Editorial

As enterprises and critical infrastructures become increasingly data-driven and interconnected, the demands placed on integration architectures, physical system reliability, and trustworthy analytics continue to intensify. The three papers featured in this editorial reflect how contemporary research is addressing these demands through vendor-agnostic digital frameworks, rigorous experimental validation of power system components, and statistically grounded evaluation of machine learning models in healthcare. Although spanning distinct domains, each study emphasizes robustness, transparency, and practical decision support under real-world constraints.

The first paper addresses the growing complexity of multi-cloud enterprise environments and the limitations of vendor-locked integration models. By proposing a comprehensive vendor-agnostic architecture built on Boomi and SAP Business Technology Platform, the study demonstrates how resilient integration flows can be deployed across AWS, Google Cloud Platform, Azure, and Oracle Cloud Infrastructure. Through detailed design principles, governance models, and comparative analysis of cloud-native capabilities, the work shows how interoperability, security, and compliance can be maintained without sacrificing agility or performance. Practical evaluations of common enterprise workflows further illustrate how the proposed framework reduces technical debt, optimizes costs, and accelerates digital transformation. The forward-looking discussion on AI-driven integration, federated observability, and zero-trust pipelines positions the contribution as both technically actionable and strategically future-ready [1].

The second contribution shifts focus to power system protection, presenting an experimental investigation into the short-circuit behavior of metal oxide surge arresters under severe fault conditions. By testing pre-faulted 36 kV arresters at rated and extreme short-circuit currents, the study provides insights that cannot be reliably obtained through simulation alone. The results demonstrate the arresters' ability to relieve internal pressure, extinguish flames rapidly, and prevent enclosure rupture and hazardous component dispersal. This empirical analysis offers valuable guidance for both designers and end users, strengthening confidence in arrester performance and safety under real fault scenarios [2].

The third paper examines the trustworthiness of machine learning predictions in clinical decision-making by focusing on probabilistic calibration rather than discrimination alone. Using a structured heart-disease dataset, the study rigorously evaluates multiple classifiers and post-hoc calibration methods under a leakage-controlled workflow. The findings show that isotonic regression consistently improves probability quality for several widely used models while preserving discriminatory power, whereas other calibration techniques may degrade performance in certain cases. By combining diverse calibration metrics, statistical testing, and reliability visualization, the research provides a reproducible framework for selecting calibration strategies that enhance clinical interpretability and risk communication [3].

Together, these three studies highlight a shared commitment to building systems that are resilient, interpretable, and operationally reliable. Whether enabling seamless integration across heterogeneous cloud platforms, ensuring the physical safety of power system components under extreme conditions, or improving the trustworthiness of predictive models in healthcare, each contribution advances its field through rigorous methodology and practical relevance. Collectively, they underscore the importance of transparency, validation, and adaptability in designing digital and physical systems that support informed decision-making in complex, real-world environments.

References:

[1] P. Venkiteela, "A Vendor-Agnostic Multi-Cloud Integration Framework Using Boomi and SAP BTP," *Journal of Engineering Research and Sciences*, vol. 4, no. 12, pp. 1–14, 2025, doi:10.55708/js0412001.

[2] C.-E. Sălceanu, D. Iovan, D.-C. Ocoleanu, "Experimental Study of the Short-Circuit Current Performance of 10kAR.M.S and 20kAR.M.S Polymer Surge Arrester," *Journal of Engineering Research and Sciences*, vol. 4, no. 12, pp. 15–24, 2025, doi:10.55708/js0412002.

[3] P.A. Odesola, A.A. Adegoke, I. Babalola, "Model Uncertainty Quantification: A Post Hoc Calibration Approach for Heart Disease Prediction," *Journal of Engineering Research and Sciences*, vol. 4, no. 12, pp. 25–54, 2025, doi:10.55708/js0412003.

Editor-in-chief

Dr. Jinhua Xiao