IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 11, May 2023

To Study Artificial Intelligence and Machine Learning Algorithms used in Medical Chatbot

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Abstract: *The goal of this review paper is to examine the many types of algorithms utilised in detection. Artificial intelligence is one of the fascinating and all-encompassing fields of computer science with a promising future. AI tends to mimic human behaviour in machines. "Artificial intelligence" is made up of the words "artificial" and "intelligence," where "artificial" denotes something that is "man-made" and "intelligent" denotes something that has "thinking power." When a machine can possess human-like abilities like learning, reasoning, and problem-solving, this is known as artificial intelligence. The ability of machine learning to recognise or forecast outcomes based on data points includes data points from any domain, including image, text, video, and speech. Science's field of machine learning enables computers to learn without explicit programming. Machine learning is one of the most exciting technologies ever created. As the name suggests, the computer's capacity for learning is what gives it a more human-like character Machine learning is being actively used now, perhaps in a lot more places than one might imagine. There are several uses for machine learning, and one of them with the help of data, machine learning can automatically learn from the past and identify distinct patterns in a dataset. This examination will go into the underlying ideas and principles of machine learning algorithms, examining their advantages, disadvantages, and potential applications. Understanding the nuances of several algorithms can help us choose the best approach for a particular problem or dataset. This review seeks to offer helpful insights into the varied terrain of machine learning algorithms, whether you are a novice or an experienced practitioner*

Keywords: Natural Language Processing (NLP), Convolutional neural network (CNN), Support Vector Machine(SVM), Random Forest, Machine Learning, Supervised Learning

I. INTRODUCTION

Many customer support processes, as well as websites for businesses, organisations, and organisations, are being automated by chat bots. Questions that are more regular or common receive quick answers from the user. We have a suggested chatbot system for patients here. Patients may have many questions about illnesses, medications, and other services. Through this chat bot system, they can quickly receive a response without having to question any random individual. An AI agent that can engage in conversation with a user is a chatbot. The majority use a messenger-style user interface with a user input and a chatbot output Based on what the user has just sent, the chatbot responds to the user's input. It could be a salutation, a topic of discussion, or even a visual. The most fundamental chatbots function by matching user input with a library of prepared dialogues. For instance, if a user says "Thank you," the chatbot will respond with "You're welcome." It is possible to set up the predetermined collection of dialogues to mimic a typical conversation between two people. When a user says something the chatbot does not understand, such as "Thank you" when they mean "Thanks a lot," the chatbot may become confused because it will be trying to match the "Thank you" input with "Welcome." The attempt to specify every possible combination of a user expressing "Thanks" results in a lot of tedious labour. The more sophisticated chatbots of today have natural language processing that can pick up information from user input. They have access to APIs to obtain user information like news, weather, time, etc. They are even able to make reservations and process orders entirely through a chatbot interface. As messaging is at the core of a mobile phone, chatbots are perfectly suited for mobile devices. Since the 2000s, when SMS texts first gained

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popularity, messaging has advanced significantly and is currently in decline. In Ireland, SMS usage fell by 44% between 2011 and 2015. 1.7 billion texts were sent in 2015 as opposed to 3 billion in 2011. [John Hargan, 2015, Killbiller] Despite the fact that SMS usage is declining, individuals are still sending messages; they are just using alternative providers now.

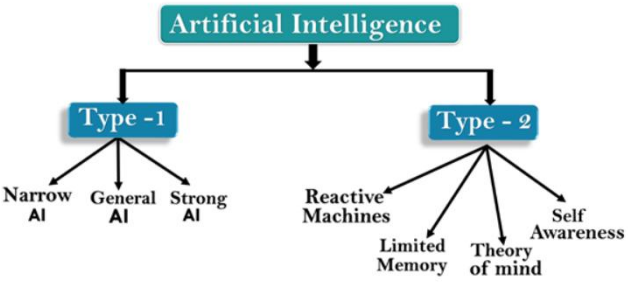
1.1 Abbreviations and Acronyms:

- AI: Artificial intelligence
- ML: Machine Learning
- CNN: Convolutional Neural Network
- NLP: Natural Language processing
- ANN: Artificial Neural Network
- SVM: Support Vector Machine
- RF: Random Forest

1.2 Artificial Intelligence

Building computers and machines with the ability to reason, learn, and behave in ways that would typically need human intelligence or that use data of a size beyond what people can analyse is the focus of the study of artificial intelligence. Computer science, data analytics, statistics, hardware and software engineering, languages, neurology, even philosophy and psychology are just a few of the numerous disciplines that fall under the umbrella of AI.

