

Analysis of a Dual-Core microcontroller for safety critical automotive applications according to ISO 26262

Motivation

Automotive control units increasingly are subject to requirements regarding safety and reliability. This is due to new functionalities (driving assistant systems, drive-by-wire, etc.) on the one hand and the growing cross-linking of different functionalities on the other hand. When designing systems of this kind it is required to choose an appropriate combination of hardware and software components. These must fulfill the functional requirements as well as safety requirements and must not violate any other non-functional requirements such as costs and energy consumption.

Task

Your task in this thesis will be the examination of requirements according to the corresponding norms (IEC61508/ISO26262) using exemplary applications. You may on the one hand compare different applications with each other (e.g. active steering vs. motor control vs. deck control), or on the other hand examine what kind of requirements result from implementing multiple conditionally safety-critical and non-safety-critical applications on a single controller.

Fields of Study

- Computer science
- Electrical engineering or comparable

Your participation in the following lectures is desired

- Introduction to Embedded Systems
- Safety and Reliability Engineering
- Programming Embedded Hardware

In case of interest, please send an email to the tutor.

Student

- Thomas Siegbert

Tutor

- Falk Salewski

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