

DEEP LEARNING

1. INTRODUCTION

Deep learning is a subset of machine learning that is based on artificial neural networks (ANNs). It is a powerful tool for solving a wide range of problems, including image recognition, natural language processing, and speech recognition. The most common types of deep learning architectures are convolutional neural networks (CNNs), recurrent neural networks (RNNs), and generative adversarial networks (GANs).

2. BACKGROUND

Deep learning is a subset of machine learning that is based on artificial neural networks (ANNs). It is a powerful tool for solving a wide range of problems, including image recognition, natural language processing, and speech recognition. The most common types of deep learning architectures are convolutional neural networks (CNNs), recurrent neural networks (RNNs), and generative adversarial networks (GANs).

3. RELATED WORK

Deep learning has been widely studied in the past few years. In 2006, Hinton et al. [1] introduced the concept of deep belief networks (DBNs). In 2009, Bengio et al. [2] introduced the concept of deep restricted Boltzmann machines (DRBMs). In 2011, Collobert et al. [3] introduced the concept of deep convolutional neural networks (DCNNs). In 2013, Mikolov et al. [4] introduced the concept of word embeddings. In 2014, Sutskever et al. [5] introduced the concept of long short-term memory (LSTM) units. In 2015, Bahdanau et al. [6] introduced the concept of sequence-to-sequence models. In 2017, Vaswani et al. [7] introduced the concept of the Transformer architecture. In 2018, Devlin et al. [8] introduced the concept of BERT. This paper surveys the state-of-the-art in deep learning for natural language processing (NLP).

1. Transformer 2. BERT GPT 3. 4.