FINAL PROJECT PROPOSAL

Shopping website

PREPARED FOR

COM S 3190 - Construction of User Interfaces

Iowa State University Computer Science Department

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1. Introduction

Tanisha Magikar and Shubam Chaudhari are from team IP_3. We are both Sophomores Majoring in Computer Science and Software engineering. We are in the process of learning the demanding web development skills like HTML, CSS and JavaScript from this class of COM S 319. We learned how to build a website on catalog of products from our in-class activities. We both are taking COM S 309, which involves frontend and backend collaboration to design an Android App. We believe that we can combine our thoughts and skills to make a better website.

2. Purpose of the proposal

For our final project, we have chosen to build upon our midterm project. This decision allows us to enhance, refine, and expand upon the existing implementation while introducing additional features and improvements. By leveraging the foundation laid in the midterm, we aim to create a more complete and polished application.

The goal of this project is to develop a modern e-commerce website named **ShopTune**, specifically designed for clothing, while incorporating a music player that enables users to listen to songs while browsing and shopping. This will create a more immersive and enjoyable shopping experience.

3. Goals and Objectives

The main goals and objectives of the ShopTune project are:

- Design a visually appealing and user-friendly e-commerce platform tailored specifically for clothing retail.

- Implement a seamless and intuitive shopping experience, featuring efficient navigation, clear product categorization, and easy checkout processes.

- Integrate a built-in music player, allowing users to listen to songs while browsing and shopping, thereby enhancing user engagement and enjoyment.

● Ensure cross-device responsiveness so the website functions smoothly on desktops, tablets, and mobile devices.

● Develop a secure and scalable system with robust user authentication, product management, and admin capabilities.

● Utilize modern web development technologies, including HTML, CSS, JavaScript, and frameworks such as Bootstrap to build a responsive and dynamic interface.

● Incorporate a smart product search feature to help users find clothing items quickly and efficiently.

4. Project

Our final project will focus on developing a shopping website named ShopTune for clothing with a Bootstrap-based responsive design.

Key Features:

- **Homepage:** A modern landing page showcasing featured products and categories.
- **Login & Signup page**: A page allowing users to create accounts and login to the website
- **Product Catalog:** A grid layout displaying clothing items with Bootstrap cards.
- **Music Player:** Plays music while the user shops. Smooth audio playback without disrupting navigation.
- **Navigation Bar:** A fixed top menu allowing easy access to different sections.
- **Product Filters:** Options to filter by category, price, or brand.
- **Add product review page:** Allows users to add reviews for each product.
- **View product review page:** Allows users to view reviews for each product.
- **Shopping Cart UI:** A simple UI to display selected items.
- **Checkout Page:** Allowing users to complete transactions and checkout items in their cart.

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5. Resources

For our Final Project, we are redeveloping the entire application using modern web technologies, based on the Midterm Project structure and future goals. All pages and functionalities will be recreated using React.js, with backend integration through Node.js and Express. We will also incorporate best practices in modular front-end architecture, RESTful APIs, and state management.

Technologies & Tools

- Frontend:
  - React.js (JSX): To build dynamic, component-based UIs
  - React Router: For managing navigation and routing between pages
  - Bootstrap (React-Bootstrap): To ensure a responsive and mobile-friendly design
  - Figma: For wireframing, prototyping, and UI design
- Backend:
  - Node.js + Express: For creating RESTful API endpoints and server-side logic
  - JSON File / MongoDB: For storing user data, product data, and playlists
- Version Control & Collaboration:
  - GitLab: To manage code, version control, and collaboration

    - GitLab Issue Boards: For task distribution and progress tracking

- Project Management Methodology:
    - SCRUM-based Agile Workflow: Weekly sprints with planning, development, testing, and review phases
    - Weekly Check-ins: To maintain collaboration and adapt to any new requirements
- Assets & Content:
    - Image Sources: Pixabay, Unsplash, and Gratisography – All copyright-free
    - Audio Files: Free-to-use music libraries or custom audio uploaded by users (depending on implementation)

