

FUZZY BASED SYSTEM MODELING USING (μ COS-II)

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Abstract:

Time alarm for real time demo with sensors with real time operating system (μ COS-ii). It is the first injector that is able to test the behavior under inconsistency situations of arbitrary The proposed system consider the Fault Injection of Injection molding Machine Automation industries and software for CAN nodes and the first that makes it possible to inject faults that may lead to integrity errors without requiring any modifications to the nodes' software or CAN controllers. Moreover, Sfi CAN allows the remote and flexible configuration of fault injection and the retrieval of accurate information about the subsequent behavior of the nodes.

Key Words:

Fuzzy Controller, μ COS-ii, Sfi CAN, fault injection

Introduction:

Fuzzy modeling is the method of describing the characteristics of a system using fuzzy interface rules[1-6]. The method has a distinguishing feature is that it can express linguistically complex nonlinear systems, It is however, very hard to identify the rules and tune the membership functions of the fuzzy reasoning. Fuzzy controllers are normally built with the use of fuzzy rules[7-11]. These fuzzy rules are obtained either from domain experts or by observing the

people who are currently doing the control. In the automotive domain, CAN is the most widely adopted network technology, and new CAN-based applications and protocols are expected to be introduced. In fact, although the use of CAN in the most critical automotive applications is still controversial, standards such as AUTOSAR establish it as one of its fundamental technologies, and there is interest in integrating

CAN with newer field buses, such as Flex Ray, which are used as high-speed backbones given their increased bandwidth. In part, this interest in CAN is due to the current economic situation[12-16], Which makes companies reluctant to invest in newer but more expensive technologies.

The Star-based physical Fault Injector for CAN, sfi CAN is based on a star topology forCAN, which is transparent from the nodes point of view. Figure 1.1 shows the high-level architecture of the fault-injection infrastructure[17-21]. Each node is connected to a hub, where a fault injection module resides, by means of a dedicated link comprised of an uplink and a downlink. A node's CAN controller is connected to the node's link by two CAN transceivers using a configuration identical to the one in CAN cent rate. Inside the hubs a coupler module implements CANs wired-AND function by performing the logical AND of the uplink signals and thenBroad casting the result through all downlinks. Logically this implement a CAN bus, but with the advantage that local faults can be injected into the nodes with enough granularity to

only affect an incoming or outgoing signal[22-29].

The hub also contains a CAN Module. Its function is to observe the coupled signal, output by the coupler module[30-35], and to provide to the fault-injection module a set of signals indicating which bit within which bit field is currently broadcast. If other modules are added to the hub, the fault injector can also be used for more advanced CAN star topologies, e.g., if CAN cent rate's fault treatment module is added, the fault injector can be used to inject faults into a CAN cent rate network.

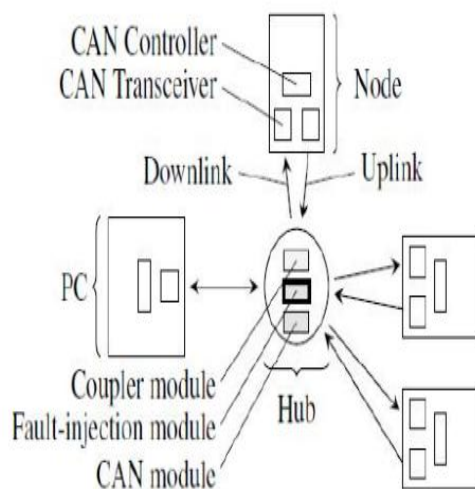


Fig.1.1 Proposed Architecture

The proposed design for an active star topology called star based physical fault injection infrastructure for CAN networks. Our design solves the limitations indicated above by means of an active hub, which prevents error propagation from any of its

ports to the others. Due to the specific characteristics of this hub, it is fully compatible with existing CAN controllers [1,14]. Here, bus and star topologies are compared, describes the topology basics, paying special attention to the mechanisms used for detecting faulty ports, and finally describes the implementation and test of a prototype. Here, the project concentrates mainly on the automobile industries and their fault diagnosis and gives flexibility to supervise everything under one roof i.e. one central web server that has information of all the automobiles in the industry. This fault injection method will describe whatsort of fault is occurred in the particular part of the automobile, which makes easy to the user to identify the fault and rectify it[36-40].

Fuzzy Configuration:

Performance of the controller must be measured and the membership functions and rules adjusted, based upon the performance. This process will be time consuming. The basic configuration of fuzzy logic controller consists of four major parts. i) Fuzzification, ii) Knowledge base, iii) Decision-making logic and iv) Defuzzification. The FuzzificationThe functions of the module is described below[41-45],

- Measure the values of input variables.
- Performs a scale mapping that transforms the range of values of input variable into corresponding universe of discourse.
- Performs the function of fuzzification that converts input data into suitable linguistic values, which may be viewed lables of fuzzy sets.

Proposed Method:

The new system, which is designed using fuzzy controller replaces the conventional standoff. The hub can play a key role to diagnose and passivity faults, thereby reducing the number of components whose failure can cause a severe failure of communication, to a unique single point of failure, i.e., the hub. The various sensors are connected to the analog to digital converter channels and the digital values of the sensors are displayed on the web server. Here three linguistic variables are used with respect to speed.

Key Characteristics of this work are:

Flexible

Expandable

Moderate Reliability

Moderate performance

Disadvantages:

Entire network shuts down if there is a break in the main cable

Terminators are required at both ends of the backbone cable

Difficult to identify the problem if the entire network shuts down

Not meant to be used as a stand-alone solution in a large building

It is slow when more devices are added into the network

If a main cable is damaged then network will fail or be split into two networks

Conclusion:

The results that are obtained using sensor and the updating of the sensor values in the Monitoring Unit (MU). The proposed work consists of a web server application. Here, the LPC 2551 board is used to display the Temperature of the sensor. A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate.

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