Nested Learning: The Illusion of Deep Learning Algorithms

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Abstract—**Deep learning is a computer-based modeling approach, composed of multiple processing layers that are used to understand the representation of data with multiple levels of abstraction. This review paper presents the state of the art in deep learning to highlight the major challenges and contributions to computer vision. This work mainly summarizes the current understanding of deep learning and their approach in solving the problems of traditional artificial intelligence. These computational models have improved their applications in many other areas, such as object detection, visual object recognition, voice recognition, face recognition, drone visual systems, virtual assistants and genomics, and drug development. the article also describes current trends and challenges in intensive training of neural networks.**

Index Terms—Neural networks, Convolutional Neural network, Recurrent Neural Network, Long Short-Term Memory and Generative Adversarial Network

I. INTRODUCTION

Human life has been searching for a comfortable life and has changed the stone, the wheel Inventions, the Industrial Revolution, the inventions of electricity and communications, and the IT Revolution. Today, the world is facing a computer revolution and believes that computers are not just slaves, but slaves Intelligent machines. There is now interest in making machines that can see, hear, feel, and think Analyze like a human. Artificial intelligence began in the early 1940s and includes Create machines that mimic human behavior. Later, a subfield of machine learning artificial intelligence developed, using Improve statistical methods for tasks through experience. Deep learning is a subfield of machine learning

The task is performed using the same neural network as the brain Large amounts of data and improved hardware configurations, such as GPUs (graphics processing units) TPU (Tensor Processing Unit) and several learning-intensive algorithms lead to Twenty years of in-depth education. Several reinforcement learning algorithms suitable for text recognition, This paper identifies speeches, images, and videos and discusses their theoretical background. This paper discusses the applications of reinforcement learning algorithms in various fields.

Deep learning evolved a few decades ago from machine learning to train and operate deep neural networks. Deep learning mimics the work of human neurons and the interconnection of nervous system structures that move forward through intellectual and information theories [2]. The huge amount of data available as a result of the increased use of the Internet and database systems has helped the deep-sea, low hardware costs, especially the GPU (graphical processing units), have made it easier for researchers to focus on deep learning. not machine learning. Deep learning algorithms can work simultaneously, as opposed to machine learning algorithms that require functions to be unfolded and modeled separately. An advanced deep neural network architecture can extract functions from unstructured data without much human effort [3]. The article [4] deals with various deep learning applications, such as NLP (natural language processing), audio and speech processing, image processing and social media analysis. NLP includes answering the chatbot, translating text data into another language, identifying emotions, redefining, identifying, and accurately creating them in the comments. Processing visual data consists of classifying images, identifying objects in images, dividing images into different parts, extracting videos, and visual data sets to detect, classify, and understand events. Speech and speech recognition include speech recognition, speech correction, and speech separation.

In the systems recommended by Amazon, we can see deep learning applications, movie recommendations on Netflix, Tesla cars, automatic Facebook-friendly labeling and spam detection in emails. Other areas are traffic congestion

II. RESEARCH OBJECTIVES AND OUTLINE

Although in-depth research is considered to be mostly research, this article aims to create a broader image and share the experience of research with friends. Although some previous studies focus on a certain period of intensive education [36, 70], the novelty of this article is that it focuses on different aspects. The biggest problem of intensive learning, presenting a high-level review of authors and documents seeking research and successful application in an intense neural network, is that today they face intensive study.

The study of large data files is available because data sets are becoming much more diverse and complex, as well as being an important tool for analyzing big data, Our surveys with intensive research in this area clarify the problems and opportunities in key areas of in-depth research. The first concern for integrating equality should be the ability to scale force and adapt. RNS will use different types of depth nets for different domains such as NLP and CNN processing to solve the above problems. This article presents and compares tools. Popular intensive education, such as Kaif, Deep Learning, Tensorfo, Theno and Torch, and intensive training tools, with each adaptation of the technique. Intensive training applications are also being considered. Extended guidelines for intensive teaching to help other researchers.

III. Deep Learning Networks

This section discusses some popular intensive learning networks such as recursive neural networks (RvNN), RNN, CNN and intensive generic models. However, as deep training grows very quickly, many new networks and architectures appear by a few months, which is beyond the scope of this article.

