System Requirements Documentation

Project: Online Shopping System with Sentiment Analysis

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Customer Problem Statement.

Online shopping websites face barriers such as fraudulent product reviews, nonsensical recommendations, and poor customer support. It becomes challenging for customers to evaluate the genuineness of products, leading to poor buying decisions. Moreover, companies are also hampered by a scarcity of real-time mechanisms that can analyze customer sentiment effectively. This system integrates Sentiment Analysis to improve product suggestions, enhance customer understanding, and streamline the overall shopping experience.

System Requirements

Functional Requirements

No.	Priority Weight	Description
REQ-1	**High**	The system should allow customers to view, search for, and filter products with ease.
REQ-2	**High**	Customers should have the ability to add products to the shopping cart and proceed to checkout.
REQ-3	**High**	The system should have various payment modes, such as credit/debit cards, PayPal, and mobile wallets.

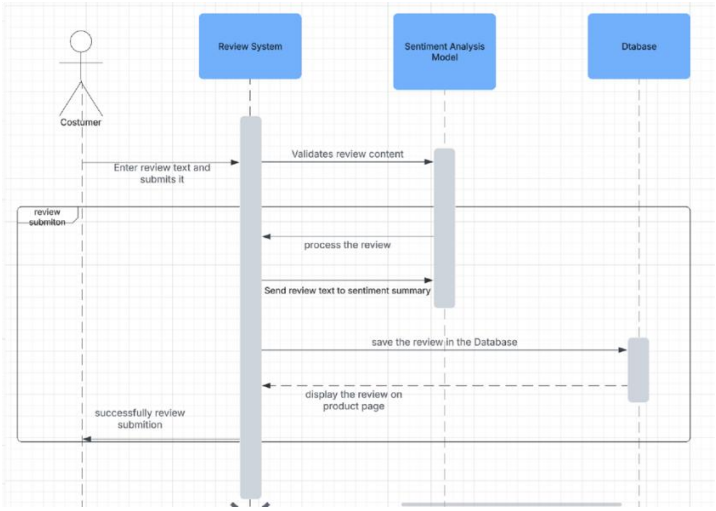
REQ-4	**High**	Customers should be able to post product reviews and provide ratings.
REQ-5	**High**	The sentiment analysis capability should scan customer reviews and classify them as positive, neutral, or negative.
REQ-6	**Medium**	The system must provide a sentiment-based product rating summary.
REQ-7	**Medium**	Customers must be provided with product recommendations based on their previous purchases and sentiment trends.
REQ-8	**High**	The system must include a secure user authentication and account management system
REQ-9	**Medium**	Users must be able to see sentiment trends over time for a specific product.
REQ-10	**High**	The system must provide secure data storage and encryption of personal and payment information.

Nonfunctional Requirements (FURPS)

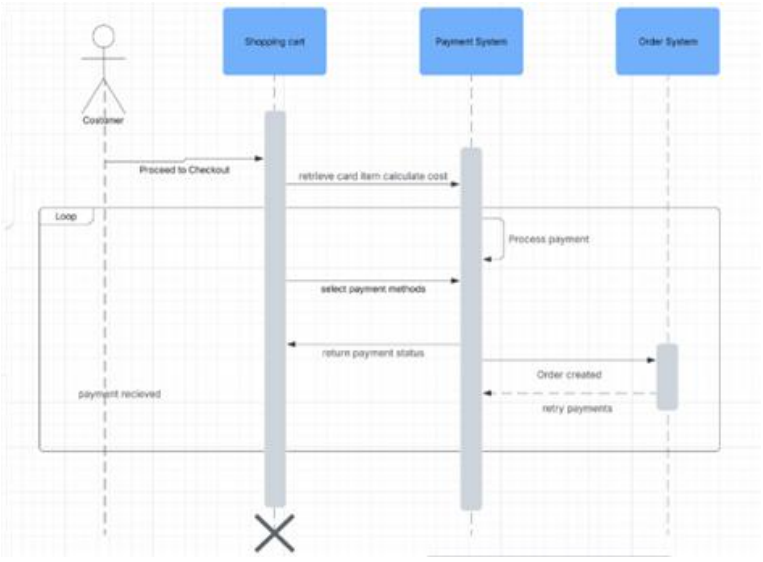
Category	**Priority Weight**	**Description**
Functionality	**High**	The system must provide accurate sentiment analysis and product filtering based on customer reviews.
Usability	**High**	The UI has to be intuitive, mobile-friendly, and easy to use for anyone.
Reliability	**High**	The system must provide 99.9% uptime with maximum performance in handling simultaneous users.
Performance	**Medium**	Sentiment analysis processing must be done within 2-3 seconds of posting a review.
Supportability	**Medium**	The system must allow seamless updates for the addition of new product categories and upgrading sentiment analysis algorithms.

