

Convolutional Neural Network (Recap)

Naeemullah Khan

naeemullah.khan@kaust.edu.sa

Prashant Aparajeya



جامعة الملك عبد الله
للعلوم والتقنية
King Abdullah University of
Science and Technology

KAUST Academy
King Abdullah University of Science and Technology

May 19, 2025

1. Definition
2. Convolutional Layer
3. Activation Functions
4. Pooling Layers
5. Padding & Strides
6. Normalization (Batch Norm)
7. Regularization (Dropout)
8. Flattening & Fully Connected Layers
9. Loss Functions & Optimizers
10. Architectures
 - 10.1 LeNet
 - 10.2 AlexNet

10.3 VGG

10.4 InceptionNet

10.5 ResNet

10.6 MobileNet

11. Transfer Learning

12. Evaluation Metrics

13. Further Reading

- ▶ Convolutional Neural Networks (CNNs) are a class of deep learning models specifically designed for processing structured grid data, such as images.
- ▶ They are particularly effective for tasks like image classification, object detection, and segmentation.
- ▶ CNNs leverage the spatial structure of images by using convolutional layers to automatically learn hierarchical features.
- ▶ The architecture typically consists of convolutional layers, activation functions, pooling layers, and fully connected layers.
- ▶ CNNs are known for their ability to capture local patterns and translate them into higher-level representations.