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# Editorial Statement—Harnessing the Power of Large Language Models Responsibly in Applied Analytics

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Large language models (LLMs) provide revolutionary capabilities that can contribute to significant benefits in applied analytics. Their ability to understand and generate natural language, synthesize complex information, quickly analyze vast amounts of unstructured data, and—especially in more advanced models—carry out complex reasoning, may open new frontiers for the field. This is as these capabilities offer immense potential to accelerate the creation of analytics pipeline and democratize access to advanced analytics, enabling decision makers to interact with sophisticated models without requiring deep technical expertise. We believe that it is part of the responsibility of the *INFORMS Journal on Applied Analytics* to educate our readership on new, relevant capabilities and help them remain at the forefront of analytics applications. Therefore, the journal recognizes and would like to encourage submissions that explore such innovative uses of LLMs to enhance the application of analytics.

However, alongside the potential benefits of LLMs in the field, we feel that it is vital to acknowledge that integrating LLMs into analytics pipelines, especially those that drive decision making, introduces new and distinct challenges that must be addressed to ensure responsible deployment. Recently, we have seen a growing number of submissions that include the use of LLMs as part of recommendations or decisions directly consumed by end users, often without the involvement of analytics experts. Additionally, although model validation has always been a cornerstone of applying analytics, the nature of LLMs introduces complexities that differ fundamentally from pre-existing analytical approaches and models, which make validation even more essential.

Pre-existing models typically operate within more well-defined mathematical frameworks, with more transparent assumptions, interpretable parameters, and predictable behavior under known conditions. Validation in these contexts often involves well-established

methods, such as statistical diagnostics, sensitivity analysis, what-if analysis, or performance metrics on test data.

LLMs, by contrast, are at their core probabilistic next-token generators trained on vast corpora of text. This means that their outputs are not deterministic solutions to well-posed problems but rather, contextually plausible continuations of input prompts. Moreover, the correct approaches and methodologies for validating the output of such models are in their infancy. These facts along with the widespread accessibility of these models result in critical concerns regarding the integration of LLMs into analytics pipelines, especially pipelines that drive decision making.

- Hallucination risk. LLMs are known to generate plausible but incorrect or misleading outputs, which can lead to erroneous decisions if not properly validated.
- Model opaqueness. The probabilistic nature of LLMs and their lack of interpretability as next-token generators make it difficult for users to understand the rationale behind their outputs.
- Convincing misexplanations. LLMs can produce explanations that appear coherent and authoritative, even when they are fundamentally flawed.
- Lack of expert oversight. The removal of analytics professionals from the decision-making loop eliminates a vital layer of scrutiny and domain expertise.

Given these risks, it is our position that any application of LLMs in decision-making contexts addresses these concerns by explicitly including validation of LLM outputs, transparency regarding the potential shortcomings and risks of LLMs, and accountability (i.e., the responsibility of the decision maker in interpreting and acting upon model-generated recommendations).

We will be updating our editorial statement and submission guidelines to make addressing such requirements an explicit part of any analytics application that includes such LLM usage.

It is our hope that by taking this position and with the corresponding updates to the submission guidelines, we will continue publishing state-of-the-art work that describes how to push the boundaries of applying analytics impactfully while upholding the highest standards of rigor and responsibility.

**Segev Wasserkrug**, PhD, is a Senior Technical Staff Member and leader at IBM Research. He works on enhancing mathematical optimization algorithms with AI and quantum computing and has 25+ years' experience in applying optimization and AI to benefit IBM and its clients. He promotes democratized optimization, including via LLMs and has 60+ publications, ~50 patents and INFORMS finalist honors.