FPGA BASED PLATFORM FOR VALIDATION OF PLC CONTROL SPECIFICATIONS

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Abstract

Programmable logic controllers (PLCs), as a specialized type of embedded systems, have been introduced to increase system flexibility and reliability, but at the same time to give faster response time and lower cost of implementation. The reliability of such systems depends heavily on the involved testing or verification techniques. In these areas, functional and real-time properties are highly concerned. PLC programs are difficult to be analyzed manually, using formal methods. Testing safety-related software is still an indispensable step to improve software reliability. Failures arising from the execution of such software could lead the equipment under control (EUC) to risky states that include environmental disasters, damage to human health, and financial losses. There are many researches carried out & going on PLC validation using the IEC 61131 standard as well as some model checkers such as SMV, NuSMV and UPPAAL. But many of them have not practically performed it. This project proposes method for validating the PLC using FPGA for conforming its response to assure safety critical conditions.