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**Comparative analysis of application of different types of neural networks to recognition of one-dimensional signals**

**Abstract:** In the processes of determining the properties of materials and structures based on the study of the response to a given dynamic influence the task of analysing a one-dimensional time signal and its classification arises. One of the effective approaches in its solution is the use of artificial neural networks possessing generalised properties of approximation and data filtering. In this paper we investigate the efficiency of application of full-link, recurrent and convolutional neural networks to the problems of impact indentation to determine the strength properties of metals and elastic moduli of layered structures of non-rigid motorways.