**Abstract**

The application of artificial networks (ANNs) to predict the Ultimate strengths of reinforced concrete (RC) beams with transverse reinforcement is investigated in this work .

This study was divided in to three parts, the first included collection of data of experimental tests of 27 rectangular beams [compressive strength (f'c ), modulus of elasticity (E), diameter of bars , ratio of reinforcement crack load(Pcr), yield load (Py) ,ultimate load (Pu), deflection (∆),ductility(μ) ](1). [The secondpart included matlab program for Artificial neural network ](2) , in this part we were divided our data in to input data ,and output data , and we were using data of (18) specimen as training data for (ANN) , and using the remained data (9) specimen to simulate it with experimental data .

The third part included calculation of crack load ,and ultimate load of simulated data (9) specimen according (ACI318-08 code)(3) .

The predicted data of crack load(Pcr) and ultimate load(Pu) that obtained from (ANNs) , were compared with experimental(1) and calculated values according (ACI318-08 code)(3) . we obtain the output data from ANN agree well experimental data , that give as indicate that the performance of ANN program has good simulation to experimental data also selection of program parameter such as , no of layer , weights , …. give as a good result that compare will with experimental data .

The **ANN** models represental by the search can be used to carry out parametric study for the strength of rectangular concrete beams .