

國科會計畫

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車輛電子嵌入式微處理器實驗教材發展之研究---以 OBD 行車記錄器為例  
The Study of Experimental Module Materials for OBD Driving Recorder Based  
on Embedded Microprocessor

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中文摘要

由於業界不斷創新以提升競爭力，車輛電子已經成為車輛產業的明日之星。車上診斷系統（On Board Diagnostics，簡稱 OBD）：指具有經由車上電腦監控車輛空氣污染防制設備使用狀況及偵測故障之能力，並可儲存故障碼及顯示故障指示信號功能之系統。2008 年以後出廠之國產車、進口車及 2008 車型年之車輛應配備車上診斷系統(OBD)。因此本研究藉由將嵌入式微處理器應用在車上診斷系統(OBD)行車記錄器的實作，整合成一套實驗模組，提供學生有關嵌入式微處理器和車上診斷系統(OBD)的學習素材，配合政府推動的智慧型車輛，帶動汽車產業的發展。為落實嵌入式微處理器在車輛電子的應用，本計畫旨在建構出一套車上診斷系統(OBD)行車記錄器實驗模組，同時進行教學成效之評估。本研究首先蒐集並整理車上診斷系統(OBD)行車記錄器之相關資料，接著製作嵌入式微處理器實驗模組，逐步整合出一套完整的車上診斷系統(OBD)行車記錄器教學模組，最後進行主題式教學活動，以評估實驗模組之實施成效，據以作為未來開設有關於車上診斷系統(OBD)行車記錄器相關課程教學時之參考。

## Abstract

The industry innovates continuously in order to improve the competitions; the vehicle electronic has already become the star of the vehicle industry. On-Board Diagnostics, or OBD, is a generic term referring to a vehicle's self-diagnostic and reporting capability. OBD systems give the vehicle owner or a repair technician access to state of health information for various vehicle sub-systems. All new vehicles sold in Taiwan starting in manufacturer's year 2008 must have OBD capability. This research applies the embedded microprocessor to the OBD driving recorder. An OBD driving recorder experiment module is proposed according to offer a material of study about embedded microprocessor applied to OBD. The application of the proposed method promotes the education of electronic vehicle. In order to implement the embedded microprocessor in the vehicle electronic, this project develops an OBD driving recorder experiment module according to teaching strategy and teaching materials. This research collects and analysis relevant materials of the OBD driving recorder. An embedded microprocessor is designed to construct a set of vehicle electronic experiment. Most efforts will be focusing on developing instructional materials relating to OBD driving recorder experimental module. Finally, the effects and results will be evaluated by of theme type teaching. The results of study could be the reference of curriculum for the vehicle electronic education in the future.