Time Commitment & Workload Distribution

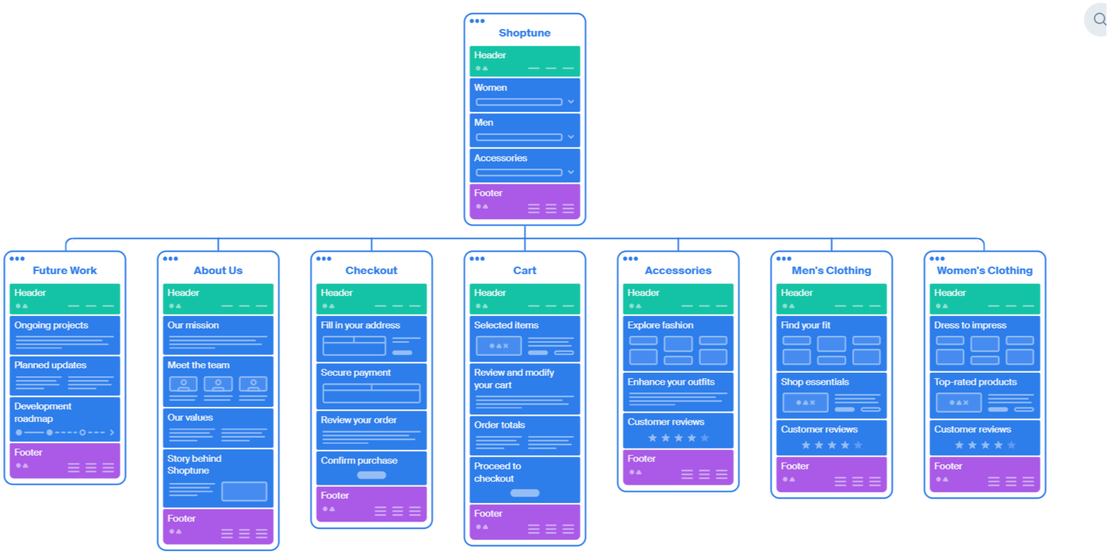
- Estimated Time Commitment:
    - We will dedicate 5–6 hours per week during initial development, increasing as we approach the testing and deployment phases.
- Team Structure:
    - The workload will be equally divided between both members. Weekly stand-ups will ensure we are aligned, and tasks will be adjusted based on individual progress and skill strengths.

Project Timeline

- Phase 1: Planning & Wireframing
    - Finalizing feature list, user flow diagrams, and UI mockups in Figma

- Phase 2: Development (Frontend + Backend)
  - Rebuilding the app using React components and integrating with Express backend
- Phase 3: Testing & Debugging
  - Unit testing, UI/UX feedback, form validation, and API response checks
- Phase 4: Deployment
  - Deploying using a service like Vercel, Netlify, or Render (for full-stack hosting)

5. Wireframes



6. Screen Sketches & Documentation

Login/Signup Page

The Login/Signup Page offers a clean, user-friendly interface for account creation and authentication. It is fully rebuilt using React components and communicates with the backend through RESTful APIs built in Node.js and Express.

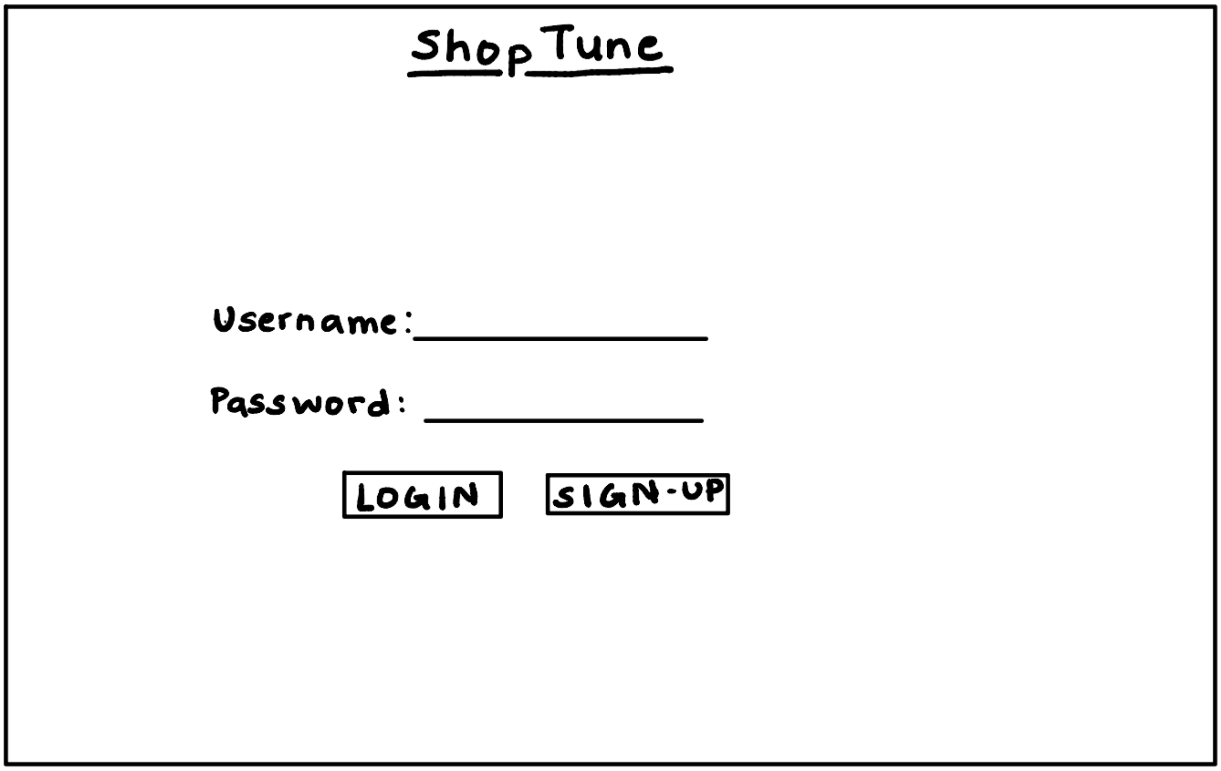
Features:

