

Call for Papers

Special Session 02 - Dynamic Reliability Calculation of Industrial Automation Systems Using Digital Twins

Organized and Co-Chaired by
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❖ FOCUS

The digital twin has evolved from a mere idea to a more and more concrete technology that can support the engineering, maintenance, reconfiguration, recycling, etc. of an asset (an industrial automation system). An important future application of the digital twin would be the dynamic calculation of the reliability of the asset throughout its life cycle. However, the digital twin does not yet support reliability estimation sufficiently, despite the obvious benefits. Using the dynamic characteristics of a digital twin, reliability can be calculated dynamically and instantaneously, in contrast to conventional approaches to calculating the reliability of industrial automation systems, which only consider information from product specifications or experiments. Furthermore, the static information of an asset may age and therefore no longer accurately represent the asset in late phases of its life cycle. Challenges lie in approaches automatically spotting limitations of models, in calculation of reliability at runtime and in model quality management throughout life cycle.

❖ TOPICS

- ❖ Dynamic calculation of the reliability of industrial automation systems
- ❖ Digital Twin and its aspects considering reliability and safety
- ❖ Adaptive models of digital twin
- ❖ Challenges and limitations of using digital twins for reliability calculations
- ❖ Experiences and case studies related to digital twins for functional safety and reliability calculation
- ❖ Machine learning on resource limited industrial automation systems
- ❖ Robust machine learning on systems with less data

❖ AIM

The aim of the Special Session is to bring together researchers and practitioners from the industry and academia and provide them with a platform to report on recent advances and developments in the newly emerging areas of dynamic calculation of reliability considering Digital Twin and AI-methods

❖ CONFERENCE FORMAT

The conference will comprise multi-track sessions for regular papers, to present significant and novel research results with a prospect for a tangible impact on the research area and potential implementations, as well as work-in-progress (WiP) and industry practice sessions.

❖ AUTHOR'S SCHEDULE Regular and special sessions papers (2022)

Submission deadline	April 01
Acceptance notification	May 06
Deadline for final manuscripts	June 17