Types of Artificial Intelligence



AI type-1: Based on Capabilities:

1. Weak AI or Narrow AI:

Narrow AI is a subset of AI that has the intelligence to carry out specific tasks. In the field of artificial intelligence, narrow AI is the most prevalent and readily available AI.

Because it is only trained to accomplish one single task, narrow AI cannot perform beyond its field or boundaries. It is frequently referred to as weak AI as a result. If limited AI goes beyond its capabilities, unanticipated failures can result.

2. General AI:

The concept behind general AI was to create a system that could be smarter and think like a human on its own.

General AI is a type of intelligence that could perform any intellectual work with efficiency like a human.

3. Super AI:

Super AI is a degree of system intelligence where computers are capable of outperforming people at any task thanks to their cognitive abilities. It is a by-product of generic AI

Strong AI should be able to think, reason, solve puzzles, make decisions, plan, learn, and communicate on its own, among other vital traits.

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AI type-2: Based on functionality: -

1. Reactive Machines

- Artificial intelligence in its most basic forms consists of purely reactive machines.
- These AI systems don't keep track of memories or previous experiences for use in the future.

2. Limited Memory

- Machines with less memory can temporarily store some data or memories of the past.
- These devices can only temporarily access saved data.

3. Theory of Mind

- Concept of Mind AI ought to be able to interact socially with people and comprehend their feelings, character traits, and worldviews.
- Although this kind of AI robot has not yet been built, researchers are working hard to advance their capabilities.

4. Self-Awareness

- Self-awareness Future of artificial intelligence is AI. They will be extremely clever and possess consciousness, feelings, and self-awareness.
- These devices will be more intelligent than the human intellect.

1.3 Machine Learning

Computers can learn without being explicitly programmed thanks to the branch of research known as machine learning. Machine learning is one of the most exciting technologies ever created. The ability to learn is what, as the name suggests, gives the computer a more human-like quality Machine learning is being actively used right now, possibly in a lot more ways.

There are two types of Machine learning:

- Un-supervised learning
- Supervised learning

A. Un-Supervised Learning:

Unsupervised learning is a subfield of machine learning where the model learns patterns or structures in unlabelled data without explicit guidance or supervision. Unlike supervised learning, where the model is provided with labelled examples and aims to learn a mapping between input and output, unsupervised learning focuses on finding inherent patterns or relationships within the data itself.

The goal of unsupervised learning is to extract meaningful insights, discover hidden structures, or group similar data points together without any prior knowledge. It is commonly used in tasks such as clustering, anomaly detection, dimensionality reduction, and generative modelling.

B. Supervised Learning:

In Supervised Learning, algorithms learn from labelled data. The algorithm decides the label to use after comprehending the input. Based on patterns, the algorithm chooses which label to assign to new data and links the patterns to the unlabelled new data. For problems where the available data is made up of labelled examples, which means that each data point has an associated label, supervised learning (SL) is a machine learning paradigm. Classification and regression are the two categories into which supervised learning may be separated. Regression makes predictions about a numerical value based on previously observed data, whereas classification makes predictions about the category to which the data belongs.

Supervised learning is a popular approach in machine learning for various tasks, including text detection. In the context of text detection, supervised learning involves training a model using labelled examples, where each example consists of an input image and the corresponding ground truth annotations indicating the location of the text.

