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دانشگاه صنعتی شریف  
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# Neural network application to solve Fredholm integral equations of the second kind

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## Abstract

In this paper, a novel method based on neural networks is presented for solving Fredholm integral equations of the second kind. In the present approach, we first approximate the unknown function based on neural networks, then substitute the approximate function in the appropriate error function of the integral equation, and finally train the network with as few neurons as necessary to achieve the desired accuracy. This novel method, in comparison with existing numerical methods, shows that the use of neural networks provides solutions with very good generalizations and higher accuracy.

**keywords:** Fredholm Integral equations , Artificial neural networks, MLPs (Multi-Layer Perceptron networks).