

# 應用動態模糊系統於旋轉式倒單擺系統之分析與控制

周晏鈴、陳昭雄

E-mail: 9314965@mail.dyu.edu.tw

## 摘要

倒單擺系統為典型的非線性不穩定系統，常被應用於驗證控制理論可行性之實驗設備。本文提出一動態結構模糊系統，用於解決非線性不確定系統之參考模式適應控制問題。而動態模糊系統主要是重建未知非線性動態系統。在動態結構系統中，參考模型提供閉回路性能回饋產生或修正一個模糊近似資料庫。模糊規則數基於所需的準確度可以隨著時間增加或減少。透過結合動態結構模糊系統和里阿普諾夫的穩定法則，所獲得之適應控制法則使追隨誤差收斂至所需的準確度。最後，我們模擬一倒單擺系統之控制，來驗證本文所提方法之有效性。

關鍵詞：模糊控制；非線性不確定系統；適應控制

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