Brief CV

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Research Area	Identification linear and nonlinear systems, recursive estimation, fractional order systems, digital signal processing			

Many different solutions have been presented for system identification of nonlinear dynamic systems from noise–corrupted output measurements. On the other hand, estimation of the parameters for dynamic systems when also the input is affected by noise is recognized as a more difficult problem.

The class of scientific disciplines which make use of such representations is very broad, such as time series modelling, array signal processing for direction–of–arrival estimation, blind channel equalization, image processing etc.

Errors-in-variables models can be motivated in several situations. One such case is the modeling of the dynamics between the noise-free input and noise-free output. Another situation is when a highdimensional data vector is to be approximated by a small number of factors, which is the standard motivation for factor analysis.

We can have different situations concerning to what degree the noise variances are known.

1. The noise variances input and output are unknown.

2. The noise variances input and output are both known.

3. The ratio variances is known.

The application of the method of least squares gives biased estimates of the parameters of the system.

For linear dynamical systems, there are a sufficient number of the most complicated achievements in computational complexity, the volume of a priori information and the accuracy of the estimates obtained. The analysis showed that one of the most promising methods is the nonlinear least squares method, which is a generalized Rayleigh relation. This method has an average complexity, high accuracy and requires a small amount of a priori information.

Recently, for modeling systems using fractional derivatives and different fractional order. Fractional production and differences do not have a simple physical or geometric interpretation. Attention to digital signal processing can be called two reasons:

1. Many objects (communication channels, waveguides, etc.) have distributed parameters and are

described by partial differential equations. In many applications, the spatial coordinate can be considered as a constant (x = const) and measurements are available at the beginning and end of the line. For such cases, the transfer function of an object is an irrational variable function. That in the time domain is equivalent to a fractional derivative.

2. The signals described can have a slowly decreasing autocorrelation function, $\rho_k \square k^{-\alpha}, 0 < \alpha < 1, k \to \infty$. For such signals, the application of fractional order differences makes it possible to reduce the estimated parameters.

*******All the columns need to be filled in.**