

EINLADUNG

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Titel: Design Patterns for Safety-Critical Embedded Systems

Abstract:

Over the last few years, embedded systems have been increasingly used in safety-critical applications where failure can have serious consequences. The design of these systems is a complex process, which is requiring the integration of common design methods both in hardware and software to fulfill functional and non-functional requirements for these safety-critical applications.

Design patterns, which give abstract solutions to commonly recurring design problems, have been widely used in the software and hardware domain. In this talk, we address how to adopt the concept of design patterns in the design of safety-critical embedded system. In our work, a catalog of design patterns was constructed to support the design of safety-critical embedded systems. This catalog includes a set of hardware and software design patterns which cover common design problems. Furthermore, the catalog provides a decision support component that supports the decision process of choosing a suitable pattern for a particular problem based on the available resources and the requirements of the applicable patterns.

As non-functional requirements are an important aspect in the design of safety-critical embedded systems, this talk focuses on the integration of implications on non-functional properties in the existing design pattern concept to form a new pattern representation. The considered requirements include safety, reliability, modifiability, cost, and execution time. Moreover, this talk will address the safety and the reliability assessment methods which have been proposed in our representation to show the relative safety and reliability improvement that can be achieved when using the design patterns under consideration.

Es laden ein: Die Dozenten der Informatik