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Learning Solutions to Differential Equations using LS-SVM

Simin Shekarpaz

In this talk, we develop a machine learning method for solving differential equations which is based on the Least Squares Support Vector Machines (LS-SVM). The collocation LS-SVM approach is proposed for training the network, by using Legendre Kernel. The linear problems are solved in dual form and a system of algebraic equations is concluded. For non-linear problems, the quasi-linearization method (QLM) is used and then a system of linear algebraic equations is concluded which should be solved to obtain the approximate solutions. Finally, by presenting some numerical examples, the efficiency of the current method is demonstrated in comparison with the existing methods.