

電動輔助轉向系統之模擬與控制

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摘要

動力轉向系統為現有車輛的標準配備，其系統從簡單的機械結構到與液壓輔助並使用齒條與小齒輪轉向機構，都讓人們在轉向上帶來更多的便利。近年來，電動輔助轉向系統已越來越普遍使用於車輛上，其優點除了結構裝置簡單外，又減少了燃油的消耗。電動輔助方向盤控制系統主要是利用扭力、車速及方向盤轉角訊號感知器，經由轉向輔助控制策略判斷當時之駕駛情況，以控制輔助馬達提供適當之輔助扭矩，藉以改善駕駛舒適性。本研究可分為EPS系統之工作原理；特點以及模擬EPS系統與實際車輛實驗參數做比較，並針對電動輔助轉向系統控制器設計，其控制器是將接收之轉角訊號；扭力訊號利用車輛控制器區域網路提供快速且精準的信號傳送，而電動輔助馬達部份則是利用H橋電路以控制馬達運轉。

關鍵詞：電動轉向系統，轉角感知器，扭力感知器，輔助扭力，H橋電路，控制策略，控制器區域網路

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