

AI4STYLE	Version: 1.2
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VD-A4S	

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Revision History

Date	Version	Description	Author
26/10/25	1.0	This version includes the initial overview of the project's vision, outlining the purpose, scope, objectives, and key requirements	All team's members
13/11/2025	1.1	This version includes the details of features, define clearly stakeholder and user in this project	All team's members
07/01/2026	1.2	This version includes the non-functional requirements for the AI and its technology stack.	Nguyễn Anh Thu

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Vision (Small Project)

1. Introduction

The purpose of this document is to collect, analyze, and define high-level needs and features of AI4STYLE. It focuses on the capabilities needed by the stakeholders and the target users, and why these needs exist. The details of how our product fulfills these needs are detailed in the use-case and supplementary specifications.

2. Positioning

2.1 Problem Statement

The problem of	Clothing e-commerce spread around the world for remote buying. This is a good phenomenon but still has a drawback that people can not try on clothes to see if it fits them or mix clothing.
affects	Fashion customers.
the impact of which is	Causing waste of money and time when customers have to return unfit clothing.
a successful solution would	Attract more online shoppers with a better shopping experience. Help customers make the right decisions, which in turn saves money and time.

2.2 Product Position Statement

For	Fashion shop owners.
Who	Want to enhance their customers' shopping experience .
AI4STYLE	A fashion e-commerce platform.
That	Integrates AI functionality.
Unlike	Many shopping platforms, such as Shopee or Lazada.
Our product	This platform will have a chatbot for suggesting suitable clothing with the client's preferences. It also provides an online virtual dressroom for clients to try selected clothing on their virtual body image.

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3. Stakeholder and User Descriptions

3.1 Stakeholder Summary

Project Manager	The project leader that manages resources and team communication, helping everyone work together.	Ensuring project completion on time and within budget. Managing risks and maintaining effective, seamless communication among all stakeholders.
Designer	Responsible for designing the User Interface (UI) and defining the User Experience (UX) of the entire product.	Shaping the application's look and feel. Ensuring the product is aesthetically pleasing, user-friendly, and intuitive to optimize user experience.
Developer	Team member primarily engaged in building, coding, and implementing the functional features of the product.	Writing code, developing, and integrating functional modules according to technical specifications. Ensuring code quality, performance, and scalability of the application.
Business Analyst	Serves as the crucial liaison between project stakeholders and the development team.	Gathering, analyzing, and documenting detailed business requirements from customers. Translating these needs into clear System Requirements for the development team.
Tester	Responsible for quality assurance by identifying, documenting, and tracking bugs and issues throughout the development lifecycle.	Designing and executing test cases to verify the functionality, stability, and performance of the product. Ensuring the application works correctly against defined requirements.
Shop Owner	Primary business client and proprietor of the platform.	Minimizing product returns (due to sizing/style issues) to reduce operational costs and time. Manage the staff team members.
Staff	Internal team members appointed by the Shop Owner to handle management operations	Managing the flow of goods and customer transactions. Processing and tracking orders, managing refunds, updating product inventory.
Buyer	The individual shopper who uses the platform to browse and purchase fashion items.	Find perfectly-fitting and suitable clothing using the AI features of the platform. Placing orders and leaving reviews.

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3.2 User Summary

Name	Description	Responsibilities	Stakeholder
Buyers	End-users who use the platform to browse and purchase fashion items.	Browse and purchase clothing. Use the chatbot system for recommendation. Use the virtual try-on feature to visualize how items look when worn. Provide reviews and feedback.	Marketing and User Experience (UX) Team
Staff Members	End-users responsible for the day-to-day management operations.	Manage product inventory, listings, offers. Manage status of order	Staff Team
Shop Owners	Businesses or individual retailers.	Have all feature of staff Manage staff (create new account for staff, delete, create custom role for specific staff)	Business Development Manager

