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### Special Issue on Digitalization and Reverse Engineering for Additive Manufacturing

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*ASME Journal of Computing and Information Science in Engineering*

#### Special Issue on Digitalization and Reverse Engineering for Additive Manufacturing

Additive manufacturing (AM) is superior in fabricating parts with complex geometry and intricate features directly from a computer-aided design (CAD) model. Nevertheless, it can be challenging and time-consuming to create 3D-CAD models from design information of other forms, such as legacy parts, 2D-drafts, and proprietary model formats. Reverse engineering tools, such as 3D-scanning, provide an efficient and effective solution to transform a physical object, e.g., a clay model or a legacy part, from the physical world to the digital. Meanwhile, with the fast-increasing demand and expectation of highly-customized products, the growth of mass customization also becomes a central trend in manufacturing, where the digitalization of AM is playing a critical role in driving it forward. This gives rise to a large variety of unique applications, including human-centered design, which critically need the assistance of reverse engineering and AM. On the other hand, as a critical technology in remanufacturing, reverse engineering provides a fast solution for repair, redesign, and reengineering. Increased capabilities in measurement systems, computer graphics, knowledge engineering, machine learning, and the integration of AM, also provide new opportunities to enhance the redesign/reengineering capability, extend the product life cycle, and achieve sustainable (re-)manufacturing.

This Special Issue will solicit cutting-edge studies on digitalization and reverse engineering for AM, including the associated innovation in computer-aided design and digitalization techniques, manufacturing and remanufacturing, redesign and reengineering, as well as their integration with AM. Such digitalization and reverse engineering-related techniques can significantly advance manufacturing industries and will have tremendous impacts by providing enhanced functionalities and customizability of products, enabling product digital twins, and ultimately improving manufacturing capability, throughput, cost-effectiveness, and sustainability. Topics of interest include, but are not limited to:

#### Topic Areas

- Technical innovations in reverse engineering, 3D-scanning, computational metrology, inspection, and health monitoring
- Artificial intelligence and machine learning tools for reverse engineering
- Geometric Product Specification and Verification (GPS&V), and current Geometric Dimensioning and Tolerancing (GD&T) standards for conformance assessment of complex designs and additive manufacturing
- Geometric processing and digital threads in reverse engineering for additive manufacturing
- Computer-aided geometric (re-)design for additive manufacturability (e.g., layer compensation, design modification, etc.)
- Reverse engineering in human-centered design
- Reverse engineering and design optimization for additive manufacturing (including topology optimization, shape optimization, etc.)
- Mass customization through the digitalization of additive manufacturing
- Sustainable design for manufacturing/remanufacturing
- Product redesign and reengineering to extend the product lifecycle

#### Publication Target Dates

Paper submission deadline	<b>May 1, 2023</b>
Review completed	<b>September 30, 2023</b>
Special Issue publication date	<b>April 2024</b>

#### Submission Instructions

Papers should be submitted electronically to the journal at [journaltool.asme.org](http://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 [ASME Journal of Computing and Information Science in Engineering](#) and then select the Special Issue **Digitalization and Reverse Engineering for 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. Early submission is highly encouraged. Please also email the Editor, Professor Yan Wang, at [yan.wang@me.gatech.edu](mailto:yan.wang@me.gatech.edu), to alert him that your paper is intended for the Special Issue.

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