BSCS FINAL PROJECT PROPOSAL

SportswearXpress

Term of Registration: Fall 2014

Presented by:

Registration No:	Name:
L1S21BSSE0072	M Awais Akram
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Faculty of Information Technology

University of Central Punjab

Project Title

SportswearXpress: AI-Enhanced Sportswear Customization Platform.

Project Advisor

Anum Mustaqeem

Particulars of the students:

S.No	Registration# eg.**L1F00BSCS0101**	Name in Full Use Block Letters	CGPA	Signatures
1	**L1F21BSSE0476**	**Muhammad Qasim Abbas**	**3.54**	
2	**L1S21BSSE0072**	**M Awais Akram**	**3.52**	
3	**L1F21BSSE0564**	**Muhammad Muneeb Butt**	**3.10**	

Advisor's Consent

I Prof./Dr./Mr./Ms. _____ am willing to guide these students in all phases of above-mentioned project as advisor. I have carefully seen the Title and description of the project and believe that it is of an appropriate difficulty level for the number of students named above.

Note:

Advisor can't be changed without prior permission of the Manager Projects and the duration for completion of the Project is 2 regular semesters (approx.) from the date of Registration of Research Project.

Signatures and Date

Advisor

EVALUATOR/REFEREE 1

I have carefully read the project proposal and feel that the proposed project is a useful one and of a sufficient difficulty level to justify 2 regular semesters workload for above mentioned students. I have made recommendations in the evaluation form to improve the scope and quality of the project.

Signatures and Date

EVALUATOR/REFEREE 2

I have carefully read the project proposal and feel that the proposed project is a useful one and of a sufficient difficulty level to justify 2 regular semesters workload for above mentioned students. I have made recommendations in the evaluation form to improve the scope and quality of the project.

Signatures and Date

Abstract / Executive Summary

This project focuses on developing an AI-driven e-commerce platform designed to address the challenges of customizing sportswear, where precise design and customer satisfaction are critical. Current platforms in the industry often lack the necessary advanced tools and real-time communication features, resulting in miscommunication and unmet customer expectations.

To solve these issues, the proposed platform will integrate AI-powered design tools that guide users through the customization process step-by-step. An AI chatbot will recommend appropriate design tools and suggest actions for each task, ensuring that users can efficiently complete their personalized designs. Upon finalizing the design, the platform will dynamically adjust the product's price based on the complexity of the changes and the number of design tools used, providing transparency and fair pricing.

Key knowledge areas utilized in this project include artificial intelligence, real-time communication systems, and dynamic pricing algorithms. The integration of these elements will not only enhance the customer experience but also improve operational efficiency for sellers. The results will be a more user-friendly, engaging platform that increases customer satisfaction, reduces errors, and optimizes the customization workflow in the sportswear industry.

Introduction and Background

In the sportswear industry, precise product customization is increasingly important, yet many e-commerce platforms fall short in delivering effective design tools and clear communication channels. This gap often leads to misunderstandings, design errors, and lower customer satisfaction.

SportswearXpress addresses these challenges by developing an advanced e-commerce platform tailored specifically for sportswear. The platform will feature AI-driven design tools that assist customers in creating custom sportswear with high accuracy. An AI chatbot will guide users through the design process, recommending tools and steps to achieve their desired outcome. Additionally, the platform will enable real-time communication between customers and sellers, ensuring that design specifications are clearly understood and implemented.

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By integrating dynamic pricing that reflects the complexity of design changes and enhancing interaction between users and sellers, SportswearXpress aims to improve the overall customization experience. This project leverages cutting-edge AI technology to provide a streamlined, efficient solution that meets the growing demand for personalized sportswear, ultimately enhancing customer satisfaction and operational efficiency.

Statement of the Problem

Existing e-commerce platforms for sportswear fall short in providing advanced customization tools, effective real-time communication, and dynamic pricing. This leads to misaligned designs, communication errors, and inadequate pricing adjustments for complex customizations.

Project Question

How can we create an e-commerce platform that offers precise sportswear customization through advanced AI tools, ensures clear communication between customers and sellers, and dynamically adjusts pricing based on design complexity?

Objective(s) / Aim(s) / Target(s)

The key objectives for your project are:

- Develop an AI-enhanced e-commerce platform for sportswear customization.
- Integrate AI tools to guide users through the design process.
- Implement dynamic pricing based on design complexity.
- Ensure real-time communication between customers and sellers.
- Enhance user satisfaction and operational efficiency through advanced AI-driven features.

Completeness Criteria

S.No.	Criteria	Weightage %
1	Frontend and Backend development	35
2	Integrate canvas with machine learning algorithm and compose pricing criteria.	15
3	Integration of canvas to user interface	20

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4	Machine learning algorithm integration for chatbot.	20
5	Integration of user interface	10

Challenges

Understanding AI Algorithms for Design Suggestions: Developing AI algorithms that provide real-time design recommendations is complex. It involves creating decision-making processes that effectively guide customers through customization based on their actions and preferences.

