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Deep Learning Networks for New Computer Vision Technologies

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Abstract: **Deep Learning can is a machine learning subject in Artificial Intelligence with networks that have the ability of learning without supervision from unlabeled or unstructured data. It is also referred to as Deep Neural Learning. Deep learning networks have proved to be effective in solving various problems. They have also been effective in various applications in computer technology and thus they have greatly helped in moving the computer technology to another level. Deep learning networks have the ability that is remarkable in deriving meaning from data that is complicated. They also help in detecting complex trends. A network that is trained can be considered to be an expert in analyzing data. The essay examines various ways in which the deep learning networks have been applied and used.**

Keywords: **Deep learning networks, machine learning subject, Artificial Intelligence, computer technology.**

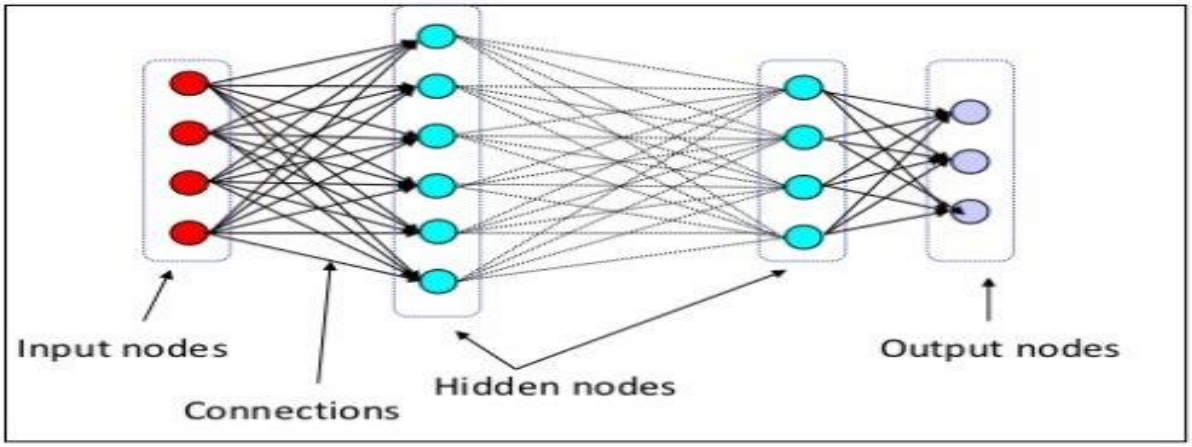
1. INTRODUCTION

Deep Learning can be described to be a machine learning subject in Artificial Intelligence with networks that have the ability of learning without supervision from unlabeled or unstructured data. It is also referred to as Deep Neural Learning. The essay, therefore, seeks to explore more on deep learning networks with the aim of determining how it is a new vision for computer technologies.

Deep learning networks can be described to be algorithms set that are loosely modeled like the human brain. They are designed in a way that they can recognize patterns. They illuminate sensory data via a perception machine (Patterson et al., 2016). They recognize numerical patterns, and they are accommodated in vectors where real world data is translated. Deep learning networks help in classifying and clustering. They help in grouping data that is unlabeled based on their similarities.

Deep learning networks follow a computational structure that is dynamic that do not follow a simple process in order to achieve the output that is desired. Each network intakes multiple inputs that are unique in order to produce a single output.

Deep learning networks have multiple layers that are hidden between the output and input layers. They help in modelling non-linear relationships that are complex. The deep learning networks generate models that are compositional where an object gets to be expressed as primitives layered compositions.



Deep learning networks have been seen to have ability that is remarkable in deriving meaning from data that is complicated. They also help in detecting complex trends. A network that is trained can be considered to be an expert in analyzing data. Therefore, it can help in providing projections in a situation where it is given new circumstances. Therefore, the networks are able to learn various ways through which they can do tasks according to the data that they are given. They also manage to create their own representation or organization from the information that they receive.

The networks take an approach that is different when it comes to solving problems compared to conventional computers. Conventional computers use instructions that have been set when solving problems. The computer cannot manage to solve the problem not unless it knows the specific steps that it has to follow (Sugomori et al., 2017). Therefore, the capability of solving problems for the conventional computer is restricted. However, the deep learning networks have the ability to process information just like the brain of human beings. The networks have a huge number of processing elements that are highly interconnected and they parallel work with the aim of solving specific problems. The networks learn through examples and it is not possible to program them to perform specific tasks. Therefore, the networks have to come up with a way through which they will deal with a problem by themselves and it is not possible to predict their actions.

