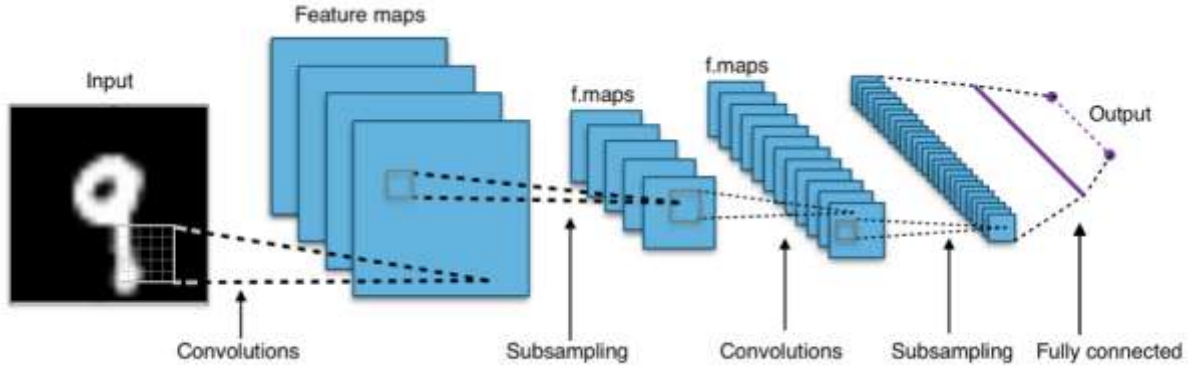
Convolutional Neural Network

1. Reshape input into 28x28 matrices
2. Generate new test data by scaling and rotating

3. Convert labels into One-hot vectors (e.g. 3 = [0, 0, 0, 1, 0, 0, 0, 0, 0, 0])
4. Train CNN in 230 epochs using all training data in each epoch



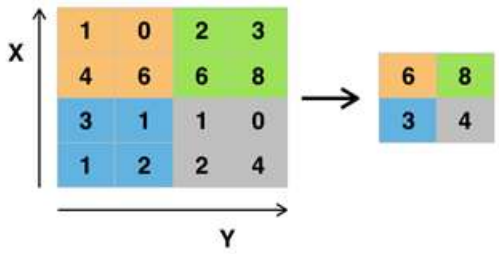
Input: 28x28 features

1st Convolutional Layer: 5x5 kernel, 32 features

➔ 32 feature maps with the shape 28x28

1st Subsampling Layer: 2x2 max-pooling (reduces image to 14x14)

➔ 32 feature maps with the shape 14x14



2nd Convolutional Layer: 5x5 kernel, 64 features

2nd Subsampling Layer: 2x2 max-pooling (reduces image size to 7x7)

Fully Connected Layer: 1024 neurons

Output Layer: 10 neurons (representing the one-hot vector)