arrangements and build new ones if required. AI will bring out both threats and opportunities (good time) for the future of work. As the humans being are more creative and innovative than machines, the creative work will stand the alike. In the upcoming years, humans may assist machines by concentrating more on creative and innovative work and work alongside machines that will create the chances which is undecided and new professions.

Today the algorithms which are run by AI and machine learning's are more error free and valid in the field of medical. As the old life do not apply anymore it is vital that government will take the action as AI becomes more common in society.



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REFERENCES

- [1]. T. Nitin, S. Apoorvaa, S. Himanshi, and T. Krishna, “Diagnosing dengue: A faster, artificial intelligence based hack”, International Journal Of Engineering And Computer Science, 2017, pg no:21895–21915
- [2]. L. Sharma and V. Srivastava, “Performance enhancement of information retrieval via artificial intelligence”, International Journal of Scientific Research in Science, Engineering and Technology, 2017, pg no:187–192
- [3]. A. Anitha, G. Paul, and S. Kumari, “A cyber defence using artificial intelligence”, International Journal of Pharmacy and Technology, 2016
- [4]. A.-A. Shayma M and A. Maysam, “Prediction of cancer behavior based on artificial intelligence.”, 2017 , pg no: 11-18
- [5]. R. Sathya, M. Pavithra, and G. Girubaa, “Artificial intelligence for speech recognition” , International Journal of Computer Science & Engineering Technology (IJCSET), 2017, pg no: 2229–3345.
- [6]. E. Khanna, “On the applicability of artificial intelligence in black box testing”, International Journal On Computer Science And Engineering, 2017 , pg no : 165-169
- [7]. B. Neha, B. Utkarsha, and S. Yerker,” A brief review on artificial intelligence in power system,” International Journal for Engineering application and technology, 2019 , pg no : 1778-1790
- [8]. A. Heydarzadegan, Y. Nemati, and M. Moradi, “Evaluation of machine learning algorithms in artificial intelligence,l vol, 2015, pg no: 278–286.
- [9]. A. A. Dongare and R. Ghongade, “Artificial intelligence based bank cheque signature verification system”, International Research Journal of Engineering and Technology, 2016.
- [10]. G. Kaur and R. Sharma, “A systematic performance comparison of artificial intelligence techniques used for alnpr system”, An International Journal of Engineering Sciences,2016, pg no: 161–167.
- [11]. S.-H. Park and S.-P. Lee, “Emg pattern recognition based on artificial intelligence techniques”.IEEE transactions on Rehabilitation Engineering, 1998, pg no :400–405.
- [12]. Yakubu Ajiji Makeri, “The Role of Cyber Security and Human Technology Centric for Digital Transformation”, International Journal of Scientific Research in computer science and engineering, 2018, pg no 53-59.