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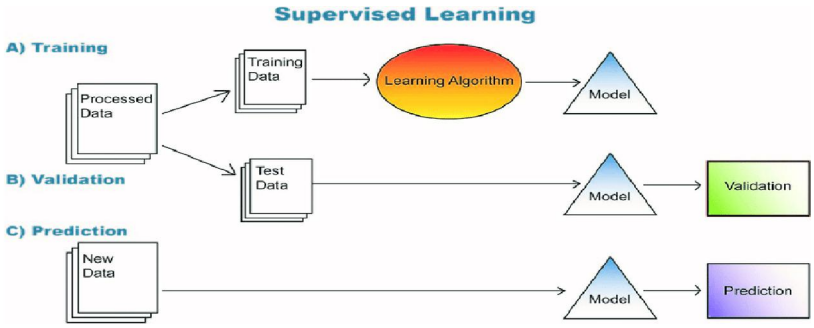


Advantages of Supervised Learning:

- **Labelled Data:** Supervised learning relies on labelled training data, which provides explicit information about the input-output relationship. This labelled data helps the model learn patterns and make accurate predictions.
- **Predictive Accuracy:** Supervised learning algorithms tend to achieve high predictive accuracy, especially when trained on a large and representative dataset. They can generalize well to unseen data, making them useful for various applications.

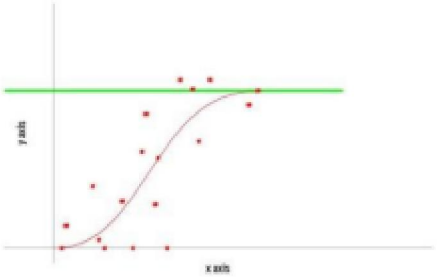
Disadvantages of Supervised Learning:

- **Dependency on Labelled Data:** Supervised learning algorithms require labelled data for training, which can be expensive and time-consuming to obtain. The process of labelling data often relies on human expertise and may introduce biases or errors.
- **Limited Generalization:** The performance of supervised learning models heavily depends on the quality, representativeness, and diversity of the training data. If the training data does not capture the full range of possible scenarios, the model may struggle to generalize to unseen instances accurately.

II. ALGORITHMS OF SUPERVISED LEARNING

2.1 Logistic Regression Algorithm

In essence, the predictive model analysis technique of logistic regression uses discrete values for the output (target) variables for a given collection of characteristics or input (X). This supervised classification approach in machine learning is extremely effective yet straightforward. The logistic regression approach can be used to resolve about 60% of the classification issues encountered world-wide. One of the most popular algorithms for binary classification is logistic regression. A logit function is used to forecast the likelihood that a binary outcome will occur. Given that it uses the log function to estimate outcome probabilities, it is a specific example of linear regression. Simply said, linear regression uses the results of a second variable to predict the scores on a first variable. The projected variable is referred to as the Criterion Variable. The element. They succeeded to record 98.3% as accuracy rate based on this methodology.



Advantages:

- **Simplicity:** Linear logistic regression is relatively simple to understand and implement. It is a straightforward extension of linear regression to predict binary outcomes.

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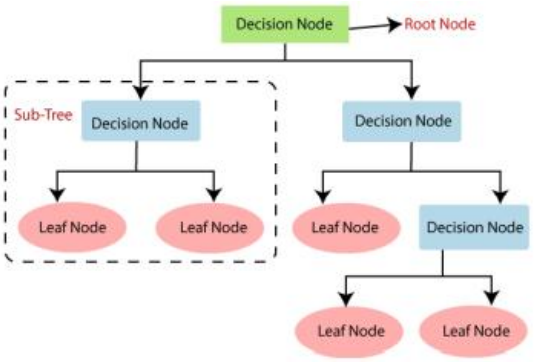
- **Interpretable coefficients:** Linear logistic regression provides coefficient estimates for each predictor variable, allowing you to interpret their impact on the probability of the outcome. These coefficients can provide insights into the relationship between the predictors and the outcome.

