Editorial

We bring the first issue of the fifteenth volume of the **Electronic Devices** with the research outlined as follows.

In the first paper, "**Edge AI Chip Architecture: A Hierarchical Design Framework for Energy-Efficient On-Device Intelligence,"** the authors outlined a hierarchical architecture comprising four interdependent layers: compute fabric, memory subsystem, interconnect network, and system integration, which collectively address the multidimensional optimisation challenges inherent in on-device intelligence. They stressed the fact that edge AI architectures fundamentally diverge from conventional processors through specialized neural processing units (NPUs). They presented evidence that edge devices resolve >95% of inference requests locally, while cloud resources handle model training and federated learning aggregation.

For residual data generated in learned image and video compression pipelines, the authors of the second paper, "**Dataset-Level Entropy Characterization and Complexity-Aware Benchmarking for Learned Residual Coding,"** outlined a comprehensive entropy characterization and complexity-aware benchmarking framework. In this paper, the author presented a benchmark for evaluating entropy modelling efficacy independent of codec-specific preprocessing, establishing that adaptive, complexity-aware strategies, not static global models, are required.

In the last paper, "**Comparative Analysis of Entropy Modeling Strategies in Learned Image Compression: Hyperprior, Autoregressive, and Transformer-Based Approaches**," the author outlined a systematic comparative analysis of entropy modeling strategies in learned image compression (LIC), evaluating hyperprior (HP), autoregressive (AR), and transformer-based (TR) approaches under a controlled experimental framework. The experimental analyses revealed hierarchy in entropy modelling accuracy, quantified by cross-entropy gap.

We hope that the research presented in this issue is incremental in the Electronic Devices research.

Editors