

Title: Layer (deep learning)

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A layer in a deep learning model is a structure or network topology in the model's architecture, which takes information from the previous layers and then passes it to the next layer.

Layer types

The first type of layer is the Dense layer , also called the fully-connected layer , [1] [2] [3] and is used for abstract representations of input data. In this layer, neurons connect to every neuron in the preceding layer. In multilayer perceptron networks, these layers are stacked together.

The Convolutional layer [4] is typically used for image analysis tasks. In this layer, the network detects edges, textures, and patterns. The outputs from this layer are then fed into a fully-connected layer for further processing. See also: CNN model.

The Pooling layer [5] is used to reduce the size of data input.

The Recurrent layer is used for text processing with a memory function. Similar to the Convolutional layer, the output of recurrent layers are usually fed into a fully-connected layer for further processing. See also: RNN model. [6] [7] [8]

The Normalization layer adjusts the output data from previous layers to achieve a regular distribution. This results in improved scalability and model training.

A Hidden layer is any of the layers in a Neural Network that aren't the input or output layers.

Differences with layers of the neocortex

There is an intrinsic difference between deep learning layering and neocortical layering : deep learning layering depends on network topology , while neocortical layering depends on intra-layers homogeneity .

See also

Deep Learning

Neocortex § Layers

References

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Differentiable programming

Information geometry

Statistical manifold

Automatic differentiation

Neuromorphic computing

Pattern recognition

Ricci calculus

Computational learning theory

Inductive bias

IPU

TPU

VPU

Memristor

SpiNNaker

TensorFlow

PyTorch

Keras

scikit-learn

Theano

JAX

Flux.jl

MindSpore

Portals Computer programming Technology

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