Conclusion

In this thesis, first, we have solved fuzzy Prey-Predator model with fuzzy initial conditions and obtained a closed-form solution of the model by using Eigen value and Eigen vector method.

In further work, we have proposed numerical techniques to solve fully fuzzy dynamical systems. We have proved convergence for the proposed schemes based on complete error analysis and applied it to real-world problem and compared the results with crisp solution. A fuzzy scenario helps us in estimating the more realistic value of the variable so that we can apply the treatment accordingly.

In next work, first we have solved fuzzy linear dynamical system using the existing fuzzy Laplace transform. We then redefined Fuzzy Laplace Transform under new derivative i.e., Modified Hukuhara derivative along with its existence condition. We also revised all results related to Fuzzy Laplace Transform under this new derivative. Lastly, we have solved fully fuzzy Prey-Predator model by considering three cases and results in all cases are compared at the core.

In next work, we have discussed the semi-analytical technique FADM in two ways. First, we have used it traditionally i.e., applying on a problem in parametric form. Secondly, we have developed the whole technique in a fuzzy environment. For that, we have proved many results under new derivative, the Modified generalized Hukuhara derivative. The advantage of this technique, we can solve the directly fuzzy differential equation without converting it into the system of ordinary differential equation. It is directly applicable to fuzzy differential equations. We have also solved examples by both techniques. All the results are validated at the core.

Lastly, we have discussed how the temperature of air collector behaves in the fuzzy environment. After the modelling is done, the solution is obtained using fuzzy Adomian Decomposition method in the parametric form.