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Special Issue on Data Wrangling to Support Research on Engineering Design and Manufacturing

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Special Issue on Data Wrangling to Support Research on Engineering Design and Manufacturing

The digitalization of manufacturing and the technologies associated with Industry 4.0 has led to an explosion of unstructured data across the entire product lifecycle, including engineering design and manufacturing activities, which are embodied in the emerging “digital thread” and corresponding “digital twin” of the product. These technologies expose rich information that can be used to achieve data-driven (re)design of products and engineering, support continuous improvement of manufacturing operations, and enhance product development practices. However, challenges persist across the entire product lifecycle due to the massive scale at which this data is generated and shared (e.g., some researchers have reportedly resorted to the inelegant solution of mailing hard drives). Significant challenges also arise due to the format, variety, and content of the data, limiting its broader use in engineering design and manufacturing research.

This Special Issue aims to capture contemporary perspectives on both the challenges and opportunities regarding the generation, collection, curation, storage, transmission, and transformation of engineering design and manufacturing data in digital databases and repositories.

Topic Areas

Topics of interest include, but are not limited to:

- Methods for data storage, management, and curation of product lifecycle data
- Repository-based exploration of design and manufacturing data
- Translation and transmission techniques for facilitating scalable data-driven pipelines
- Automated data/model generation for engineering workflows (e.g., virtual scenes and data-driven decision-making)
- Opportunities of standards development for data management in engineering
- Data representations and data schemas to enable the digital thread

Publication Target Dates

Paper submission deadline	April 15, 2022
Initial review completed	June 2022
Special Issue publication date	December 2022

Submission Instructions

Papers should be submitted electronically to the journal at journaltool.asme.org. If you already have an account, log in as author and select **Submit Paper** at the bottom of the page. If you do not have an account, select **Submissions** and follow the steps. 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 **Data Wrangling to Support Research on Engineering Design and 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-in-Chief, Professor Satyandra K. Gupta, at guptask@usc.edu, to alert him that your paper is intended for the Special Issue.

Non-Standard Submission Instructions

Authors may submit either Tech Briefs (~5,000 words) or Research Articles (~10,000 words). The focus of this Special Issue is on the generation, collection, curation, storage, transmission, and transformation of the data itself. Research and development contributions should explicitly relate to the domain-specific challenges of mechanical design, product development, manufacturing, and/or similar areas. Submissions that propose novel machine learning or other algorithms, for instance, will be considered out-of-scope. To the extent possible, authors are encouraged to make accessible the data and software used in their submissions.

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