

## Soft-computing Methods for Solving Complex Differential Equations

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### **Abstract:**

There exist many complex differential equations (e.g., delay-differential ones) that attained much attention from researchers due to its historical attractiveness and immense applications in many fields of human activity, e.g., in population dynamics, communication systems, economical methods, engineering systems, propagation or transport systems.

Some of them are solved, despite that their analytic solution is an onerous task. However, some others are still solved by known methods. For both the categories, it is reasonable to propose a numerical solution that is sufficiently accurate and sufficient for practical reasons. One possibility is to define a fitness function based on the errors of the differential equation and initial conditions, which are further minimized via some advanced soft-computing methods.

The aim of the doctoral thesis is to develop this very recent idea and verify the obtained results on various equations and soft-computing techniques.

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