

基因算法之模糊滑動控制實現

On GA-based Fuzzy Sliding Mode Control

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摘要

本文在使用模糊滑動控制器設計技巧應用在模糊控制器設計上，克服傳統上規則的修正僅適合二輸入變數控制架構的缺點。並使用基因法則來調整比例因子以獲得好的響應結果。並將學習式的控制架構應用在馬達轉速的控制上。經由電腦模擬與實驗的結果，亦獲得不錯的系統響應性能。

關鍵詞：模糊控制，滑動控制，馬達控制，基因算法

Abstract

This paper is concerned with the genetic algorithms (GA) based for the designing of fuzzy sliding mode controller. In particular, the input variables of fuzzy controller for high order system can be integrated in only switching variable under sliding mode, such that the proposed controller is superior to that of conventional ones. In addition, to obtain well performance of the closed-loop system, the scaling factors of input/output are learned through GA. Finally, DC motor speed control system is developed to verify the proposed control scheme.

Keywords: Fuzzy control, Sliding Mode, Motor Control, Genetic Algorithm