

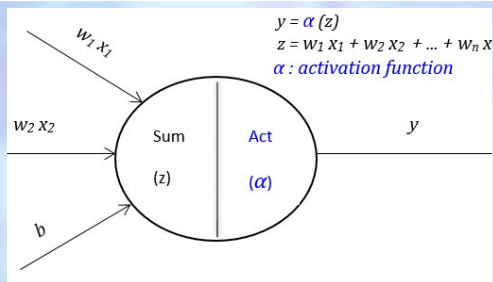


MAGAZINE

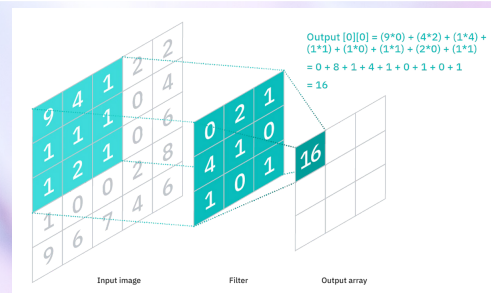
ISSUE NO: 96
APRIL 15, 2021

Department of
CSE

Byte Quest



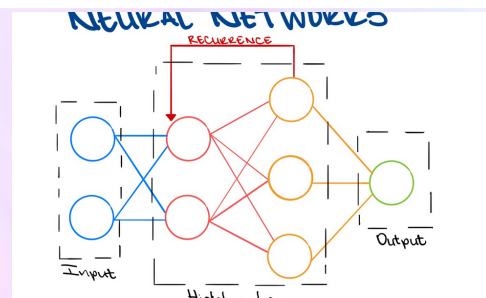
ACTIVATION FUNCTIONS



CONVOLUTIONAL NEURAL NETWORKS



METAVVERSE



RECURRENT NEURAL NETWORKS

Department Vision

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals.

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

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2ND YEAR

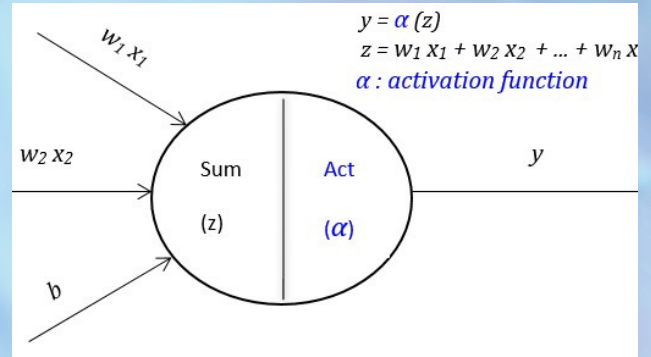
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ACTIVATION FUNCTIONS

Activation functions are the building blocks of a neural network. A good analogy to understand about the activation functions is by understanding the working of human brain. When our brain is bombarded with a large amount of data at once, it works hard to comprehend and classify it into "useful" and "not-so-useful" information.

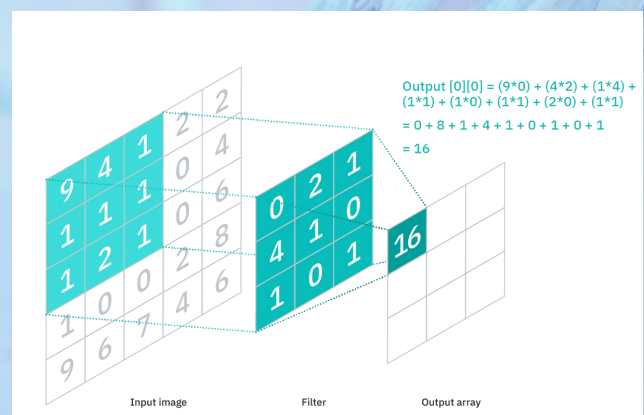


In the case of Deep Neural network, a comparable method for categorizing incoming information as "beneficial" or "less-useful" is required. An artificial neural network's activation function is a crucial component since it determines whether or not a neuron should be stimulated.

The activation function of a node in an artificial neural network determines the output of that node given input or group of inputs. In simple term, it calculates a "weighted sum(w_i)" of its input(x_i), adds a bias and then decides whether it should be "fired" or not.

