

## **Heuristic computational design of morlet wavelet neural network for solving the higher order singular nonlinear differential equations**

### **ABSTRACT**

The aim of this study is to present the numerical solutions of the higher order singular nonlinear differential equations using an advanced intelligent computational approach by manipulating the Morlet wavelet (MW) neural networks (NNs), global approach as genetic algorithm (GA) and quick local search approach as interior-point method (IPM), i.e., GA-IPM. MWNNs is applied to discretize the higher order singular nonlinear differential equations to express the activation function using the mean square error. The performance of the designed MWNNs using the GA-IPM is observed to solve three different variants based on the higher order singular nonlinear differential model to check the significance, efficacy and consistency of the designed MWNNs using the GAIPM. Furthermore, statistical performances are provided to check the precision, accuracy and convergence of the present approach