Unit 1: Questions and Exercises

Question 1

Learning is the execution of a computer program to _____ the parameters of the model using the training data or past experience.

Question 2

In supervised learning, classification algorithms produce _____ outputs while regression algorithms produce _____ outputs.

Question 3

The aim of unsupervised learning is to find _____ in the input.

Question 4

The three core math competencies for machine learning and artificial intelligence research are:

a. Linear Algebra, Logic, and Multivariate Calculus
b. Probability Theory, Linear Algebra, and Multivariate Calculus
c. Geometry, Linear Algebra, and Statistics
d. Statistics, Multivariate Calculus, and Probability Theory

Question 5

To assess your knowledge of linear algebra, solve the following matrix multiplication problem:

$$\begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix} \begin{bmatrix} 3 & 2 \\ 5 & 3 \end{bmatrix} =$$

Unit 1: Solutions

Question 1

Learning is the execution of a computer program to **optimize** the parameters of the model using the training data or past experience.

Question 2

In supervised learning, classification algorithms produce **qualitative** outputs while regression algorithms produce **quantitative** outputs.

Question 3

The aim of unsupervised learning is to find **regularities** in the input.

Question 4

The three core math competencies for machine learning and artificial intelligence research are:

a. Linear Algebra, Logic, and Multivariate Calculus
b. Probability Theory, Linear Algebra, and Multivariate Calculus
c. Geometry, Linear Algebra, and Statistics
d. Statistics, Multivariate Calculus, and Probability Theory

Question 5

To assess your knowledge of linear algebra, solve the following matrix multiplication problem:

$$\begin{bmatrix}1 & 3\\4 & 2\end{bmatrix}\begin{bmatrix}3 & 2\\5 & 3\end{bmatrix} = \begin{bmatrix}1*3+3*5 & 1*2+3*3\\4*3+2*5 & 4*2+2*3\end{bmatrix} = \begin{bmatrix}18 & 11\\22 & 14\end{bmatrix}$$