ABSTRACT

The proposed work demonstrates the architecture of an Ethernet prototype platform for On-Board Diagnostic System (OBD) and a camera based application using an Advanced RISC Machines (ARM) centred system. The Proposed work develops DoIP gateway device that provides its diagnostics services over Ethernet and TCP/IP allowing the vehicle to be connected directly to a test tool that is available on the local network or the network. Driver is also provided with a user interface through which user can read any of the sensor values by selecting on the list. Diagnosis of faults in parameters, notification of sudden changes to the driver, and indication regarding the reason for the fault are included in the system setup. The driver can find out the faults in car on the spot and this does not require an OBD scan tool for it. If in case the vehicle got struck in remote areas, the proposed OBD system inside the vehicle can be connected to the vehicle service centre by providing internet facility. The presented work focuses on a migration concept for replacing today’s employed Controller Area Network (CAN)-buses by Ethernet/IP-based networks. The Vehicle is now directly accessible to any PC with an Ethernet local area Network (LAN) interface.

When connected to the internet it offers the benefits of accessing advanced services provided by the vehicle manufacture in real-time. Due to ever more complex electronic systems and the frequently growing volume of data in vehicles, vehicle access for diagnostics and Electronic Control Unit (ECU) programming has to be correspondingly efficient. For this purpose, communication-based on Ethernet technology has been precise with Diagnostics over Internet Protocol (DoIP). In recent times, Ethernet-based DoIP is useful to automotive systems, and in-vehicle gateways have been initiated to assimilate Ethernet with usual in-vehicle networks, such as the Local Interconnect Network (LIN), Controller Area Network (CAN) and FlexRay. In this work, a remote diagnostic vehicular gateway is implemented under a Real Time Operating System (RTOS) environment for an automotive system is presented.