

Special Issue

FPGA-Based Accelerators for Deep Neural Networks

Message from the Guest Editor

In recent years, deep learning has achieved remarkable breakthroughs across various artificial intelligence (AI) domains, including computer vision, natural language processing, and generative AI. The advent of large-scale models, such as Transformer-based Large Language Models (LLMs) and Diffusion models, has further pushed the boundaries of AI capabilities. However, these models come with ever-increasing computational complexity and memory demands, posing significant challenges to conventional computing platforms in terms of performance, energy efficiency, and scalability.

- Algorithm–hardware co-design for efficient FPGA-based DNN acceleration;
- System-level design and software tools for compiling and deploying models on FPGAs;
- Reconfigurable and adaptive computing architectures for AI/ML workloads;
- FPGA-based rapid prototyping of ML systems, including large-scale models;
- Programmable neuromorphic and spiking neural network implementations on FPGAs;
- Deployment and evaluation of Transformer, LLM, and Diffusion models on reconfigurable hardware;
- Design of FPGA accelerators with optimized attention mechanisms and generative model blocks;

Guest Editor

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