Author	Description	Methodology	Results	Limitations
Ee Fey Goh, ZhiYuan Chen, Wei Xiang Lim	Frequency Domain Convolutional Neural Network (FDCNN) for large image classification using FFT-based convolution operations.	Proposed Frequency Domain Convolution (FDC) and Frequency Domain Pooling (FDP) layers using RFFT, kernel initialization in spatial domain then transformed to frequency domain, Channel Independent Convolution (CIC), and convolution artifact removal. Built FDCNN architecture and modified VGG16 with Full FDC layers.	FDCNN achieved 54.21% faster training and 70.74% more memory efficient than equivalent CNN. Full FDC layer 46% faster than conventional convolution at 256/512 channels.	Lack of suitable frequency domain activation function limits architecture design. FDCNN shows accuracy decrease when overfitting begins.
Kai Xu, Minghai Qin, Fei Sun, Yuhao Wang, Yen-Kuang Chen, Fengbo Ren	Learning in frequency domain using DCT coefficients as input to CNNs, with learning-based frequency channel selection to identify important frequency components for image classification.	Convert RGB to YCbCr then DCT domain, group same-frequency components into channels (192 total), use learning-based gate module with Gumbel Softmax for dynamic channel selection.	ImageNet classification: +1.60% accuracy on ResNet-50, +0.63% on MobileNetV2. COCO segmentation: +0.8% AP on Mask R-CNN. Can prune up to 87.5% frequency channels with minimal accuracy loss.	Counter-intuitive observation that fewer channels sometimes perform better suggests high-frequency noise. Limited analysis of frequency-spatial mapping for explainability.
Nicolas Vasilache, Jeff Johnson, Michael Mathieu, Soumith Chintala, Serkan Piantino, Yann LeCun	FFT-based convolution implementations for CNNs using cuFFT and custom fbfft library, focusing on GPU performance optimization.	Implemented FFT convolution using cuFFT library with autotuning strategy, developed custom fbfft implementation with warp-level optimization for batched 1-D and 2-D FFTs.	cuFFT implementation: 1.4x-14.5x speedup over cuDNN for common layer sizes, up to 23.54x for 13x13 kernels. fbfft: 1.5x speedup over cuFFT, achieves 78% efficiency at 97.5% occupancy.	Poor performance for small kernels (3x3) due to overhead. fbfft limited to square convolutions with power-of-2 sizes. Limited size range (8-64) for maximum gains.