Integration of Real-Time Communication Technologies: Seamlessly integrating real-time communication systems poses challenges in data synchronization. Ensuring smooth interaction between customers and the AI chatbot, along with managing instant price updates and feedback without delays, is critical.

Handling Real-Time Data Streams: Efficiently processing real-time user interactions to minimize latency is essential for smooth performance. Managing immediate pricing adjustments based on design complexity and tool usage is necessary to provide users with timely feedback.

Addressing Accessibility and User Interface Design: Designing an intuitive and accessible interface for all users, including those with disabilities, requires careful planning. Incorporating easy navigation, AI assistance, and possibly voice commands demands extensive design and testing to ensure effective use by all customers.

Dynamic Pricing Algorithm: Creating a dynamic pricing model that adjusts costs based on customization complexity and the tools used is a significant challenge. It requires developing algorithms that accurately reflect the value of various design modifications.

System Integration: Ensuring seamless integration of AI tools, communication features, and pricing models into a cohesive platform is complex. It involves coordinating multiple components to work together without performance issues or conflicts.

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Knowledge Areas Required

Artificial Intelligence and Machine Learning: AI and machine learning concepts will be used to develop intelligent design suggestions, helping users with the customization process by recommending appropriate tools based on their design actions.

Software Engineering: The principles of software engineering will be applied to design, develop, and maintain the entire system, ensuring modularity, maintainability, and scalability of the platform.

Database Management Systems (DBMS): Database knowledge will be leveraged to efficiently manage user data, design assets, and transaction details using MongoDB, ensuring data integrity and smooth retrieval.

Web Development and Full-Stack Programming: Frontend (React) and backend (Node.js, Express) web development skills will be necessary to create a dynamic user interface and ensure robust communication between the client-side and server-side components**.**

Algorithms and Optimization: Algorithm design will play a key role in developing dynamic pricing models and ensuring that the AI-driven suggestions run efficiently, optimizing both the performance and user experience.

Human-Computer Interaction (HCI) and User Experience Design: Knowledge of HCI and UX design will be important in creating an intuitive and user-friendly interface that facilitates seamless navigation for users during the customization process.

Learning Outcomes

AI Integration: Gain expertise in integrating AI algorithms into software applications, specifically for enhancing user customization experiences.

Real-Time Communication Systems: Develop skills in implementing and managing real-time chat functionality within web applications.

Dynamic Pricing Algorithms: Learn to design and implement complex pricing models that adapt to user interactions and customization complexity.
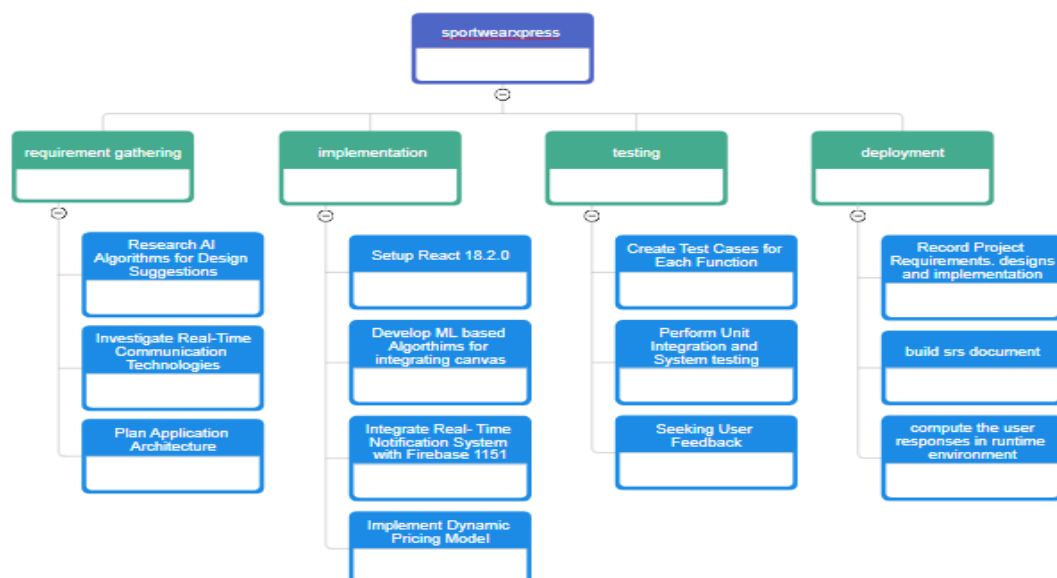
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System Integration and Optimization: Acquire knowledge in effectively integrating various technological components and optimizing system performance for a seamless user experience.

