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Book- Data Science and Machine Learning
Mathematical and Statistical Methods

Deep Learning

1. Here, y denotes the vector valued output for given input x.
2. Approximation-estimation tradeoff.
3. Balance complexity.
4. A class of functions that permits hierarchical construction is the class of Neural networks
5. If we increase layers(hidden layers), representational capacity as well as complexity increases.
6. Output of a neural network is a repeated composition of linear and nonlinear functions.
7. Kolmogorov- Arnold representative theorem inspired the idea of neural networks.
8. Activation functions are used for the composition of different layers and the summation of these layers build the neural network architecture.
9. Activation functions are infinite in number.
10. Improving representational capacity is done in 2 ways. One is to change the type of activation function and another is to increase the hidden layers.
11. If a neural network has L+1 layers, l=0 is the input layer that encodes the input feature vector x and l=L is the output layer that encodes the multivalued output function g(x). In between them lies the hidden layers.