AI-Driven E-commerce Store

Final Year Project Report

Bachelor of Science in Computer Science

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Dedication

This project is dedicated to our parents, teachers, and peers who have inspired and supported us throughout our academic journey. Their unwavering encouragement has been a driving force behind the successful completion of this project.

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Introduction to the Problem

1 Introduction

The rapid growth of e-commerce has transformed the way consumers shop, creating a demand for more personalized and efficient online shopping experiences. The AI-Driven E-commerce Store project aims to leverage cutting-edge artificial intelligence technologies to enhance user satisfaction by offering personalized product recommendations, visual search capabilities, sentiment-based review insights, secure payment systems, and 24/7 chatbot support. This project integrates advanced AI models with modern web technologies to create a seamless and user-friendly shopping platform.

2 Background

E-commerce platforms have become increasingly competitive, with businesses striving to provide unique and personalized experiences to attract and retain customers. Traditional e-commerce systems often rely on static product listings and basic search functionalities, which may not cater to individual user preferences. Artificial intelligence offers solutions such as recommendation systems, visual search, and sentiment analysis to address these limitations. By analyzing user behavior, preferences, and feedback, AI-driven systems can deliver tailored product suggestions, visually match items, and provide meaningful insights from customer reviews, thereby improving user engagement and satisfaction.

3 Purpose

The primary purpose of this project is to develop an AI-driven e-commerce store that enhances the online shopping experience through personalization, efficiency, and user-centric features. The system aims to provide a platform where users can easily find products that match their preferences, make informed decisions based on reliable reviews, and enjoy a secure and interactive shopping process.

4 Scope

The scope of the AI-Driven E-commerce Store includes the development of a web-based platform with the following key modules:

- Personalized Product Recommendations: AI-driven recommendations based on user behavior, browsing history, and preferences, using content-based filtering.
- Visual Search: A feature allowing users to upload images to search for visually similar products in the catalog.
- Customer Reviews and Sentiment Insights: Displaying reviews with sentiment labels (e.g., positive or negative) to aid decision-making.
- Secure Payments: Integration with secure payment gateways for credit cards, PayPal, and other methods, with order tracking and payment history.

- Boatbot Support: An AI-powered chatbot to assist users with product queries, recommendations, and order tracking, available 24/7.

The project utilizes technologies such as Next.js, Tailwind CSS, Material UI, MongoDB, Firebase, and AI models to implement these features.

5 Objective

The objectives of the AI-Driven E-commerce Store are:

- To develop a web-based e-commerce platform that leverages AI to provide personalized product recommendations.
- To implement a visual search feature that allows users to find products by uploading images.
- To integrate sentiment analysis for customer reviews to provide meaningful insights.
- To ensure secure payment processing and provide order tracking functionalities.
- To offer 24/7 customer support through an AI-powered chatbot.
- To create a scalable and maintainable system using modern web technologies and databases.

6 Intended Audience and Reading Suggestions

The intended audience for this document includes:

- Project Supervisors and Faculty: To evaluate the technical feasibility, innovation, and progress of the project.
- Developers and Researchers: To understand the implementation details and technologies used in the project.
- Students and Peers: To gain insights into AI-driven e-commerce systems and their development process.

Readers are encouraged to start with the Introduction and Background sections to understand the context and motivation of the project. The Scope and Objectives sections provide details on the project's features and goals, while the technical sections (to be included in later chapters) will cover implementation details.

7 Document Conventions

This document follows the following conventions:

- Terminology: Terms such as "AI-driven," "personalized recommendations," and "visual search" refer to specific functionalities of the system.

- Formatting: Headings are used to organize content hierarchically, and bullet points are used for lists to enhance readability.
- References: All tools and technologies (e.g., Next.js, MongoDB) are mentioned as they are used in the project.
- Abbreviations: AI (Artificial Intelligence), UI (User Interface), CSS (Cascading Style Sheets).