3.1 Recursive Neural Network

RvNN development elements are primarily inspired by the recursive Auto Association Memory (RAAM) [5], an architecture built to process structured objects in its own format, such as trees or graphs. access is to use a data structure to call up a variable size and create a distributed display with a fixed width.

3.2 Recurrent Neural Network

Another widely used and popular algorithm in deep learning, especially in NLP and speech processing, is the RNN [1]. Unlike traditional neural networks, RNNs use continuous information within the network. This feature is very important in many applications where structures embedded in data arrays provide useful information. For example, to understand a word in a sentence, you need to know the context. Therefore, an RNN can be thought of as a short-term memory unit that contains an x-input layer, a hidden (state) layer, and a y-output layer.

3.3 Convolutional Neural Network (CNN)

CNNs are also popular and widely used deep learning algorithms [7]. It has been widely applied in a variety of applications including NLP [6], speech processing [8] and computer vision [9] to name a few. Like traditional neural networks, its structure is inspired by neurons in the animal and human brains. Specifically, we model the visual cortex of the feline brain, which contains complex cell sequences, CNNs have three main advantages. These are parameter sharing, sparse interaction, and equivalent representation. To make the most of the two-dimensional structure of input data (such as image signals), local connections and shared weights within the network are used instead of traditional fully connected networks.

3.4 Deep Generative Networks

There are discussions about the four in-depth networks here, such as DBN, Deep Boltzmann Machine (DBM), Generative Adversarial Network (GAN) and Variational Autoencoder (VAE) DBN [10] are hybrid probability generator models in which general RBMs with no-directional connections are created by the upper layer. Two layers And the ground floor uses a focus connection to receive input from the top layer The lowest layer which isVisible layer Indicates the mode of the input device as a DBN data factor. Learn to recreate the input in an uncontrollable manner. While the layer acts as a function detector on the input. In addition, learning with additional instructors gives DBN the opportunity to work in classifications. DBN hasSimilar to many RBM components. [11] Where the hidden layers in each subnet can be seen as visible layers for the next subnet.

IV. Deep Learning Techniques and Frameworks

A variety of detailed learning algorithms can help improve learning efficiency. It expands the range of applications and simplifies the calculation process. However, the long training period for reinforcement learning models remains a major issue for researchers. The classification accuracy that can also be achieved has also been improved. It is superior because it increases the size of the training data and the size of the model parameters, accelerating the detailed learning process. Therefore, several advanced techniques have been proposed from the literature. In enhancing the learning framework, modular depth optimization techniques that combine the use of learning algorithms are infrastructure allocations and supports developed to improve processes and facilitate development and research at the system level. This section introduces some techniques and frameworks[12].

1 Unsupervised and Transfer Learning
2 Online Learning
3 Optimization Techniques in Deep Learning
4 Deep Learning in Distributed Systems
5 Deep Learning Frameworks

V. Various Applications of Deep Learning

Currently, applications for advanced learning include, but are not limited to, NLP (eg, sentence rating, translation, etc.), Image processing (eg, computer vision). Multimedia data analysis, etc.), voice and audio processing (such as value addition, awareness, etc.), social media analysis and health care [2].

VI. Future and Drawbacks of Deep Learning

Despite catalytic unsupervised learning, pure supervised learning has emerged successively through the system. However, the importance of unsupervised learning has long grown significantly. Because observations are made to discover the structure of the world, animals and humans primarily undergo unsupervised learning. For the active process of human vision, light arrays are selected in an intelligent way using smaller resolutions. Reinforcement learning is used in conjunction with iterative neural networks to determine where to look. This paper provides a comprehensive state-of-the-art review of the current scenario. Deep learning and simple reasoning have long been used for speech and writing recognition, but there are new examples[13]

1. Large amount of data are required for performing better than any other technique
2. Due to complex data modules, it is very expensive to train
3. Deep learning needs hundreds of machines and expensive GPUs for processing data and thus it is costly
4. It requires classi/er for comprehending the output based on mere learning

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