- Signup Form:
    - Collects user information: Name, Email, Password, and Confirm Password
    - Validates password match and email format using React form validation hooks (e.g., react-hook-form or built-in logic)
    - Submits data to backend (/api/signup) where user details are stored securely (e.g., in a MongoDB or JSON file with password hashing)
- Login Form:
    - Accepts registered email and password
    - Authenticates user against backend records using a POST request to /api/login
    - Upon successful login, stores a session token or authentication flag in localStorage or React Context/Redux for user state

Technologies Used:

- Frontend: React, React Router, Axios
- Backend: Node.js, Express (handling login/signup APIs)

- Security: Basic password hashing and token/session management (for demo purposes)
- Validation: Custom or library-based validation with meaningful error messages
- Responsive Design: CSS Modules or styled-components to ensure layout works across devices

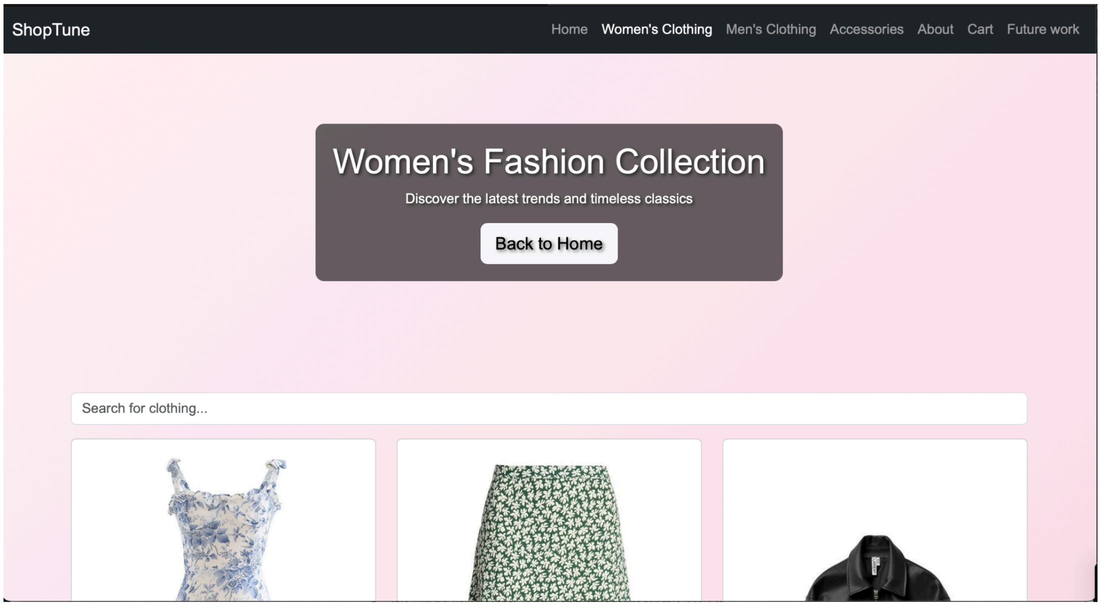


Products Listing Page

The Product Listings Page dynamically loads and displays products using React components. Product data is fetched from a JSON file or served from an Express API.

