TU Clausthal

Kolloquiums-Reihe des Instituts für Informatik

Dienstag, 30.05.2017, 15 Uhr s.t., Seminarraum 106a (T2), IfI, Hörsaalgebäude, Albrecht-von-Groddeck-Straße 7, Gebäude D5

Managed Evolution of Automotive Software Product Line Architectures

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The automobile has become the technically most complex consumer product. The amount of software in cars has been growing exponentially since the early 1970s, and one can expect this trend to continue. Today, automotive software systems and functions are the major drivers for innovations in cars.

Automotive manufacturers and suppliers design and implement complex applications by mechanisms that allow them to implement such functionality on integrated platforms. This offers the opportunity to build a variety of similar systems with a minimum of technical diversity and thus allows for strategic reuse of components. However, the increasing complexity and degree of variability of automotive software systems hinders the capabilities for reusability and extensibility of these systems to an increasing degree. After several product generations, software erosion is growing steadily, resulting in an increasing effort of reusing software components, and planning of further development.

First I will present an approach for repairing an eroded automotive software consisting of a set of product architectures by applying strategies for recovery and discovery of the product line architecture. Next, I will introduce a holistic approach for a long-term manageable and plannable software product line architecture for automotive software systems. As a part of this approach, I consider automotive product development and prototyping based on software product lines, and propose an approach for architecture compliance checking to avoid software erosion. The approach was applied on a real world example, a brake servo unit (BSU) software system from automotive software engineering. I will present the results of a corresponding field study. As a result, we could avoid architecture erosion for several years, and achieve a high degree of reuse. Even the high number of potential variants could be managed with the approach.

Weitere Informationen:

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