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ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering

Special Issue on Probabilistic Digital Twins in Additive Manufacturing

Additive manufacturing (AM) has made enormous progress over the past decade, as it is capable of producing complex parts with significantly less fabrication constraints compared to existing manufacturing technologies over a broad dimensional scale. Complicated AM process variability is one of the greatest obstacles in performance evaluation and quality control of additively manufactured materials and products, and thus hinders widespread implementation of AM techniques. Digital twin, as a digital replica of a production system or process, has great potential in overcoming quality variability and reliability issues in AM processes. With the development of probabilistic digital twins in AM and uncertainty management techniques, it becomes possible to reduce the computational burden for multi-scale modeling and realize reliable AM processes by taking advantage of large volumes of in situ sensor data to optimize process parameters, detect, and prevent process faults.

Topic Areas

- Online monitoring, diagnostics, and prognostics of AM processes
- Digital twin-enabled AM process optimization under uncertainty
- Cyber manufacturing process design under uncertainty
- Probabilistic model predictive control in AM
- Validation and certification of additive manufacturing process
- Surrogate modeling of AM process
- Deep learning for additive manufacturing
- Virtual reality and augmented reality for digital twins in AM
- Case studies of digital twins in AM applications

Publication Target Dates

Paper submission deadline	**September 30, 2023**
Initial review completed	**January 31, 2024**
Special Issue publication date	**June 2024**

Submission Instructions

Papers should be submitted electronically to the journal at **journaltool.asme.org**. If you already have an account, log in as an author to your ASME account. If you do not have an account, sign up for an account. In either case, at the **Paper Submittal** page, select the ***ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*** and then select the Special Issue **Probabilistic Digital Twins in Additive Manufacturing.**

Papers received after the deadline or papers not selected for inclusion in the Special Issue may be accepted for publication in a regular issue.

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