Abstract:
Despite several architectural advantages for the challenges of future manufacturing systems, the IEC 61499 standard is currently not widely accepted by industry. One advantage of the IEC 61499 is the concept of downtimeless system evolution. An extension of this, dynamic software updating, which allows switching out running processes and deal with unplanned changes, is readily available in the programming language Erlang. This paper investigates the real-time performance of an asynchronous, parallel IEC 61499 basic function block implementation in Erlang, a functional programming language with a soft real-time, concurrent runtime environment. As a result, although hard real-time performance is not guaranteed and the runtime environment is executed on top of a regular operating system, the performance is consistent and promising for future implementations and extensions.

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