Nature of the End Product / Research Outcomes

The final product will be an advanced e-commerce platform designed for sportswear customization. It will include AI-powered tools to help users create their own designs, real-time chat features for smooth communication between customers and sellers, and a dynamic pricing system that adjusts based on the complexity of the customizations. This platform will offer a more intuitive and effective way for users to personalize their sportswear and will address current gaps in the market, making the customization process simpler and more satisfying for everyone involved.
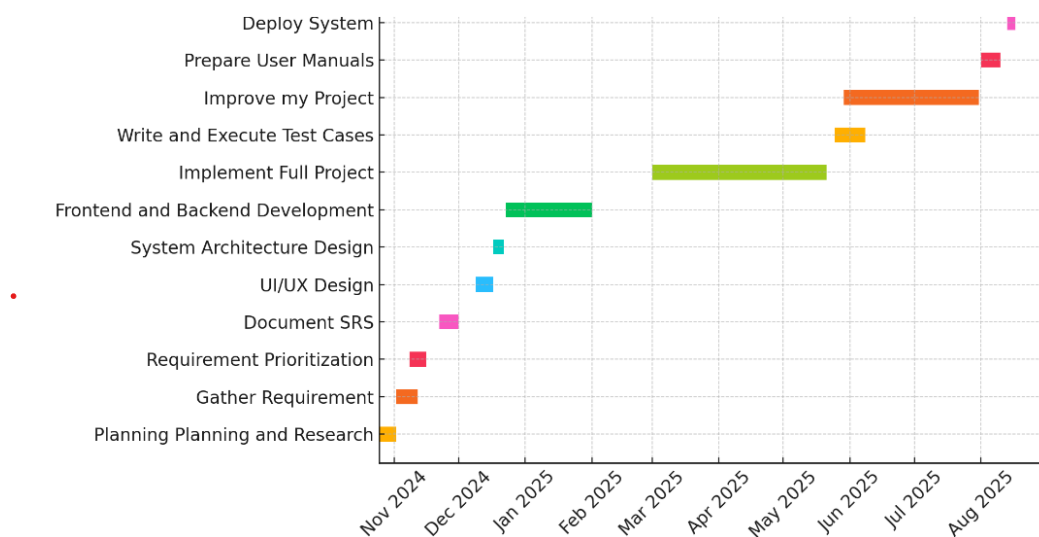
Deliverables / Work Breakdown Structure

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Project Plan / Project Schedule / Project Timetable / Project Calendar

Name	Start Date	end Date	days
Planning Planning and Research	25-Oct-24	2-Nov-24	8
Gather Requirement	2-Nov-24	12-Nov-24	10
Requirement Prioritization	8-Nov-24	16-Nov-24	8
Document SRS	22-Nov-24	1-Dec-24	9
UI/UX Design	9-Dec-24	17-Dec-24	8
System Architecture Design	17-Dec-24	22-Dec-24	5
Frontend and Backend Development	23-Dec-24	1-Feb-25	39
Implement Full Project	1-Mar-25	21-May-25	81
Write and Execute Test Cases	25-May-25	8-Jun-25	14
Improve my Project	29-May-25	31-Jul-25	63
Prepare User Manuals	1-Aug-25	10-Aug-25	9
Deploy System	13-Aug-25	17-Aug-25	4

Resources Required

Key Technologies:

AI Design & Recommendations: TensorFlow.js for AI-powered design suggestions.

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Image Processing: OpenCV for processing and analyzing sportswear images.

Front-End & Back-End: React and Node.js for a smooth user interface and real-time interaction.

Local Server: A local or on-premises server for hosting the application and managing data.

Database: MongoDB for user data, customization options, and transactions.

Canvas Library: Konva.js for interactive canvas-based design tools.

AI Integration Libraries: Natural Language Processing for the AI chatbot and a custom-built Dynamic Pricing Algorithm.

UI/UX Design: Adobe XD or Figma for user interface design and responsiveness (Bootstrap).

Communication Features: Socket.io for real-time communication between users and AI/sellers.

Cost estimation

Web Hosting & Domain:

Annual costs for hosting and domain registration.

Development Tools & Software:

Open-source tools like React, Node.js, and Konva.js.

MongoDB Atlas, free options with potential upgrades.

Design Tools:

Free design tools with optional premium plans.

API Integrations:

Costs for integrating external services like payment gateways and communication APIs.

Testing Tools:

Free options available, with optional paid cross-browser testing tools.

Miscellaneous:

Additional costs for marketing, branding, and documentation tools.

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Miscellaneous

Clear Objectives:

Ensure that the project goals, such as integrating AI tools for sportswear customization, dynamic pricing, and real-time communication, are clearly defined and understood by all team members.

Effective Communication: Establish regular team meetings and use communication platforms like Slack or Microsoft Teams for seamless collaboration. Discuss progress, address challenges, and share updates to keep the team aligned.

Resource Allocation:

Properly allocate time and resources for each stage of the project, from web development to AI tool integration and testing. Ensure all team members have access to necessary development tools and systems.

References/Bibliography

- **TensorFlow.js:** https://www.tensorflow.org/js
- **OpenCV:** https://opencv.org/
- **Konva.js:** https://konvajs.org/

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