Disadvantages:

- **Linearity assumption:** Linear logistic regression assumes a linear relationship between the predictor variables and the log-odds of the outcome. If the relationship is highly nonlinear, the model may not fit the data well and result in poor predictions.
- **Independence of observations**: Linear logistic regression assumes that the observations are independent of each other. If there is dependence or correlation among the observations, the model assumptions may be violated, leading to biased or inefficient coefficient estimates.

2.2 Decision Tree Algorithm:

A supervised learning approach known as a decision tree is frequently employed in classification tasks. It works for both categorical and continuous input and output variables [7] According to the most important differentiator or splitter in the input variables, we divide the sample into two or more homogeneous groups (or sub-populations) with this method. In decision tree internal node represents a test on the attribute, branch depicts the outcome and leaf represents decision made after computing attribute.[2] The general motive of using Decision Tree is to create a training model which can be used to predict class or a value of target variables by learning decision rules inferred from prior data (training data). Compared to other classification
methods, the Decision Tree approach is quite simple to understand. By representing the problem as a tree, the Decision Tree method attempts to find a solution. Each leaf node of the tree corresponds to a class label, whereas each internal node of the tree relates to an attribute [7] Algorithm that produces several useful rules to find incursions. They succeeded to record 97.65% as accuracy rate based on this methodology



Advantages:

- **Interpretable and Easy to Understand:** Decision trees provide a clear and intuitive representation of the decision-making process. The tree structure with nodes and branches can be easily interpreted and visualized. This makes decision trees particularly useful for explaining the reasoning behind the decisions made by the algorithm.
- **Handling Both Numerical and Categorical Data:** Decision trees can handle both numerical and categorical data without requiring extensive pre-processing. They can automatically handle missing values and outliers, making them robust to data imperfections.

Disadvantages:

- **Overfitting:** Decision trees have a tendency to over-fit the training data, especially when the tree becomes too complex or is allowed Overfitting: to grow too deep. Overfitting occurs when the tree captures noise or irrelevant patterns in the data, leading to poor generalization performance on unseen data.

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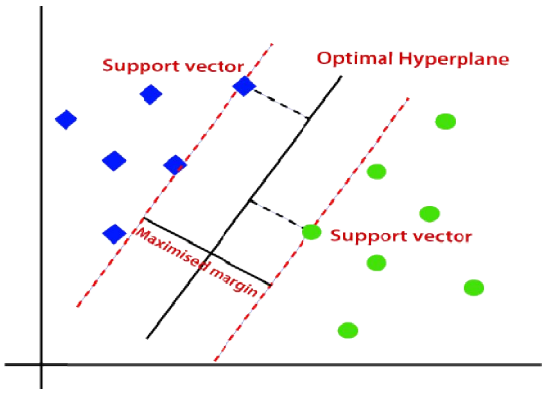
- **Lack of Robustness:** Decision trees are sensitive to small changes in the training data. A slight variation in the data can lead to a completely different tree structure. This lack of robustness makes decision trees prone to high variance.

2.3 SVM

Support Vector Machine (SVM) is a form of supervised learning technique. It is used for both regression and classification purposes however, most of the time it is used in classification problems. Support Vector Machine is a fast and dependable classification method that excels when given a small amount of data [9] The main ideology behind SVM is to create a hyperplane and to classify the dataset given. To isolate the two classes of data points, there are numerous Conceivable Hyperplanes that could be picked. Our objective is to find the plane with the greatest margin, i.e., the greatest separation between data points of the two classes. Expanding the margin enables the future data points to be classified with much more precession.[1] Hyperplanes are those that help in classifying the data. Data points or vectors that fall on either side if the hyperplane can be credited to different classes. If we have two independent features then our hyperplane will be three dimensional. If we have one independent feature then we will have a simple one-dimensional hyperplane below is the figure from [3] that shows how hyperplane is built and can be used to classify the data points. H represents the hyperplane. H1 and H2 are the lines drawn parallel to hyperplane such that the distance between these two i.e., the margin is maximum



Above fig that shows how hyperplane is built and can be used to classify the data points. An algorithm was utilised to provide a variety of useful rules to find intrusions. They succeeded to record 99.60% as accuracy rate based on this methodology

Advantages of SVM:

- **Effective in high-dimensional spaces:** SVM works well even when there are more dimensions than samples. This is known as the "curse of dimensionality" problem, and SVM addresses it through the use of hyperplanes to separate classes.
- **Flexible kernel selection**: SVM supports a variety of kernel functions, including sigmoid, radial basis function (RBF), linear, and polynomial. This flexibility enables SVM to handle various types of data distributions and capture complex relationships.

