Editorial

We are pleased to release the second issue of the fifth volume of **the Digital Signal Processing and Artificial Intelligence for Automatic Learning**," with the research outlined.

The first paper, **"Optimizing High-Dimensional Data Analysis Through Latent Representation Learning, Contrastive Embedding, and Consensus Clustering for Sensor Intelligence,"** introduces a unified, multi-stage unsupervised framework for sensor intelligence. This approach combines Variational Autoencoder (VAE)-based probabilistic latent representation learning with contrastive optimization techniquesincluding Triplet Networks, SimCLR, and BYOL and applies consensus hybrid clustering to reliably identify subgroups within high-dimensional digital sensor signals. The framework is validated on the IEEE DataPort binary-classification dataset, which contains 11 numerical features exhibiting temporal dependencies and event-driven activation patterns. Ultimately, the study delivers a scalable, robust solution for intelligent sensing, anomaly detection, cyber-physical monitoring, and unsupervised IoT analytics.

The second paper, **"Explainable AI-Driven Workforce Intelligence Framework for Automation Risk Analysis and Occupational Transformation toward 2030,"** presents an XAI-powered model designed to assess automation risk and guide occupational shifts through 2030. To address the widespread lack of interpretability in workforce-automation research, the framework integrates predictive analytics with global and local explainability mechanisms, along with an attention-inspired analysis of feature interdependencies. This combination reveals how socioeconomic and technological factors jointly shape occupational vulnerability. By clarifying the structural drivers of workforce disruption, the model equips policymakers, academic institutions, and industry leaders with actionable insights for developing targeted reskilling programs and adaptive labor strategies in an increasingly AI-driven economy.

The final paper, **"Adaptive Weighted Ensemble Clustering for Robust Latent Structure Discovery in RF Signal Datasets,"** introduces a novel ensemble clustering architecture tailored to radio-frequency (RF) signal analysis. The method fuses centroid-based, density-aware, hierarchical, and graph-based clustering algorithms into a single, adaptively weighted consensus model. Empirical results demonstrate that this approach substantially outperforms standalone clustering baselines, achieving a consensus silhouette score of 0.722 and exhibiting strong reproducibility across repeated subsampling trials. Looking ahead, the authors plan to incorporate self-supervised representation learning and optimize computational efficiency to enable real-time deployment on edge devices.

We hope that the research published in this issue outlines ongoing work in digital signal processing.

Editors