Week 2 Research

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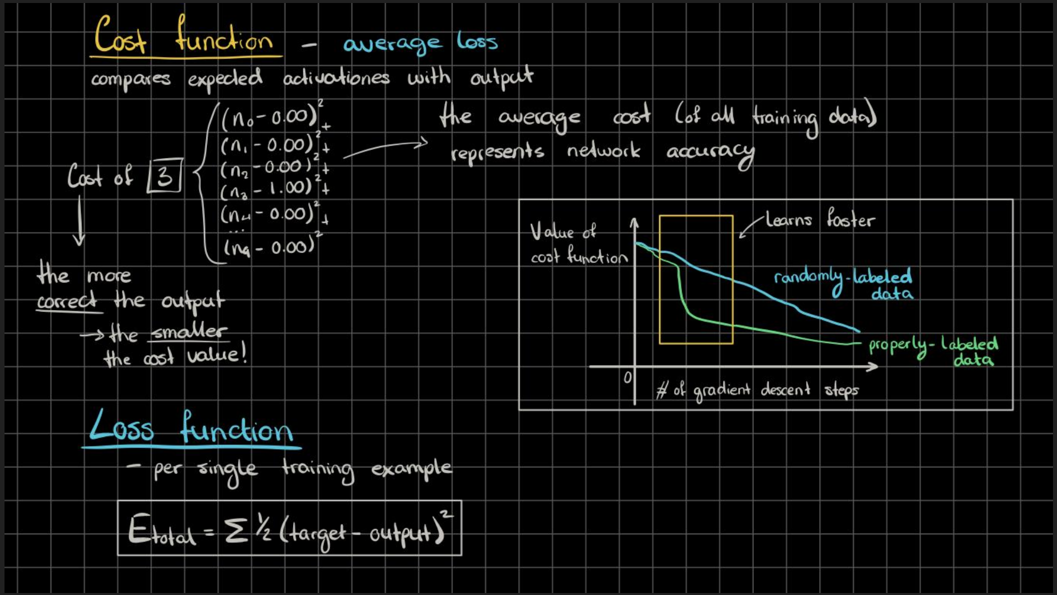
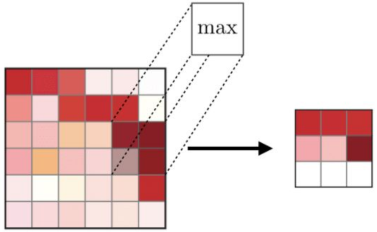
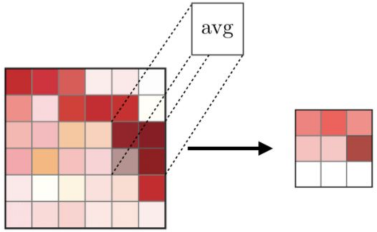
Everything CNN’s

- Network structure
- Sigmoid Activation function
- CNN vs MLP
- Cost function
    - Network accuracy
    - Loss function
- Padding and step size



Pooling Layers

- Average pooling
- Max pooling
- Global pooling
- Keras

Type	Max pooling	Average pooling
Purpose	Each pooling operation selects the maximum value of the current view	Each pooling operation averages the values of the current view
Illustration		
Comments	• Preserves detected features • Most commonly used	• Downsamples feature map • Used in LeNet

Pooling layer

Output dimentions :

feat. map height

filter size

channels in feat. map

$$\frac{(n_h - f + 1)}{s} \times \frac{(n_w - f + 1)}{s} \times n_c$$

stride length

feat map width

Activation functions

- Sigmoid
  - Binary output
  - Tend to varnish gradient
- ReLU
  - Simple math
  - Networks with Relu tend to show better convergence performance than sigmoid. (Krizhevsky et al.)
  - Tend to blow up activation