2.4 K Nearest Neighbour (KNN) Algorithm

The K Nearest Neighbour (KNN) technique calculates the separation between a group of scenarios in the data set and a query scenario. The full training dataset serves as the KNN model. The KNN algorithm will look through the training dataset for the most comparable cases when a prediction is needed for an unobserved data instance. The most comparable examples' prediction attributes are compiled and sent back as the prediction for the unknown instance. The type of data has an impact on the similarity metric. The Euclidean distance can be applied to data with real values. Hamming distance can be applied to category or binary data, among other forms of data. Algorithms that model the problem using data instances (or rows) are known as instance-based algorithms., Instance-based algorithms are those

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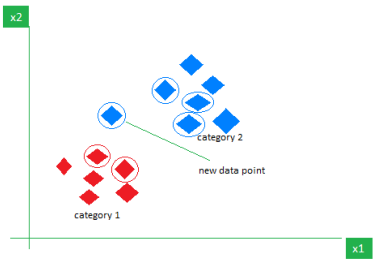
that use data instances (or rows) to model the problem and then use that model to predict outcomes.[4] All training observations are kept in the model through the KNN algorithm, which is an extreme instance-based technique. Its underlying use of competition amongst model components (data examples) in order to arrive at a prediction conclusion makes it a competitive learning algorithm. Each data instance competes to "win" or be the most similar as a result of the objective similarity metric between data instances. An algorithm was utilised to provide a variety of useful rules to find intrusions [11] Algorithm used to generate a number of effective rules to detect intrusions. They succeeded to record 95.75% as accuracy rate based on this methodology.



Advantages:

- **Simplicity:** KNN is a simple and easy-to-understand algorithm. It's straightforward to implement and interpret the results.
- **No training phase:** KNN is a lazy learning algorithm, which means it doesn't require a training phase. The algorithm directly uses the training data during the prediction phase, making it suitable for dynamic or constantly changing datasets

Disadvantages:

- **Computationally expensive:** During the prediction phase, KNN needs to calculate distances between the query point and all the training points. This computation can be expensive, especially for large datasets.
- **Sensitivity to feature scaling:** KNN uses distance metrics (e.g., Euclidean distance) to determine the similarity between data points. If the features have different scales, it can lead to biased results. Feature scaling is often required to normalize the data

2.5 Random Forest

Random Forest algorithm is a supervised classification algorithm. From its name, it is clear that the goal is to haphazardly establish a forest. The more trees a forest has, the more accurate its results will be; conversely, the fewer trees a forest has, the less accurate its results will be. But it's important to keep in mind that building a decision using information gain or an index strategy is not the same as establishing a forest. The procedures of locating the root node and dividing the feature nodes in the Random Forest method operate at random, in contrast to the Decision Tree Approach. The Random Forest algorithm has two stages: creating the random forest and making a prediction using the classifier produced in the first stage. For applications in classification problems, Random Forest algorithm will avoid the over fitting problem and for both classification and regression tasks, the same random forest algorithm can be used. The most crucial features in the training dataset can be found using the Random Forest technique. Random forest takes time to training and testing and also it does not give 96.1% accuracy. For overcome to accuracy part we use support vector machine for increases accuracy of intrusion detection system

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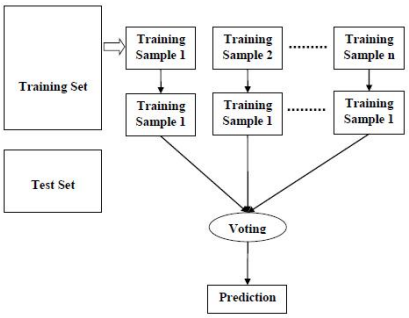

