Abstract

Artificial neural networks (ANNs) are proposed to estimate the ultimate shear capacity of simply and continuous deep beams and various types of web reinforcement are investigated.

The input layer describes the geometry of beam and material properties of concrete and reinforcement, and the output is always the ultimate load capacity. The effects of the various parameters, such as preprocess of patterns, weights initialization method, number of nodes in hidden layer(s), and selecting of learning rate and momentum coefficient, on the behaviour of neural network have been investigated.

Finally, the proposed networks are used to investigate the behaviour of deep beams as a result of varying the different parameters (inputs), and the results are discussed in relation with strut and tie method (ACI 318-08) and modified strut and tie method.