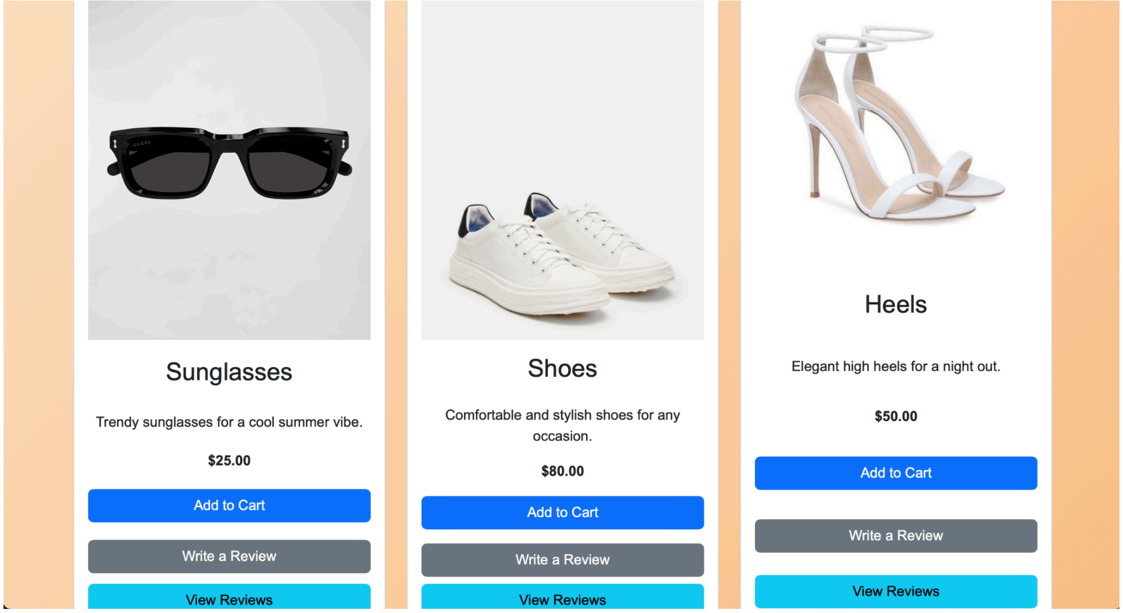
Features:

- Product Display:
  - Each product includes a name, price, image, and description
  - Products are rendered using a reusable
  - <ProductCard /> component
- Search Bar:
  - Implements real-time filtering of products by name using controlled input in React
  - Filtered results update dynamically without reloading the page
- Add to Cart:
  - Users can add products to their cart, which is managed using React Context or Redux
  - Items persist in localStorage or optionally synced with a backend session
- Folder Structure:
  - /components: Contains reusable UI components (e.g., ProductCard, SearchBar)
  - /pages: Includes main pages like ProductListing, Login, Signup
  - /api: Node.js backend logic for serving product data
  - /assets: Contains JSON data and images
  - /styles: Contains global or module-based CSS



Women's Fashion Collection

Discover the latest trends and timeless classics



Sunglasses

Trendy sunglasses for a cool summer vibe.

