# Geometrical representation of a neural network using a blending type spline construction

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Artificial neural network is a mathematical model, which approximates an objective function. The construction of the neural network is represented as a combination of simple processors that transmit signals from one to another.

We introduce a connection between the neural network and the blending type spline by using similar properties of their constructions.

In the following work, an exponential basis function of the blending type spline construction and its derivative are considered in the sense of sigmoid activation function. A main objective is to formulate a mapping between local/global parameters in the blending type spline construction and the forward/backward propagation method.

The presented method is a geometrical representation and visualization of an internal process of the neural network learning. We perform an analysis of the learning process and error estimation of the neural network geometrical representation. A comparison between a simple example of the neural network learned by back-propagation method and geometrical representation of the analogous neural network is shown, and possible applications are considered.