# Editorial

The *Journal of Engineering Research and Sciences (JERS)* is pleased to present a collection of research contributions that demonstrate the breadth of contemporary engineering research and its growing impact on both advanced technological systems and everyday applications. The studies featured in this issue address critical challenges in explainable artificial intelligence, predictive maintenance, fluid mechanics, and product design. Through the integration of data-driven methodologies, analytical modeling, and practical engineering solutions, these contributions advance scientific understanding while offering tangible benefits for industry and society.

As artificial intelligence becomes increasingly embedded within modern data center operations, the need for transparency and trust in machine learning models has emerged as a critical concern. One contribution investigates the application of explainable artificial intelligence techniques within a large-scale solid-state drive failure prediction framework. Utilizing extensive real-world data from more than half a million SSDs, the study evaluates the effectiveness of LIME and SHAP in enhancing model interpretability while maintaining predictive performance. By integrating explainability into a cost-sensitive maintenance strategy, the research demonstrates substantial operational savings and improved decision support for data center management. The findings highlight the importance of transforming traditionally opaque machine learning systems into transparent and verifiable tools capable of supporting reliable industrial operations. [1]

Fluid mechanics continues to provide valuable insights into the design and optimization of everyday consumer products. A detailed investigation into the discharge behavior of viscous liquid detergents examines the influence of outlet geometry, material characteristics, viscosity, and air-vent configurations on flow performance. Combining theoretical analysis based on hydrostatic pressure and Bernoulli's principle with extensive numerical simulations and experimental observations, the study identifies outlet radius as the dominant factor governing discharge volume while emphasizing the stabilizing role of air vents. The findings contribute to a deeper understanding of viscous-fluid transport and offer practical guidance for the design of household dispensing systems, automatic detergent delivery devices, and other applications requiring precise fluid control. [2]

The contributions presented in this issue underscore the value of combining theoretical rigor with practical innovation to address challenges across diverse engineering domains. From improving the transparency and trustworthiness of artificial intelligence systems in critical infrastructure to enhancing the performance of consumer products through fluid mechanics principles, these studies exemplify the role of engineering research in advancing technology and improving quality of life. It is hoped that the findings reported herein will stimulate further inquiry, encourage interdisciplinary collaboration, and contribute to the continued advancement of engineering science and practice.

**References:**


[1] S.K. Kumar, "Explainable AI for SSD Failure Prediction: Using LIME and SHAP for Transparency," *Journal of Engineering Research and Sciences*, vol. 5, no. 4, pp. 1–16, 2026, doi:10.55708/js0504001.

[2] Y. Kwon, E. Jekal, "An Extended Investigation of Detergent Bottle Structure Based on Fluid Mechanics," *Journal of Engineering Research and Sciences*, vol. 5, no. 4, pp. 17–23, 2026, doi:10.55708/js0504002.


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