Advantages:

- **Robustness:** Random Forest is highly robust to outliers and noisy data. It averages the predictions from multiple trees, reducing the impact of individual outliers or errors in the training data.
- **High accuracy:** Random Forest typically provides higher accuracy compared to individual decision trees. It can handle both classification and regression tasks effectively
- **Feature importance:** Random Forest provides a measure of feature importance, which helps in understanding the relative significance of different input variables. This information can be useful for feature selection and feature engineering.
- **Handles high-dimensional data:** Random Forest can handle datasets with a large number of input features and still maintain good predictive performance. It automatically selects a subset of features at each split, reducing the impact of irrelevant or redundant features

Disadvantages:

- **Model interpretability:** Random Forest is considered a black box model, meaning it is not as interpretable as simpler models like linear regression. It can be challenging to understand the underlying decision-making process of the ensemble.
- **Computational complexity:** Random Forest can be computationally expensive, especially when dealing with large datasets or a high number of trees. Training and prediction times can be slower compared to simpler models.
- **Overfitting:** While Random Forest is less prone to overfitting than individual decision trees, it can still overfit if the number of trees in the ensemble is too high or if the trees are allowed to grow too deep. Careful tuning of hyper parameters, such as the maximum depth of trees, is required to avoid overfitting

2.6 Neural Network

This algorithm's functions include pattern recognition, sensory data interpretation, and input clustering. Despite their many benefits, neural networks use a lot of processing power. When there are thousands of observations, fitting a neural network might get challenging. The 'black-box' algorithm is another name for it since it might be difficult to understand the reasoning behind the predictions it makes. . An artificial neural network is a common type of training model in AI. It is a model that is loosely based on the human brain.

A neural network is a group of artificial neurons, usually referred to as perceptrons, that serve as computational nodes in the tagging and data analysis processes. Each perceptron in the first layer of a neural network gets the data and makes a decision before sending that information to a number of nodes in the layer above. The term "deep learning" or "deep neural networks" describes training models with more than three layers.The final perceptron's' output allows the neural network to complete the task assigned to it, such as classifying an object or identifying patterns in data.

Types of Neural Networks

Feedforward neural networks (FF) One of the earliest types of neural networks are feedforward neural networks (FF), in which information passes through layers of artificial neurons in a single direction until the desired result is

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obtained. Today, it is believed that most feedforward neural networks are "deep feedforward" and have numerous layers, including multiple "hidden" layers. Feedforward neural networks are frequently used in conjunction with the "backpropagation" error-correction technique, which, to put it simply, starts with the output of the neural network and goes backwards through the network to detect faults to increase the accuracy of the neural network.Deep feedforward neural networks are frequently basic yet effective.

Feedforward neural networks (FF) One of the earliest types of neural networks, feedforward neural networks (FF), work by having data pass through layers of artificial neurons in a single direction until the desired output is obtained. Today, it is believed that most feedforward neural networks are "deep feedforward" and have numerous layers, including multiple "hidden" layers. Feedforward neural networks are frequently used in conjunction with the "backpropagation" error-correction technique, which, to put it simply, starts with the output of the neural network and goes backwards through the network to detect faults to increase the accuracy of the neural network. Deep feedforward neural networks are frequently basic yet effective.

Long/short term memory (LSTM) are an advanced form of RNN that can use memory to “remember” what happened in previous layersRNNs and LTSM vary in that LTSM uses "memory cells" to use past events as a basis for future decisions. In speech detection and prediction, LSTM is frequently employed.

