

# 微步進馬達驅動系統之速度跟隨控制

張宏煒、陳昭雄

E-mail: 9806117@mail.dyu.edu.tw

## 摘要

本文主要發展一類神經模糊網路(Neural Fuzzy Network ; NFN)控制器，以應用於線性微步進馬達的速度跟隨控制。線性微步進馬達驅動系統遭受非線性摩擦力、負載不確定性、系統參數變動和高頻動台影響，造成低速運轉時，速度震盪不平穩。本文結合類神經網路和模糊邏輯發展控制器，以解決系統受外力干擾的問題，並推導線上的倒傳遞學習法則，來調整網路系統的所有參數，以得到最佳的控制效果。在硬體方面，包括個人電腦、DMC-18x2軸控卡和E-DC驅動器，並以Borland C++軟體平台撰寫控制程式，以完成線性微步進驅動系統的閉迴路控制。最後以所發展的控制器和PID控制器應用於實際的線性微步進驅動器同時進行實驗，以比較其優劣，並驗證本文所發展控制器的可行性。

關鍵詞：線性步進馬達 驅動器 類神經模糊網路

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