1113-41-9          **George Anastassiou\*** (`ganastss@gmail.com`), Department of Mathematical Sciences, University of Memphis, Memphis, TN 38152. *Approximations by Multivariate Perturbed Neural Network Operators.* Preliminary report.

This article deals with the determination of the rate of convergence to the unit of each of three newly introduced here multivariate perturbed normalized neural network operators of one hidden layer. These are given through the multivariate modulus of continuity of the involved multivariate function or its high order partial derivatives and that appears in the right-hand side of the associated multivariate Jackson type inequalities. The multivariate activation function is very general, especially it can derive from any multivariate sigmoid or multivariate bell-shaped function. The right hand sides of our convergence inequalities do not depend on the activation function. The sample functionals are of multivariate Stancu, Kantorovich and Quadrature types. We give applications for the first partial derivatives of the involved function. (Received February 13, 2015)