

## 非均匀多采样率非线性系统的模糊辨识

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## Fuzzy identification for non-uniformly multi-rate sampled nonlinear systems

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摘要

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## 摘要

针对非均匀多采样率非线性系统辨识问题, 提出一种基于模糊模型的辨识方法. 首先, 分析了非线性系统在输入信号非均匀周期刷新, 输出信号周期采样的情况下, 非线性系统可以通过提升技术, 利用多个局部的线性模型加权组合来描述; 然后, 提出一个基于GK模糊聚类和递推最小二乘的模糊辨识算法; 最后, 针对化工pH中和过程非线性系统, 采用非均匀采样数据建立其模糊模型, 以验证所提出方法的有效性.

**关键词:** 模糊辨识, 多率, 非均匀采样, 非线性系统

## Abstract:

For the identification of non-uniformly multi-rate sampled nonlinear systems, an identification method based on the fuzzy model is proposed. First of all, nonlinear systems are described as a weighted combination representation of the multiple local linear models by using lift technology when the non-uniformly updating scheme for input signals and uniformly sampling scheme for output signals are taken in the data sampling process. On this basis, a fuzzy identification algorithm based on the GK fuzzy clustering and recursive least squared method is proposed. Finally, the fuzzy model of pH neutralization reaction process is built to demonstrate the effectiveness of the proposed method by using non-uniformly sampled data.

**Key words:** fuzzy identification multi-rates non-uniformly sampling nonlinear systems

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