$25.00

Shoes

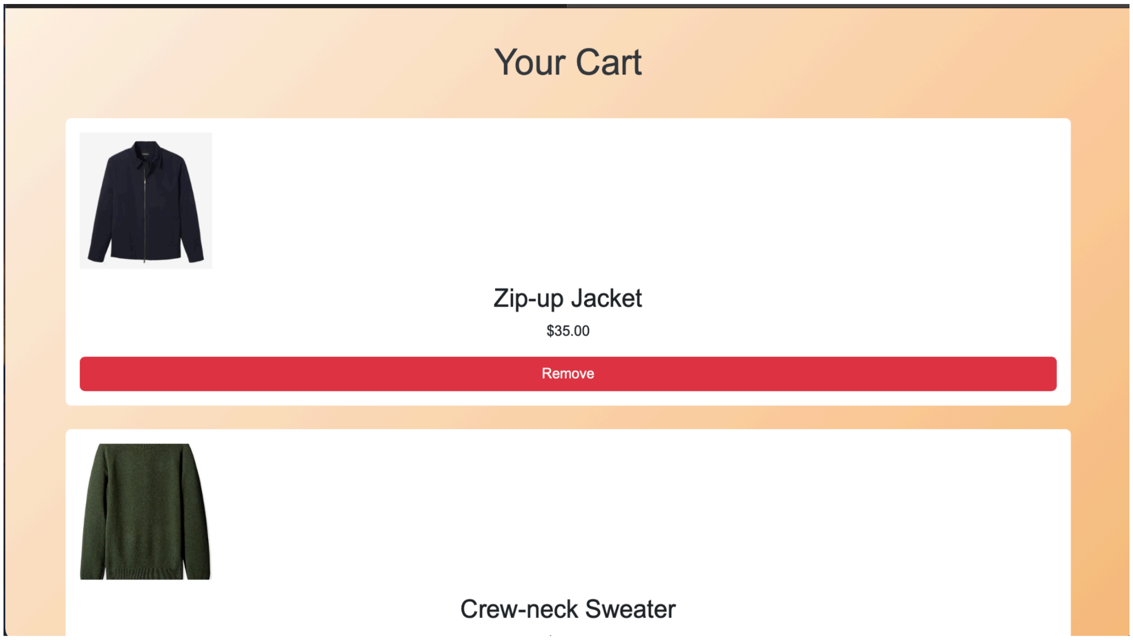
Comfortable and stylish shoes for any occasion.

$80.00

Heels

Elegant high heels for a night out.

$50.00



Your Cart

Zip-up Jacket

$35.00

Crew-neck Sweater

Music Player

The Music Player Screen is a React-based interactive component that lets users control audio playback seamlessly. Songs are fetched from a JSON file or backend API.

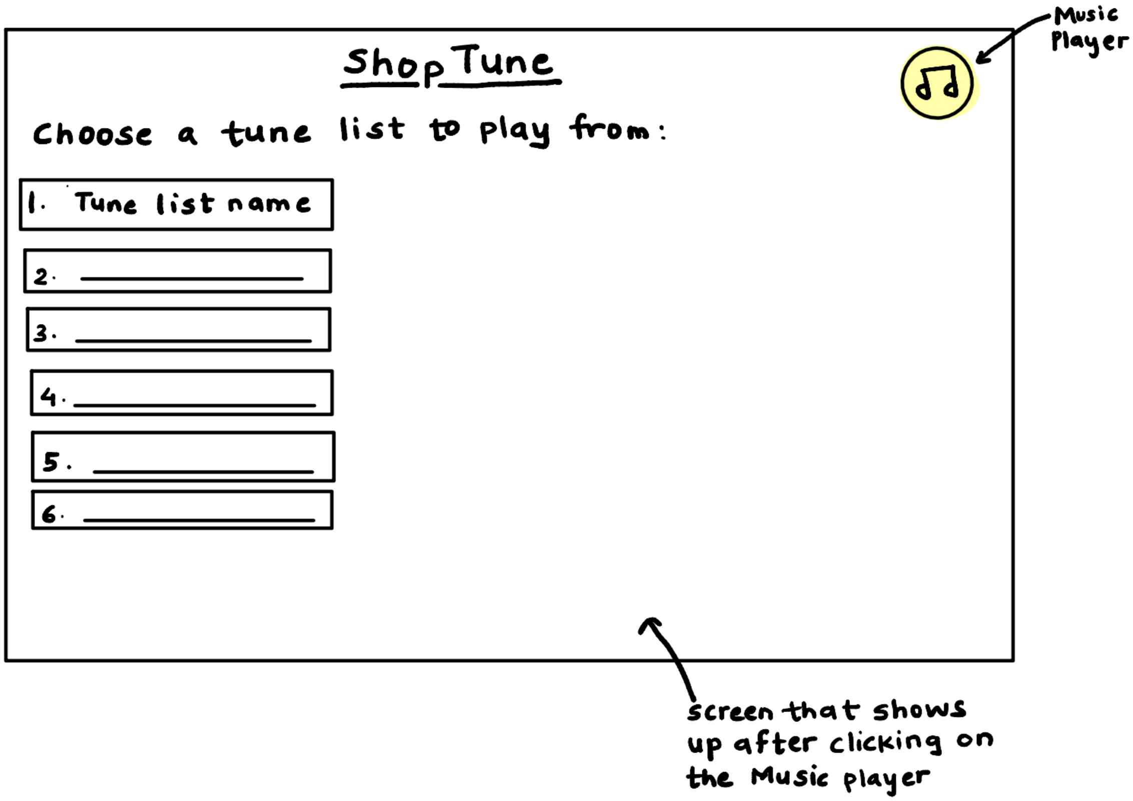
Features:

