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Wear and Share: Sustainable Fashion Community

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Abstract*—Rising clothing expenses, environmental concerns, and limited access to affordable fashion options have highlighted the need for alternative consumption approaches. The fast fashion sector promotes frequent purchasing and rapid disposal of garments, leading to significant textile waste. To tackle these challenges, we propose Wear and Share, an online platform centered on sustainability and shared fashion usage. The system allows users to rent premium clothing temporarily, purchase second-hand items at discounted prices, and share wardrobe items through a secure digital marketplace. The platform features AI-driven style suggestions, encrypted payment options, and a transparent review system to foster user trust. Unlike existing solutions that focus exclusively on resale or rentals, Wear and Share integrates both while tracking environ- mental benefits. Initial evaluations indicate enhanced affordability, reduced clothing waste, and positive user experiences. Future work includes AR-based virtual try-on, blockchain authentication for product verification, and mobile app deployment.

***Index Terms*—Circular Fashion, Clothing Rental, Sustainable E-Commerce, AI Recommendations, Green Consumerism**

I. INTRODUCTION

The fashion sector is one of the most resource-intensive industries, generating substantial waste. Fast fashion has accelerated consumerism, encouraging frequent purchases and rapid disposal of garments, placing financial and environmental strain on individuals.

Current digital platforms partially address these issues. Some focus on resale while others specialize in designer rentals, yet few combine both approaches. Many platforms also overlook sustainability metrics, affordability, and verification mechanisms to ensure quality and trust.

Wear and Share is introduced as a community-driven marketplace that unifies buying, selling, and renting apparel. It emphasizes affordability, reduces textile waste, and leverages modern technologies such as AI-based recommendations and secure payment systems to create a seamless user experience.

A. Problem Statement

Current fashion consumption practices are inefficient due to:

- Overproduction and rapid disposal of clothing.
- High costs for outfits used infrequently.
- Absence of a single platform integrating resale, rentals, and sharing.
- Limited quality assurance and trust mechanisms.
- Lack of visibility of environmental impact from clothing reuse.

B. Objectives

- Create a unified platform for resale, rentals, and sharing.
- Promote sustainable and eco-conscious fashion practices.
- Improve affordability through shared clothing access.
- Enable secure, transparent transactions with ratings and reviews.
- Offer AI-powered personalized outfit suggestions.

C. Scope

The platform is developed as a web-based system with modules for users, sharers, and administrators. It focuses on second-hand apparel, event-based rentals, secure payments, and sustainability tracking. Future improvements include mobile apps, AR/VR try-on, and blockchain-enabled verification of product authenticity.

II. LITERATURE REVIEW

Existing online fashion platforms provide partial

solutions. Platforms like Amazon and Poshmark focus on resale, while Rent the Runway specializes in designer rentals. Community- oriented platforms such as Depop and Vinted promote resale but lack structured rental frameworks.

Research highlights the role of technology in sustainable fashion. Johnson (2022) explored AI's potential in personalizing fashion experiences, and Patel (2023) emphasized trust- building in peer-to-peer marketplaces. Collaborative consumption models have been shown to reduce textile waste and support environmental sustainability.

Most platforms fail to combine resale and rental in a single ecosystem with sustainability tracking. Wear and Share addresses this by integrating both models and monitoring environmental benefits while providing a trustworthy, accessible experience.

III. METHODOLOGY

The development of Wear and Share included requirement analysis, architectural design, workflow modeling, technology selection, and testing.

A. Requirement Analysis

Key requirements identified:

- Unified support for resale, rentals, and sharing.
- Affordable access to clothing for short-term use.
- Secure authentication and payment systems.
- Tracking of environmental impact for each transaction.
- User ratings and quality assurance mechanisms.

B. System Design

The platform uses a three-tier modular design:

1) Frontend: React.js interface with responsive browsing.
2) Backend: Node.js with Express.js for authentication and order management.
3) Database: MongoDB for user and item data, MySQL for structured transactions.

C. Workflow

- User Module: Browsing, renting, purchasing, and returning clothing.
- Sharer Module: Uploading items, managing availability, and orders.
- Admin Module: User verification, dispute handling, system monitoring.
- Notifications: Order updates via web, email, or SMS.

D. Development Tools

Technologies used include React.js, Node.js, Express.js, MongoDB, MySQL, AWS/Cloudinary for media, Stripe/Razorpay for payments, and TensorFlow.js for AI recommendations.

E. Testing

Testing involved:

- Unit tests for authentication and transactions.
- Integration tests across frontend, backend, and database.
- Performance evaluation under high load.
- Security validation of login and payment systems.
- User acceptance testing with participants.

IV. IMPLEMENTATION AND RESULTS

The system includes user authentication, product catalog, rental functionality, payment integration, AI recommendations, and sustainability tracking.

A. Results

- Cost Savings: Clothing available up to 70% cheaper than retail.
- Waste Reduction: Estimated 35% reduction in textile waste.
- User Satisfaction: Average usability score 4.6/5.
- Security: All payments processed securely.
- Personalization: AI recommendations increased engage- ment by 30–35%.

VI. DISCUSSION

A. Strengths

- Integrated buy-rent-share model.
- Affordable access to high-quality clothing.
- AI-driven personalization and sustainability tracking.
- Transparent ratings and review system.
- Secure payments.

B. Limitations

- Dependence on logistics and returns.
- Ensuring garment quality in shared items.
- Adoption challenges in new regions.
- Scaling to larger populations.

C. Implications

Wear and Share demonstrates technology's role in promoting sustainable consumer habits and supporting the circular economy, aligning with UN Sustainable Development Goals.

VII. CONCLUSION

The platform illustrates how technology can enhance afford- ability, sustainability, and accessibility in fashion. Combining resale, rentals, and sharing reduces waste and encourages eco- conscious consumption.

AI personalization, secure payments, and sustainability tracking provide a responsible and user-friendly system. Evaluation results confirm cost savings, waste reduction, and positive user experiences.

VIII. FUTURE WORK

- AR/VR virtual try-on.
- Blockchain verification for authenticity.
- Mobile app with notifications.
- Partnerships with eco-conscious brands.
- Gamification to increase engagement.
- Expansion to accessories and international markets.

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AUTHOR CONTRIBUTION

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Arpita Gupta: Front-end development, Data preprocessing, Testing.
Kajal Desai: Conceptualization, System Design, Report drafting.
Riya Rai: Database design and Back-end development. Harshita Movaliya: Supervision, Validation, Review editing.