Discrete Fractional Calculus of Variations

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Abstract

Fractional Calculus has its origin in the following question: can the meaning of derivatives of integer order $\dfrac{d^n y}{dx}$, $n \in \mathbb{N}$ be extended to when n is any number? Recent developments in several fields of science, engineering, economics, bioengineering and applied mathematics, have demonstrated that many phenomena in nature are modeled more accurately using fractional derivatives and integrals. In the last years, several works have been dedicated to create a new Discrete Fractional Variational Calculus. Here we present our contribution for this new theory and some numerical examples are given.

References:

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