CONVOLUTIONAL NEURAL NETWORKS

A Convolutional Neural Network (CNN) is a Deep Learning approach that can take an input image, assign significance (learnable weights and biases) to various aspects/objects in the image, and distinguish between them.



When compared to other classification techniques, the amount of preprocessing required by a CNN is significantly less. Through the application of suitable filters, a CNN can successfully capture the Spatial and Temporal dependencies in an image. Due to the reduced number of parameters involved and the reusability of weights, the architecture performs superior fitting to the picture dataset. In other words, the network may be trained to better understand the image's sophistication.



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METaverse

The term comes from digital antiquity: Coined by the writer Neal Stephenson in his 1992 novel, "Snow Crash," then reimagined as the Oasis in the Ernest Cline novel "Ready Player One," it refers to a fully realized digital world that exists beyond the analog one in which we live.



In fiction, a utopian metaverse may be portrayed as a new frontier where social norms and value systems can be written anew, freed from cultural and economic sclerosis. But more often metaverses are a bit dystopian — virtual refuges from a fallen world.

As a buzzword, the metaverse refers to a variety of virtual experiences, environments and assets that gained momentum during the online-everything shift of the pandemic. Together, these new technologies hint at what the internet will become next.

Video games like Roblox and Fortnite and Animal Crossing: New Horizons, in which players can build their own worlds, have metaverse tendencies, as does most social media. If you own a non-fungible token or even just some crypto, you're part of the metaversal experience. Virtual and augmented reality are, at a minimum, metaverse adjacent. If you've attended a work meeting or a party using a digital avatar, you're treading into the neighborhood of metaversality.

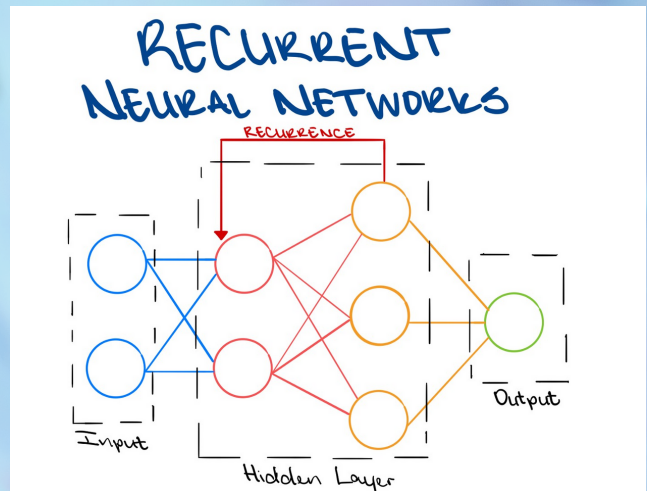
Founders, investors, futurists and executives have all tried to stake their claim in the metaverse, expounding on its potential for social connection, experimentation, entertainment and, crucially, profit.



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RECURRENT NEURAL NETWORKS

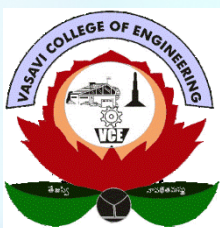
Recurrent Neural Networks (RNN) add an interesting twist to basic neural networks. An ordinary neural network accepts a fixed-size vector as input, which limits its use in situations involving "string" inputs that do not have a predetermined size. The recurring neural network remembers the past and its decisions are influenced by what it has learned from the past.



Although RNNs learn similarly during training, they remember what they learned from previous inputs when generating results. It is part of the network. RNN can take one or more input vectors and produce one or more output vectors, and the output is affected not only by the weights applied to the input (like regular NN), but also by the "hidden" state vector that represents a priori -context based on input / output impact. Therefore, depending on the previous input in the series, the same input can produce a different output.

In short, in an ordinary neural network, a fixed-size input vector is converted to a fixed-size output vector. When you repeatedly apply a transformation to a given series of inputs and produce a series of output vectors, that network becomes "circular." There is no preset limit on the size of the vector. And in addition to generating the output based on the input and hidden state, we also update the hidden state itself based on the input and use it to process the next input.

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