

UNIVERSITI TEKNOLOGI MARA

**SOFTWARE DESIGN AND DEVELOPMENT FOR
AUTOMOTIVE ONLINE MONITORING SYSTEM**

NOOR HAFIZI BIN HANAFI

**Thesis submitted in fulfillment of the requirements
for the degree of
Master of Science**

Faculty of Electrical Engineering

May 2011

ABSTRACT

An online monitoring system is an electronic system that collects data over time or in relation to location either with a built in instrument or sensor or via external instruments and sensors. An electronic online monitoring has replaced chart recorders in many applications. The vehicle online monitoring records the status data related to the security performance of automobile and integrate them, which can implement a real-time monitoring and diagnosis for the vehicle safety state. The Data acquisition can be classified three types: analogue quantity, switching value and instantaneous quantity. The goal of this research is to help scientist and engineers to more quickly and effectively extract important information from experimented car. The amount of data recorded can be overwhelming, which can restrain the effectiveness of the data. The purpose of this research is to increase the usefulness of the data through organizing, summarizing and analyzing. A computer program will be developed and written to implement more sophisticated data viewing methods. The online monitoring data functionalities is to record the speed of vehicle, engine revolution (rpm), engine temperature, fuel volume and distance. All values such as tyre sizes (to determine speed), fuel sender (to determine fuel volume in litre) and temperature sender (to determine engine temperature in Celsius) is downloaded to EEPROM. All the recorded information is saved in RAM of Microprocessor, which can be reset after load the information to the PC using serial communication (UART).

The V-model technique is very helpful for the software development. The NEC microcontroller can support for other application likes CAN Bus, LIN Bus and Serial communication likes Manchester code. The microcontroller has reserved more memory space for expend the application. The online monitoring data can save a lot of money and time to measure the data from the sensors. The behavior of the sensor input can be monitored by using the online monitoring data. The existence of the online monitoring system has an advantage for the vehicle consumers. Since the system could retrieve accurate signals such as the fuel volume with resolution 0.01 litre and the traveling distance in meter with resolution 100m, actual speed in km/h with resolution 0.1 km/h and actual revolution. Using the online monitoring data the driver can also detect the defective sensor when the sensor input remain at certain value or zero during car moving. The driver could realize the fuel consumption in seconds and can optimized their driving maneuver. The retrieved data from the sensor can be studied and analyzed for further improvement of the vehicle.

ACKNOWLEDGEMENT

**IN THE NAME OF ALLAH,
(AL MIGHTY) THE GRACIOUS, THE MOST MERCIFUL**

Alhamdulillah, with His willing has allowed me to complete this research.

First and foremost, I would like to express my special gratitude to my principal supervisor, Encik Zuraidi bin Saad for his guidance, advice, co-operation, useful ideas and encouragement in order to complete this research.

I would like to dedicate a deep appreciation to my co-supervisor, Associate Professor Dr. Hj Mohd. Asri Bin Mansor who had given very good technical guidance, valuable suggestions and moral support throughout the completion of this research.

My appreciation also goes to the Coordinator of Master of Science (Faculty of Electrical Engineering) (by Research), Associate Professor Dr. Mohammad Nawawi Seroji, and Associate Professor Dr. Mohd Hezri Fazalul Rahiman for their effort to ensure her students are always comfortable with the research environment.

Special thanks, as always, are reserved for my loving parents, who have given their unfailing inspiration, love and understanding throughout all these years. I am also grateful to my wife and my lovely kids, who always pray for my success in my studies in UiTM. Not to forget, special thanks to lecturers and to all my friends for their support and those who were involved whether directly or indirectly in helping me to finish this research.

Noor Hafizi Bin Hanafi

May 2011.

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