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The model will learn to best estimate the function given available resources – the number of layers and nodes per layer in a particular number of training epochs -passes through the training data if the learning rate is perfectly calibrated.

A desirable learning rate is low enough for the network to converge on something useful while yet being high enough to train in a reasonable length of time.

Smaller learning rates necessitate more training epochs because of the fewer changes. On the other hand, larger learning rates result in faster changes.

Moreover, larger learning rates frequently result in a suboptimal final set of weights.

An analytical method cannot be used to calculate the weights of a neural network. Instead, the weights must be discovered using stochastic gradient descent, an empirical optimization approach. In simpler terms, **the stochastic gradient descent algorithm is used to train deep learning rate [neural networks](#)**.

- Stochastic gradient descent is an optimization technique that uses instances from the training dataset to estimate the error gradient for the current state of the model and then uses backpropagation to update the model's weights.

As a result, we should avoid using a learning rate that is either too high or too low. However, we must set up the model so that a decent enough set of weights is determined on average to approximate the mapping issue as represented by the training dataset.

Testing. CI/CD. Monitoring.



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learning rate technique.

- **Scheduled Drop Learning rate** – The learning rate is lowered by a specified proportion at a specified frequency in the drop learning rate method, as opposed to the decay technique, where the learning rate declines repetitively.
- **Cycling learning rate** – The learning rate cyclically changes between a base rate and a maximum rate in this methodology. At a constant frequency, the learning rate varies in a triangular pattern between the maximum and base rates.
- **The Gradient Descent Method** – is a well-known optimization approach for estimating [model parameters](#) in machine learning. The value of each parameter is originally assumed or assigned random values when training a model. The cost function is generated using the initial values, and the parameter estimations are improved over time so that the cost function eventually assumes a minimum value.

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