The deep learning networks have various applications in computer technology. One of them is speech recognition. Large scale speech recognition that is automatic is the most convincing and first deep learning network case that has been seen to be successful (Ronao et al., 2016). All the major speech recognition systems that are commercial for example, Skype, Apple Siri, Voice Search, and Google Now among many others are all based on the networks of deep learning.

Image recognition is also among the applications of deep learning networks. Image learning that is based on deep learning networks has been seen to be superhuman (Yu, 2015). That is because it produces results that are more accurate compared to the results produced by human contestants. Vehicles that have been trained by the networks can now manage to interpret camera views that are 360 degrees. It is also used in Facial Dysmorphology Novel Analysis (FDNA), which helps in analyzing human malformation cases that have a connection to a large genetic syndromes database.

Deep learning networks are also used in processing visual art. The networks have proven to be effective in determining the style period that a certain art have. They have also helped in capturing a painting's style and then applying it in a manner that is visually pleasing to a random photograph (Schmidhuber, 2015). The networks have also proven to be effective in generating imagery that is striking based on input fields that are random.

Processing Natural Language is also one of the applications of deep learning networks. The networks have been applied in the implementation of language models for a long time. The networks, therefore, help in modelling language and also improving the translation of machines (Goodfellow et al., 2016). The networks also help in retrieving information, understanding spoken language, style recognition writing, and detecting paraphrasing and similarity.

Deep learning networks are also applied in toxicology and drug discovery. The networks have been used in predicting bimolecular target, toxic, and off-target effects that are caused by drugs, household products, and nutrient chemicals. Therefore, the use of the deep learning networks has greatly helped in drug tests.

The management of customer relationships is also among the applications. That is because the networks have helped in approximating the importance of various possible actions of direct marketing. Therefore, that helps organizations determine various ways through which they can manage their customers and ensure that they have good relationships.

Mobile advertising is also one of the applications. The networks also help in interpreting advertising datasets that are many-dimensioned and large. That is because various points of data are collected in the advertising cycle. Therefore ad selection also gets to improve.

The networks of deep learning are also applied in bioinformatics where they help in predicting the annotations of gene ontology and the relationships of gene function. In the medical field, the networks have helped in predicting the quality of sleep according to data collected from wearables (Bhanu et al., 2017). They have also been used in predicting health complications from health records that are in electronic data.

Deep learning networks has also been applied in recommendation systems. The networks have helped in extracting features that are meaningful, for example in meaningful recommendations in music that is content-based. They use an approach that is content-based and hybrid collaborative in enhancing recommendations.

The networks of deep learning can also be applied in credit scoring. For example, in a situation where a system for making credit decisions is built, one requires to know the people that can default. Therefore, a machine can be trained to detect them earlier (Beysolow, 2017). Therefore, that can greatly help in ensuring that the problem is dealt with early enough.

Many organizations have employed the networks for deep learning for various applications. For example, Facebook uses the networks in having an automatic way through which people can tag uploaded pictures with the usernames of the people that are in the pictures. Google has also applied the networks in creating a system that has the ability of learning to play video games with the use of pixels as the data input.

The networks of deep learning have been criticized for various reasons. One of the reasons is that the networks lack theory. Certain algorithms have less clear theory. Most of the confirmations by the networks are empirically done and not theoretically (Patterson et al., 2017). Therefore, some argue that the networks are not appropriate for computer technology.

The networks have also been seen to have various errors. Some of the processes have been seen to have behaviors that are problematic. Therefore, that has greatly contributed in raising various questions regarding the effectiveness of the deep learning networks.

Deep learning networks are also considered to have a risk of cyber threat. The networks have been seen to be vulnerable to deception and hacks. Manipulation can be made, for example, to an image, thus making it difficult for the networks to determine the appropriate information for the image. However, the networks can be trained to detect deception attempts, thus ensuring that the deception does not succeed.

In conclusion, it is evident that deep learning networks have been of great use to computer technology. They operate just like the brain of human beings and they have been applied in various human activities. Therefore, organizations have managed to integrate the use of the deep learning networks in their activities and that has been of great help to their progress. Therefore, it is evident that in future, deep learning networks will help in most of the processes in the day to day activities of human beings.

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