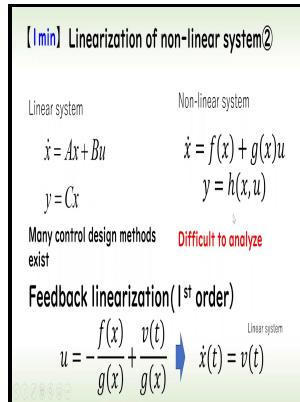


Nonlinear system design

Peregrinus on behalf of the Institution of Electrical Engineers - Nonlinear model standardization for the analysis and design of nonlinear systems with multiple equilibria



Description: -

- Continuing education -- Germany -- Congresses.
Older people -- Education -- Germany -- Congresses.

Nonlinear control theory.

System design.

Automatic control. Nonlinear system design

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Nonlinear Control Systems

Remark 4 In practice, a nonlinear system can have multi-equilibria but the system usually works around one of these equilibria. However, when nonlinear system H has several stable equilibria, before the procedure above can be applied, the model of the nonlinear system needs to be standardized about the equilibrium associated with the input signal to be processed.

Nonlinear model standardization for the analysis and design of nonlinear systems with multiple equilibria

But, even if the stable equilibria with the original system have been found out by using one of these methods, there is still no a systematic method that can be used to determine which stable equilibrium should literally be used to transform the original model into a standard form that can then be used for the required system analysis. In our case the top block equation in 5. In this paper, a novel approach to nonlinear model standardization is proposed for nonlinear systems that can be described by a Nonlinear AutoRegressive model with eXogeneous input NARX or a nonlinear differential equation NDE model.

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One of the most attractive methods is feedback linearization.

Nonlinear Control Systems

For highly nonlinear systems, control techniques directly based on nonlinear models provide significantly improved performance.

Nonlinear model standardization for the analysis and design of nonlinear systems with multiple equilibria

Generally speaking, the advantage of studying dynamic systems in the frequency rather than time domain is that the frequency-domain methods transform the study of differential equations to the study of much simpler algebraic equations. In addition, the results also show that when beams are tested under horizontal setup, the proposed nonlinear model standardization is necessary for the application of the NOFRFs approach to the

detection of cracks.

Nonlinear Control Systems

It is worth noting that the above discussions about the NOFRFs are valid for both the NARX and NDE model of nonlinear systems. In many cases, linear controllers provide adequate control performance.

Nonlinear Control Systems

Section 2 introduces the batch esterification reactor system and problem motivation. There are two classes of nonlinear control: discontinuous and continuous. Traditionally, the study of the behaviours of nonlinear systems as shown in Fig.

Nonlinear model standardization for the analysis and design of nonlinear systems with multiple equilibria

Step 2 The NOFRFs representation of the output spectrum of the system at zero frequency, i. Compared with linear system theories and methods, the methods that can be applied for the analysis and design of nonlinear systems are limited. For example, Zhu et al.

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