Fractional Order Differentiator Using Chebyshev Polynomials

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Abstract : A discrete time fractional orderdifferentiator has been modeled for estimating the fractional order derivatives of contaminated signal. The proposed approach is based on Chebyshev's polynomials. We use the Riemann-Liouville fractional order derivative definition for designing the fractional order SG differentiator. In first step we calculate the window weight corresponding to the required fractional order. Then signal is convoluted with this calculated window's weight for finding the fractional order derivatives of signals. Several signals are considered for evaluating the accuracy of the proposed method.