電子式球拍拉線機之崁入式微控制器研發

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摘 要

本文主要為研發電子式球拍拉線機之嵌入式微控制器，設計軟、硬體以整合介面電路、感測電路和馬達伺服驅動電路，達成球拍穿線拉力精密控制。首先將發展強健式拉力控制法則，以克服不同剛度拍線對拉線控制所造成之干擾，及解決馬達在穩態控制下，電流震盪問題。以L6203驅動IC為架構，我們將設計以PWM訊號控制方式之拉線馬達驅動器，透過保護線路，此驅動器能承受大的拉線電流和馬達瞬間正、反轉所產生之反電動勢。嵌入式微處理機方面，則採用Microchip公司的PIC18F8722微控制器，此嵌入式微控制器內建有許多功能模組，可以透過軟體撰寫以取代A/D、脈寬調變、編碼器解碼和雜訊濾波等外部電路，以減少電路板上電子元件個數，達到全數位化目的。

關鍵詞 : 嵌入式微控制器 ; 脈寬調變 ; 驅動器

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