



COMSATS University Islamabad
Abbottabad, Pakistan

<E-commerce >

Version 1.0

By

M Yamman Hussain

CIIT/FA21-BSE-041/ATD

M Anees

CIIT/FA21-BSE-179/ATD

Uzair Ali

CIIT/SP21-BSE-025/ATD

Supervisor

Mam Bushra Mushtaq

Bachelor of Science in Computer Science (2021-2025)

E-commerce Project Proposal

1. Introduction

This proposal outlines the development of an e-commerce platform that integrates AI-powered image validation to ensure product images match the description provided by sellers. The platform will serve as an online marketplace, offering essential features such as product catalogues, search functionality, payment gateways, customer registration, and an admin panel. By leveraging modern web development technologies, we aim to create a seamless and secure user experience for both customers and administrators.

2. Objectives

The primary objectives of the e-commerce platform are:

- Develop an AI module that automatically validates the images of products uploaded by sellers, ensuring that they match the given product description (e.g., colour, dimensions, and shape).
- Create a fully functional online store where users can browse products, filter based on categories, and complete transactions securely.
- Provide an intuitive admin panel for managing products, orders, users, and tracking AI validations.
- Offer a user-friendly interface for both customers and sellers to engage with the platform.

3. Scope of the Project

The project includes the following features:

- **AI-powered image validation module:** This module will analyse product images uploaded by sellers and compare them with the description provided. The goal is to ensure the authenticity and accuracy of the listings (e.g., a red shirt should match the colour "red" as described).
- **Customer registration/login:** Users can create accounts or log in using their credentials. The system will store user data securely using encryption techniques.
- **Product listing and filtering:** Customers will be able to browse product categories, filter by price, brand, or rating, and sort products based on popularity or relevance.
- **Shopping cart and checkout system:** Users can add items to their cart, review their selections, and proceed with checkout, selecting payment options.
- **Payment integration:** Secure payment options including credit cards and PayPal will be provided to ensure safe transactions.
- **Admin panel:** An interface for administrators to manage product listings, track orders, oversee customer accounts, and handle user queries. The admin will also monitor AI-generated reports on image validation for product listings.

4. Target Audience

The platform is designed for a wide range of customers who are interested in buying and selling products online. Our target audience includes:

- **Sellers:** Small to medium-sized businesses and independent vendors seeking an easy way to list and sell their products online.
- **Customers:** Individuals interested in purchasing products from various categories, looking for a convenient shopping experience.

5. Technology Stack

To ensure optimal performance, scalability, and user experience, we will use the following technologies:

- **Frontend:** HTML, CSS, JavaScript
 - HTML and CSS for responsive and dynamic web pages.
 - JavaScript for interactivity and managing client-side logic.
- **Backend:** Node.js
 - Node.js for server-side development to handle requests, manage data flow, and communicate with the database and AI module.
- **Database:** MongoDB
 - A NoSQL database for storing product data, user information, orders, and other platform-related data.
- **AI Module:**
 - An AI-powered image recognition system will be developed using a machine learning framework like **TensorFlow** or **OpenCV**. The module will perform tasks such as image classification and description matching to validate the accuracy of product images.

6. Timeline

The project will be developed in phases over a 12-month period:

- **Phase 1 - Planning and Design (2 months)**
 - Requirements gathering, wireframing, and project planning.
- **Phase 2 - Frontend Development (3 months)**
 - Design and implementation of the frontend using HTML, CSS, and JavaScript.
 - Ensuring responsiveness and cross-browser compatibility.
- **Phase 3 - Backend Development (4 months)**
 - Set up the server, database, and implement core features (registration, product catalog, shopping cart, and admin panel).
- **Phase 4 - AI Module Development (2 months)**
 - Develop and integrate the AI image validation module.
- **Phase 5 - Testing and Deployment (1 month)**
 - Conduct extensive testing (unit tests, integration tests, user acceptance testing) and deploy the platform.

7. Challenges and Risks

- **AI Image Validation Accuracy:** The AI module may require extensive training data to accurately match images with descriptions. This can be mitigated by using pre-trained models and gradually refining the AI system with real-time data.
- **Scalability:** As the user base grows, there could be performance issues. To manage this, we will plan for scalable infrastructure from the start (e.g., using cloud hosting solutions).
- **Security:** Payment integration and user data must be securely managed. We'll implement encryption, SSL, and secure payment gateways to protect user information.

8. Conclusion

This e-commerce platform, integrating advanced AI functionalities, will not only enhance the accuracy of product listings but also provide users with a seamless shopping experience. The combination of an intuitive frontend, robust backend, and cutting-edge AI technology will set this platform apart, offering a secure, efficient, and reliable marketplace for both sellers and customers.