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### Smart Detection of Deficiencies and Faults in Automotive Software Releases

This study introduces a novel approach for evaluating the Electric and Electronic automotive software development processes and software releases across all V-model phases. The aim is to provide transparency among the stakeholders and deliver precise feedback over the development cycles.

The ultimate purpose is to prevent software defects and reproducible conflicts.

After a systematic literature review of the complete development, the proposed model enables the stakeholders to evaluate the status, performance, and quality of the software packages by posing targeted questions to the involved stakeholders and evaluating the answers to induct the conclusions. The questions are resulted from the literature as metrics and principles, before being transformed into questions. The questions are selectively proposed by an intelligent Reinforcement Learning agent using Contextual Multi-Armed Bandits (CMAB), which serve as a recommendation system. Each question has a different weight, pre-evaluated by experts for this study, and each answer has a different value. These two parameters define the reward of the agent, which is balancing between exploration-exploitation dilemma.

The questions act as software packages containing all vital information about the evaluation, allowing a comprehensive assessment of the system under test.

The model of this study is boundlessly scalable in terms of the complexity of the target software or component that can be evaluated, empowering the continuous improvement of its performance as the algorithm learns over time. The evaluation results confirm that the concept is effectively functional under any circumstances, addressing the main challenges of cold start, partial feedback, and data parsing. In summary, this thesis contributes to automotive software development by enhancing transparency and enabling the punctual detection of process deficiencies and software faults.

## Öffentliche Verteidigung im Rahmen des Promotionsverfahrens

“Smart Detection of Deficiencies and Faults in Automotive Software Releases”

21. März 2025, 11.00 Uhr

Technische Universität Chemnitz, Straße der Nationen 62, Raum: A12.336 (alt: 1/336)

Alle interessierten Personen sind eingeladen.