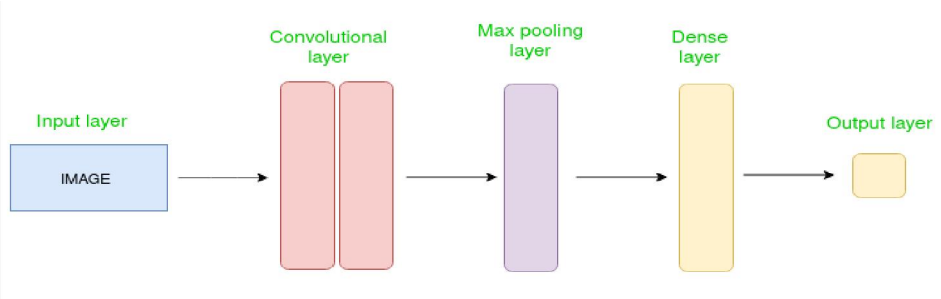
Convolutional neural networks (CNN) Some of the most popular neural networks in contemporary artificial intelligence are convolutional neural networks (CNN). CNNs, which are most frequently employed in image identification, employ multiple discrete layers (a convolutional layer, followed by a pooling layer) that separate and filter various portions of an image before reassembling it (in the fully connected layer). Before looking for more complicated features in later layers, the initial convolutional layers may search for simple features of an image like colours and edges.

A typical Deep Learning neural network architecture in computer vision is this one. A computer can comprehend and analyse visual data or images thanks to the field of artificial intelligence known as computer vision. In machine learning, artificial neural networks perform amazingly well.In many datasets, including those with images, audio, and text, neural networks are used.

An average neural network has three main types of layers:

- **Input Layers:** It is the layer where we input data into our model. The entire number of features in our data (or the number of pixels in the case of a picture) is equal to the number of neurons in this layer.
- **Hidden Layer:** The hidden layer is then fed the input from the input layer. Depending on our model and the volume of the data, there may be numerous hidden levels. The number of neurons in each hidden layer might vary, but they are typically more than the number of features. Each layer's output is calculated by multiplying the output of the layer below it by its learnable weights, adding learnable biases, and then computing the activation function, which makes the network nonlinear.
- **Output Layer:** The output of each class is then converted into the probability score for each class using a logistic function, such as sigmoid or softmax, using the data from the hidden layer as input.

CNN architecture



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Advantages of Convolutional Neural Networks (CNNs):

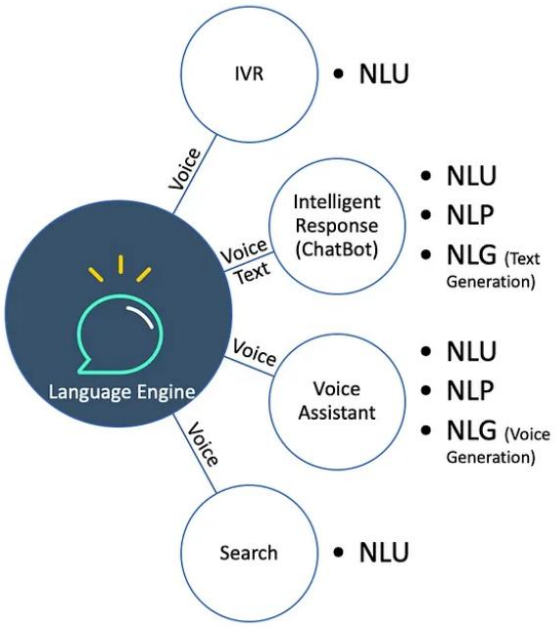
- Capable of finding patterns and features in signals such as photos, movies, and audio.
- translation, rotation, and scaling invariance-resistant.
- No need for manual feature extraction with end-to-end training.
- can handle enormous amounts of data with good precision.

Disadvantages of Convolutional Neural Networks (CNNs):

- Expensive to train computationally and memory-intensive.
- Overfitting may be caused by insufficient data or incorrect regularisation.
- Requires large amounts of labelled data.
- It is tough to understand what the network has learned due to limited interpretability.

Natural Language Processing (NLP)

The ability of a computer program to comprehend spoken and written human language is known as natural language processing (NLP). A part of artificial intelligence (AI) includes it. NLP has enabled computers to understand natural language on par with people. Natural language processing employs artificial intelligence to take real-world input, analyse it, and make sense of it, regardless of whether the language is spoken or written. Computers have reading programs and microphones to collect audio, much as people have a range of sensors like ears to hear and eyes to see. Similar to how humans use their brains to process different inputs, computers have programs to do the same. The input is finally transformed into computer-readable code during processing.



