Chapter11 Convolutional Neural Network

1. Can the network be simplified by considering the properties of images?
   a) Some patterns are much smaller than the whole image
   b) The same patterns appear in different regions
   c) Subsampling the pixels will not change the object
2. Convolution → Pooling → Convolution → Pooling → Flatten
3. Property 1 and Property 2 are used in the course of convolution
   Property 3 is used in the course of pooling
4. In convolution, non-fully connected and shared weights lead to less parameter
5. Alpha Go didn't use pooling

Chapter12 Why Deep Learning

1. Modularization
   a) The modularization is automatically learned from data
   b) Less training data is needed
   c) Use parameters effectively
2. Universality Theorem
   a) Any continuous function can be realized by a network with one hidden layer
   b) Yes, shallow network can represent any function, however, using deep structure is more effective
3. End-to-end Learning
   a) What each function should do is learned automatically