Abstract

In this communication, a fractional order design and numerical form of the solutions are presented for numerical simulations of heterogeneous mosquito model. The use of the fractional order derivatives is exploited to observe more accurate and exhaustive performances of the numerical simulation of the model. The novel design of the fractional order heterogeneous mosquito differential system is analyzed with stochastic solver based on the internet of things (IoT) technologies, represented with four categories i.e., normal individuals, people with reflex behavior, panic behavior and controlled behavior based differential system. The solutions of the novel design of the fractional order system are presented by using the stochastic paradigm of artificial neural network (ANN) procedures along with the Scaled Conjugate Gradient (SCG), i.e., ANN-SCG, for learning of weights. In ANN-SCG implementation, the data statistics are picked as 78% for training, 11% for both authorization and testing samples to approximate the solutions. The accuracy of the ANN-SCG technique is seen by correlation of the determined outcomes and the information base on Adams-Bashforth-Moulton method based standard solutions. To achieve the capacity, legitimacy, consistent quality, fitness, and accuracy of the ANN-SCG strategy, the reproductions-based error histograms (EHs), MSE, regression, and state transitions (STs) are used for extensive experimentations.