Deep Learning

Neural Networks

Convolutional Neural Networks (CNNs)

Components

- Convolutions over volumes
  - Image Stack
  - Convolution Operation
  - Convolution Layer
  - Convolutional Feature
  - Image
  - Convolution Layer with Multiple Filters
  - Convolution Operation
  - Convolution Layer
  - Convolutional Feature
  - Image
- Feature Map
  - convolving convolving a filter across the input image to get a stack of activations
  - Filter
  - Feature Map
- Padding
  - Preserving image dimensions and preserving of information from image boundaries
  - Why does this ensure that the spatial size is preserved?
  - Padding Layer
  - Padding Layer
- Normalization Layers
  - Batch Norm
  - Cross-feature norm
  - Batch Norm
  - Layer Norm
  - Cross-channel norm
  - Layer Norm
  - Batch Norm
  - Layer Norm
- Pooling Layers
  - Max pooling
  - Max pooling
  - Max pooling