Understanding of Machine Learning with Deep Learning: Architectures, Applications and Future Directions

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Abstract: *Deep Learning is a widely-used computational approach within the Machine Learning field, capable of accomplishing remarkable feats on a variety of intricate cognitive tasks, surpassing or even outperforming human execution. This innovation, which is based on manufactured neural systems, has become a major topic of discussion in computing, as it is able to learn from information, and is capable of storing large amounts of data. Over the past few years, Deep Learning has seen rapid progress and has been successfully employed in a variety of traditional fields, such as cybersecurity, dialect handling, biotechnology, mechanical technology, control, and data preparation. This article provides a detailed overview of the most notable features of Deep Learning, in light of the most recent advances in the field, to provide a more comprehensive understanding of the field.*

In this paper, the importance of deep learning is discussed, as well as the different methods and systems associated with it. Additionally, the article outlines the application ranges in which deep learning strategies may be employed. It also highlights the potential characteristics of future generations of Deep Learning, and poses questions regarding proposals. Finally, the article presents a detailed diagram of Deep Learning, which demonstrates its potential for both academic and industrial use. Furthermore, additional questions and recommendations are included to aid analysts in comprehending existing research lacunae. The article covers various approaches to Deep Learning, its various structures and processes, and its applications.

Keywords: machine learning (ML); deep learning (DL); recurrent neural network (RNN); convolutional neural networks (CNN) artificial intelligence (AI)

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