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ASME *Journal of Mechanical Design*

Special Issue on Artificial Intelligence and Engineering Design

Artificial Intelligence (AI) has advanced tremendously and has the potential to intersect the engineering design process in a variety of ways. For instance, designers could use AI to support more automatic and intelligent knowledge extraction and knowledge representation, to support early design ideation -- making the creation of products with enhanced multifunctionality possible, or even to discover design solutions to previously unrealized functions. Additionally, AI methods have great potential to solve problems where human intuition or human processing capabilities are insufficient, making it possible to expand the richness of design spaces that can be navigated effectively through AI support. Further, used as an identification tool, AI could enable more efficient and higher-performance design solutions during design revision at the manufacturing and assembly level by screening and identifying part consolidation design and multifunctional design potentials. An inverse perspective is also possible, where results from engineering design research, such as design automation methods, could be used to rapidly generate rich and tailored data sets that amplify the impact of AI methods. Furthermore, engineering design challenges and knowledge from design research could help inform new advancements in AI.

Topic Areas

The following is a non-comprehensive list of representative topics within scope of this Special Issue:

- Descriptive knowledge extraction, representation and reasoning techniques for design using AI
- Early-stage design concept generation and exploration enabled by AI methods
- Designer-AI interaction (e.g., cognitive assistants for design)
- Applications of natural language processing to engineering design
- Capitalizing on product/system lifecycle datasets using AI
- AI-enabled material, metamaterial, and material system modeling and design
- Characterization and exploration of AI-systems robustness-performance tradeoffs
- Design methods for AI-enabled autonomous engineering systems (e.g., phones and autonomous vehicles)
- AI applied to Internet-of-Things (IoT) and cyber systems design and decision-making
- Survey, review, and assessment of challenges and opportunities at the interface of AI and engineering design
- AI-assisted design of mechanisms and other mechanical systems
- Education of AI for engineering design

Publication Target Dates

Paper submission deadline:	**April 1, 2021**
Initial review completed:	**June 15, 2021**
Final decision:	**September 1, 2021**
Special Issue publication date:	**December 2021**

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 Mechanical Design*** and then select the Special Issue **Artificial Intelligence and Engineering Design**.

Papers received after April 1, 2021 may still be considered for the Special Issue, if time and space permits.

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