**General User Interaction**  
As a user, I want to see product recommendations based on my browsing history to find items related to my interests faster.

As a user, I want the system to recommend products based on items I've spent time viewing but haven't purchased to reconsider them.

As a user, I want to receive recommendations for products that are frequently bought together with items in my cart to enhance my shopping experience.

As a user, I want the ability to adjust my preferences manually so that the recommendations can be more personalized.

**User Data Analysis**

As a data scientist, I need to extract and analyze clickstream data to understand user behavior and refine recommendation algorithms.

As a user, I want the app to recognize patterns in my purchase history and recommend similar items that I might be interested in.

As a marketing manager, I want to analyze user activity data to identify trends and adjust our marketing strategies accordingly.

**Real-time and Contextual Recommendations**

As a user, I want to see real-time recommendations that reflect the latest items I've interacted with for immediate relevancy.

As a user, I want the application to offer personalized promotions based on my current browsing session to incentivize purchases.

As a user, I want the system to adjust recommendations based on the time of day or week, suggesting products that align with typical shopping habits during these times.

**Performance and Load Times**

As a user, I expect the recommendation system to load quickly to not disrupt my shopping experience.

As a system administrator, I need to ensure that the recommendation engine scales efficiently during peak traffic times.

Privacy and Security

As a user, I want to ensure that my activity data used for recommendations is securely stored to protect my privacy.

As a compliance officer, I need the system to adhere to GDPR and other privacy regulations when handling user data for recommendations.

**User Feedback and Adaptability**

As a user, I want to provide feedback on the recommendations I receive to help improve the system's accuracy.

As a product manager, I want to incorporate user feedback mechanisms that allow us to refine the recommendation engine based on user satisfaction.

**Integration and Testing**

As a developer, I need to integrate machine learning models that can update recommendations based on live user data without downtime.

As a QA tester, I need to ensure that recommendations are consistently relevant and accurate across various user segments.

**Advanced Analytics and Machine Learning**

As a data engineer, I need to implement robust data pipelines that can handle large volumes of user activity data for real-time processing.

As a machine learning engineer, I want to utilize advanced predictive models to forecast future buying behaviors based on past user activities.