Ibrahim, Rabha W.

The fractional differential polynomial neural network for approximation of functions. (English) Zbl 1357.68172

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Summary: In this work, we introduce a generalization of the differential polynomial neural network utilizing fractional calculus. Fractional calculus is taken in the sense of the Caputo differential operator. It approximates a multi-parametric function with particular polynomials characterizing its functional output as a generalization of input patterns. This method can be employed on data to describe modelling of complex systems. Furthermore, the total information is calculated by using the fractional Poisson process.

MSC:

68T05 Learning and adaptive systems in artificial intelligence
26A33 Fractional derivatives and integrals
34A08 Fractional ordinary differential equations and fractional differential inclusions

Keywords:

fractional calculus; fractional differential equations; fractional polynomial neural network

Software:

Matlab

Full Text: DOI

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