Name : Vishnu Ranjeeth P

Roll No.: 713322AD119

Dept : AI&DS

Task 4 : Data science lifecycle example

The life cycle of data science used in e commerce systems are explained as follows

1. Problem Definition

Scenario: An e-commerce company wants to increase sales by providing personalized product recommendations to its customers.

The first step is to clearly define the problem. In this case, the goal is to create a recommendation system that suggests products to customers based on their browsing and purchase history.

2. Data Collection

The next step involves gathering data. The e-commerce company collects data from various sources, such as:

- Customer browsing history
- Past purchase data
- Product details
- Customer demographics
- Click-through rates

3. Data Cleaning and Preprocessing

Raw data often contains noise, missing values, and inconsistencies. The collected data is cleaned and preprocessed to make it suitable for analysis. This includes:

- Removing duplicates
- Handling missing values
- Normalizing data
- Encoding categorical variables

4. Data Exploration and Analysis

The cleaned data is explored to understand its structure, patterns, and relationships. This step involves:

- Descriptive statistics

- Visualization (e.g., histograms, scatter plots)

- Identifying correlations

For example, analyzing purchase patterns might reveal that customers who buy smartphones often purchase accessories like cases and screen protectors.

8. Model Evaluation

The trained model is evaluated using the testing set to ensure it performs well. Common evaluation metrics for recommendation systems include:

- Precision

- Recall

- F1-score

- Mean Absolute Error (MAE)

9. Model Tuning

Based on the evaluation, the model is fine-tuned to improve its performance. This could involve adjusting hyperparameters or trying different algorithms.

10. Deployment

Once the model is fine-tuned and performs well, it is deployed to the e-commerce platform. The recommendation system is integrated into the website, where it starts suggesting products to customers in real-time.

Thus the life cycle of data science in e commerce is explained successfully.