* Neurons: Neurons are individual units in a neural network that receive input, apply an activation function, and produce an output. They are responsible for capturing and transforming information during the learning process.
* Activation Functions: Activation functions introduce non-linearities to the neural network, enabling it to learn complex patterns. Popular activation functions include sigmoid, tanh, ReLU (Rectified Linear Unit), and variants such as Leaky ReLU and ELU (Exponential Linear Unit).
* Loss Functions: Loss functions measure the dissimilarity between the predicted output of a neural network and the ground truth. They quantify the error in the model's predictions and are essential for training the network through techniques like backpropagation.
* Backpropagation: Backpropagation is a technique used to update the weights and biases of a neural network based on the error signal provided by the loss function. It propagates the error back through the network, adjusting the parameters to minimize the loss and improve the model's performance.
* Optimization Algorithms: Optimization algorithms determine how the weights and biases of a neural network are updated during training. Algorithms like Stochastic Gradient Descent (SGD), Adam, RMSprop, and Adagrad are commonly used to optimize the learning process and improve convergence.