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Concept for Interaction of Hardware Simulation and Embedded Software in a Digital Twin Based Test Environment

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Abstract

The test processes of cyber-physical systems are time- and cost-intensive. Industry 4.0 provides promising approaches that enables a flexibilization of tests. In this context, this paper addresses the research question on how to virtualize these by using digital twins. The emphasis is on the interaction of simulated hardware and embedded software. Thus, the efforts related to testing can be reduced and, as consequence, faster product and process creation cycles are achieved. We further investigate that models and interfaces are necessary to integrate the digital twin into the test process. The approach is demonstrated and validated by a prototypical implementation.

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