- Dynamic list of songs with metadata (title, artist, album cover, audio path)
- Playback Controls:
  - Play/pause toggle
  - Next/previous track
  - Seek bar showing song progress
  - Volume slider
- Real-time UI Updates:

    - Uses useRef and useEffect for tracking audio playback and progress
    - When a song ends, the next one plays automatically

Implementation Details:

- Audio playback: Managed with the native HTML5 `Audio` object inside a React hook
- Track list: Dynamically rendered from JSON or a Node API endpoint
- Styles: Responsive and styled with Bootstrap or CSS modules
- Component-based architecture:
    - <MusicPlayer />, <TrackList />, <Controls />



Music Player

screen that shows up after clicking on the Music player

Checkout Process

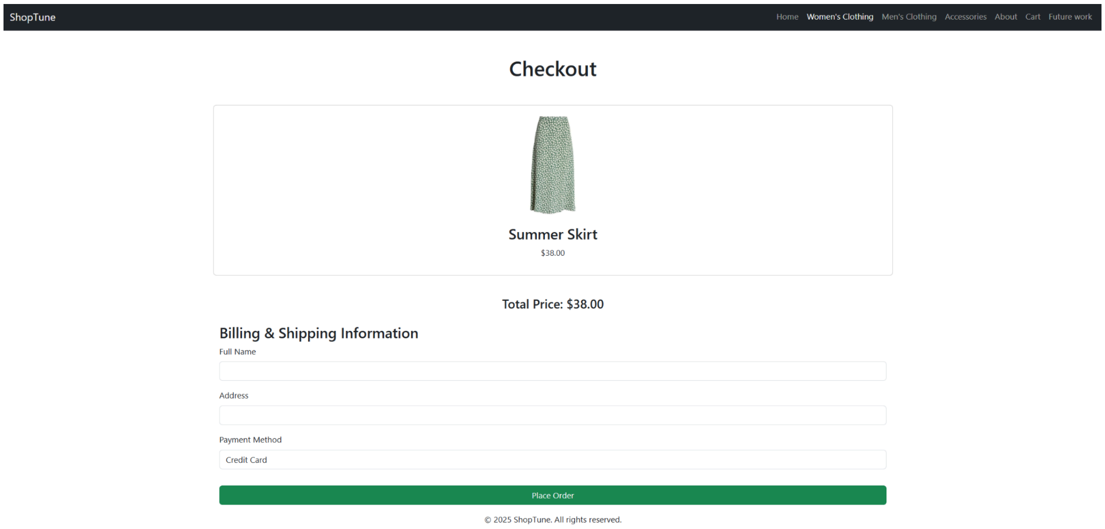
The Checkout Page lets users finalize their purchase by reviewing their cart and submitting shipping/payment details.

Features:

- Cart Review:
    - Displays items added by the user using data from React Context or Redux
    - Allows updates/removal before checkout
- Form Submission:
    - Collects name, address, payment info
    - Validates all fields using React form validation
    - Sends order data to backend endpoint (/api/checkout)
- Validation Includes:
    - Required field checks
    - Email and address format verification
    - Real-time error messages before allowing form submission

Backend Role:

- Stores order details (mock implementation using JSON or optional database)
- Simulates confirmation response for frontend display



Checkout

Summer Skirt

$38.00

Total Price: $38.00

Billing & Shipping Information

Full Name

Address

Payment Method

Credit Card

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7. Future work

Beyond the final project, we could enhance ShopEase by:

- Implementing user authentication for a personalized shopping experience.
- Adding a recommendation system based on user preferences.
- Allowing users to upload their own music while browsing.
- Optimizing performance for better loading times and smoother interactions.

8. Final Comments

This is our proposal for ShopTune. We believe this project will not only enhance our learning but also provide a valuable resource for shopping and music lovers everywhere. Thank you for considering our proposal. We are open to suggestions.

You can reach out to us at:

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