Abstract: Turbidity is the most important parameter needed to check the status of drinking water, as it is an integrated parameter because its high values indicate high values of other parameters related to water quality. Coagulation and flocculation are the most essential processes for the removal of turbidity in drinking water treatment plants. Using alum coagulants increases the aluminum residuals in treated water, which have been linked to Alzheimer's disease pathogenesis. In this paper, a hybrid algorithm (GA-ANN) used to predict the turbidity values in the drinking water purification plant in Al Qusayr was used. The models were constructed using raw water data: turbidity of raw water, pH, conductivity, temperature, and coagulant dose, to predict the turbidity values coming out of the plant. Several models were built and fitness was detected for each model, the network with the highest fitness was selected, and then a hybrid prediction network was constructed. The selected network was the most able to predict turbidity of the outlet with high accuracy with a correlation coefficient (0. 9940) and a root mean square error of 0.1078. At the part related to aluminum residuals prediction, four equations was obtained using Gene expression method, and the best equation produced results with a very good accuracy, in this regard it can be referred to RMSE =0.02   R = 0.9 for the best model.
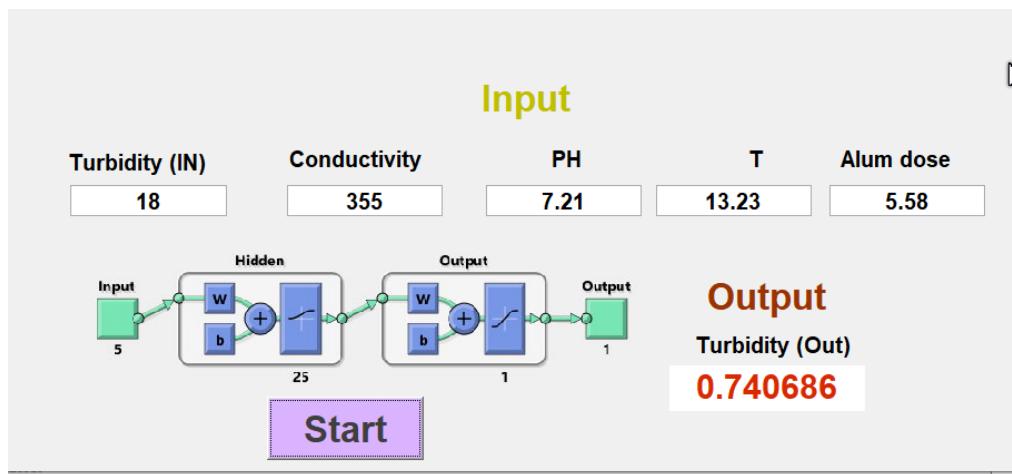
Figure 8. An interactive graphical user interface