# New CNN Architectures After 2017

With advancements in deep learning, several CNN architectures have emerged after 2017, focusing on efficiency, performance, and interpretability. Below are some notable architectures:

## EfficientNet (2019)

- Developed by Google AI, EfficientNet uses a compound scaling method to balance depth, width, and resolution.

- EfficientNet-B0 to B7 models outperform previous CNNs with fewer parameters.

- Uses Mobile Inverted Bottleneck Convolution (MBConv).

## RegNet (2020)

- Proposed by Facebook AI, RegNet (Regularized Network) is designed to generate optimized architectures automatically.

- Provides a balance between accuracy and computational cost.

- Uses a structured design space for model scaling.

## NFNet (2021)

- Normalizer-Free Networks (NFNet) remove batch normalization to improve training stability.

- Achieves state-of-the-art performance on ImageNet without batch normalization.

## ConvNeXt (2022)

- Inspired by Vision Transformers (ViTs), ConvNeXt reintroduces CNNs with modern design techniques.

- Employs large kernel convolutions and depthwise separable convolutions.

- Achieves competitive performance with ViTs while maintaining CNN efficiency.

## MaxViT (2022)

- Combines CNNs with Vision Transformer mechanisms to improve long-range dependencies.

- Uses both convolutional and attention-based mechanisms for feature extraction.

## HorNet (2023)

- Introduces Hybrid Orthogonal Convolutional Networks (HorNet), which improve efficiency by incorporating structured convolutions.

- Optimized for large-scale image recognition and vision tasks.

These architectures have significantly improved CNN-based vision models, reducing computational costs while achieving high accuracy. Further research continues to bridge the gap between CNNs and transformer-based architectures.