**Optimized CNN Approach for Efficient Image Classification**

**Abstract**

This paper presents an optimized Convolutional Neural Network (CNN) approach to enhance image classification efficiency. By incorporating advanced techniques such as selective feature extraction, reduced network complexity, and adaptive learning, the proposed method aims to improve classification accuracy while minimizing computational overhead. The architecture utilizes a combination of deep and shallow layers, optimizing parameter tuning and leveraging transfer learning to accelerate training without sacrificing performance. Additionally, the model integrates data augmentation and regularization strategies to prevent overfitting and enhance generalization. Experimental results demonstrate that the optimized CNN significantly outperforms traditional models in both speed and accuracy, achieving superior results on benchmark datasets. The approach is particularly beneficial for resource-constrained environments, offering a balanced trade-off between performance and computational efficiency. This method sets a new standard for deploying CNN-based models in real-time image classification applications, ensuring scalability across various platforms and domains.