System Diagrams

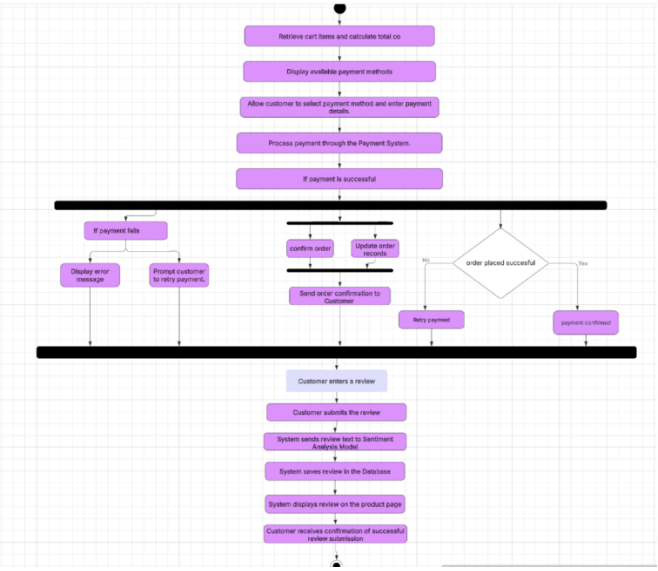
System Sequence Diagram: Checkout Process



System Sequence Diagram: Review Submission with Sentiment Analysis



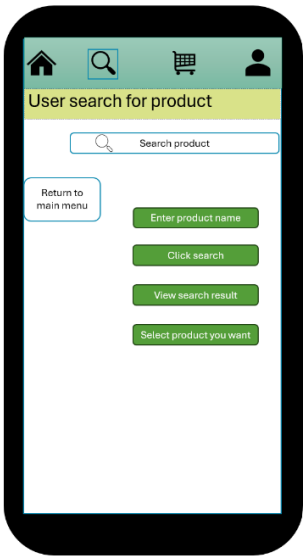
Activity Diagram: Customer Shopping Experience



User Interface Specification

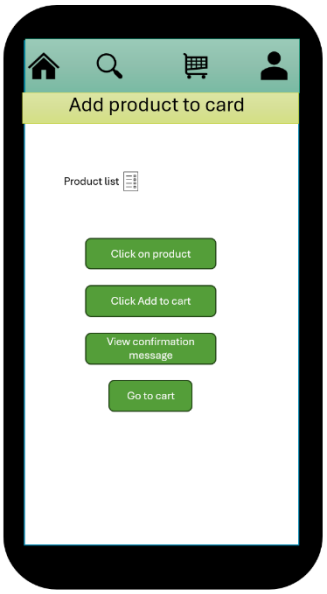
The system makes it easier for users to shop, such as feelings of reviews given by users. Most important UI features.

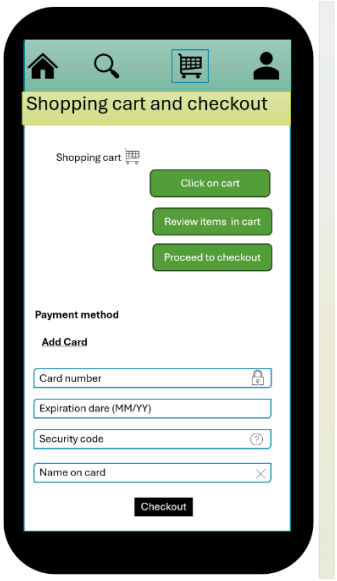
- Product Page with Sentiment Summary Sentiment trend in real-time.
- Shopping Cart & Checkout Simplified checkout facilities.
- Review Submission Interface Customer reviews and sentiment feedback handling.



A User Browses Products by Category

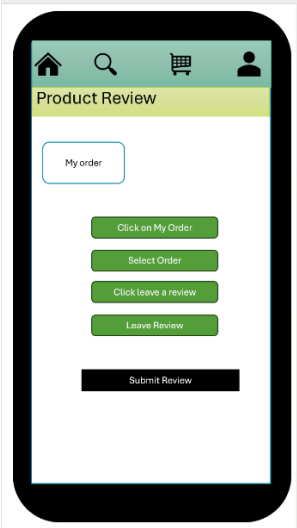
A User Searches for a Product





A User Adds a Product to the Cart

A User Checks Out



A User Leaves a Product Review

Project Plan

Development Timeline

Week 1-2: Research frameworks, finalize tech stack, design database schema, start UI development.

Week 3-4: Implement user registration, login, and product browsing.

Week 5-6: Develop backend functionalities using Flask, integrate sentiment analysis.

Week 7-8: Implement personalized product recommendations.

Week 9-11: Develop admin features and sentiment monitoring dashboard.

Week 12-13: UI refinements and system testing.

Week 14-15: Final testing, demo preparation, and documentation.

This paper presents the basic requirements and Sentiment Analysis with Online Shopping System design that ensures a hassle-free and convenient shopping experience supported by Natural Language Processing (NLP).