Advantages of NLP: -

- Users can ask questions on any topic and receive a direct answer in a matter of seconds.
- It is easy to implement.
- Using a program is less costly than hiring a person. The aforementioned tasks may take a person two or three times as long to complete as they would on a machine.

Disadvantages of NLP: -

- The user interface of the NLP system has capabilities that enable people to interact with it further.

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- Depending on the amount of data, developing a model from scratch without using a pre-trained model may take a week to get good performance.
- Due to its constrained functionality, the system is only designed to perform a single, narrowly defined task.

III. CONCLUSION

This review paper has provided a comprehensive analysis of various machine learning algorithms and their applications And Advantages and Disadvantages. A Concepts and principles underlying Artificial Intelligence and machine learning, including supervised, unsupervised, and reinforcement learning. It then delved into an extensive discussion of popular machine learning algorithms such as Convolutional Neural Network, Natural Language processing, linear regression, decision trees, support vector machines, random forests Among Others. Each algorithm was critically evaluated based on its strengths, weaknesses, and suitability for different types of data and problem domains. The review also highlighted the achieving optimal algorithm performance

REFERENCES

[1]. Neelam Labhade-Kumar, Dr.Yogesh Kumar Sharma, Dr. Parul Arora ”Key Feature Extraction for Video Shot Boundary Detection using CNN”,International Journal of Recent Technology and Engineering (IJRTE) blue Eye (Scopus),ISSN: 2277-3878, Volume-8 Issue-5, January 2020 Retrieval Number: E6789018520/2020©BEIESP DOI:10.35940/ijrte. E6789.018520, PP 4763-4769.

[2]. Neelam Labhade-Kumar, Dr.Yogesh Kumar Sharma, Dr. Parul Arora,” STUDY OF NEURAL NETWORKS IN VIDEO PROCESSING”, 2019 Journal of Emerging Technologies and Innovative Research(JETIR) March 2019, Volume 6, Issue 3PP-330-335

[3]. Jagruti Khairnar, Priyanka Doifode, Sakshi Kharche, Prof. Neelam Kumar, Falguni Ghatkar,” To Study Different Types of Supervised Learning Algorithm” May 2023, International Journal of Advanced Research in Science, Communication and Technology (IJARSCT), Volume 3, Issue 8, May 2023,PP-25-32

[4]. Siddharth NandakumarChikalkar,"K -NEAREST NEIGHBORS MACHINE LEARNING ALGORITHM",2020 IJCRT | Volume 8, Issue 12 December 2020 | ISSN: 2320-2882PP2400-240

[5]. A. Augello SacconeHumorist Bot: Bringing Computational Humour in a Chat-Bot System by G. Gaglio S. Pilato G.Pages 703–708 of the proceedings from the international conference on "Complex, Intelligent and Software Intensive Systems (CISIS)" held from March 4–7, 2019, in Barcelona, Spain.

[6]. Gambino O. Augello A. Caronia A. Pilato G. Pirrone R. Gaglio S., Real talking head interaction in a virtual setting. Pages. 263-268 in Proceedings of the Conference on "Human System Interactions", Krakow, Poland, May 25–27, 2020.

[7]. Vojtko J. Kacur JRozinaj G., Sphinx 4-based training of the Slovak voice recognition system for GSM networks.Journal of the International Symposium "EL, MAR (Electronics in Marine) focused on Mobile Multimedia", 12-14 September.2020, Zadar, Croatia, pp. 147-150.

[8]. SunMicrosystems, Developer resources for JAVA technology. [Online] http://java.sun.com(Accessed: 30 Oct. 2021) the Apache Software Foundation and the Apache HTTP Server Project.Online] http://www.apache.org (Accessed: 30 Oct. 2019)

[9]. Sun Microsystems, MySQL: The world’s most popular open source database. [Online] http://www.mysql.com(Accessed: 30Oct. 2021)