عنوان مقاله:

Solution of Fractional Optimal Control Problems with Noise Function Using the Bernstein Functions

محل انتشار:

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خلاصه مقاله:

This paper presents a numerical solution of a class of fractional optimal control problems (FOCPs) in a bounded domain having a noise function by the spectral Ritz method. The Bernstein polynomials with the fractional operational matrix are applied to approximate the unknown functions. By substituting these estimated functions into the cost functional, an unconstrained nonlinear optimization problem is achieved. In order to solve this optimization problem, the Matlab software and its optimization toolbox are used. In the considered FOCP, the performance index is expressed as a function of both state and control functions. The method is robust enough because of its computational consistency in the presence of the noise function. Moreover, the proposed scheme has a good pliability satisfying the given initial and boundary conditions. At last, some test problems are investigated to confirm the .efficiency and applicability of the new method

کلمات کلیدی:

Optimization, Spectral method, Noise function, Fractional optimal control, Operational matrix