3.3 User Environment

- Most tasks are performed individually. Shoppers browse and purchase items alone, while the shop owners may have small teams managing product inventory, and administration teams handling system maintenance and user support.
- A typical shopping session lasts around 5–30 minutes. Sellers updating inventory weekly takes roughly 30–60 minutes. Administrative monitoring is ongoing but periodic.
- The system is mainly used indoors, on desktop or mobile devices. It must support both stable and mobile network conditions, and display responsively on various screen sizes.
- Only accessible via web browsers on PCs and smartphones. Future platforms may include mobile apps.
- The platform connects with payment gateways, inventory tools, and cloud databases. Future integration with social media login and sharing features is planned.

3.4 Alternatives and Competition

End-users can currently shop on many traditional e-commerce platforms such as Shopee, Lazada, and Tiki, or through global marketplaces like Amazon. Some fashion retailers also operate their own online stores.

Competitors	Strengths	Weaknesses
Shopee / Lazada / Tiki	Large user base, wide product variety, reliable payment systems, and strong brand trust.	Limited personalization, no virtual try-on features, and less emphasis on fashion-specific recommendations.
Amazon	Advanced logistics, strong	Limited fashion-focused features, lack of

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	recommendation algorithms, and global reach.	AI-driven try-on experiences, and minimal local market adaptation.
Independent stores	Strong brand identity and collections.	Small-scale, limited AI integration, and low personalization capabilities.

4. Product Features

<i>No.</i>	<i>Feature</i>	<i>Description</i>	<i>Priority</i>
1	Product management	<p>The system allows shop owners to manage products in their store. Shop owners can:</p> <ol style="list-style-type: none"> Adding New Products <ul style="list-style-type: none"> Shop owners can add new items to their catalog by entering product details such as name, description, price, quantity, images, and category. The system supports uploading multiple product images to improve product presentation. Each new product is assigned to one or more categories for easy organization and searchability. Editing Existing Products <ul style="list-style-type: none"> Shop owners can update product details at any time to reflect changes such as pricing adjustments, new descriptions, stock updates, or promotional offers. The system ensures that updates are reflected instantly in the storefront and visible to customers. Deleting Products <ul style="list-style-type: none"> Outdated or discontinued products can be removed from the catalog to maintain data relevance and accuracy. When a product is deleted, it is no longer displayed to customers, but its record may remain archived for reporting or auditing purposes Managing Product Categories 	<p>High</p> <p>This is a core feature of the e-commerce that allow owner to manage what they sell</p>

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		<ul style="list-style-type: none"> • Shop owners can create, edit, or delete product categories to organize their catalog effectively. • Categories help group similar products and improve navigation for both administrators and customers. • Each category can include subcategories for hierarchical organization (e.g., Shirt -> T-shirt). <p>5. Viewing Product List</p> <ul style="list-style-type: none"> • A dashboard or management interface displays all available products • Shop owners can view key product information such as name, category, price, quantity, and status (active/inactive). • Search and filtering options allow quick access to specific products based on keywords, categories, or availability. <p>6. Controlling Product Availability</p> <ul style="list-style-type: none"> • Shop owners can mark products as active or inactive. • Inactive products remain in the system but are hidden from customers, useful for temporarily unavailable items or seasonal products. 	
2	Order management	<p>1. Viewing Orders</p> <ul style="list-style-type: none"> • Shop owners can access a comprehensive list of all orders placed by customers. • The list includes essential details such as order ID, customer name, order date, total amount, payment status, and current order status. • Orders can be sorted or filtered by criteria such as date, status, or customer name to simplify navigation. <p>2. Viewing Order Details</p> <p>Each order can be opened to display detailed information, including:</p> <ul style="list-style-type: none"> • List of purchased products (name, quantity, price). • Shipping and billing information. • Payment method and transaction details. 	<p>High</p> <p>This is a core feature for owner to track their orders</p>

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		<ul style="list-style-type: none"> • Delivery method and tracking number (if applicable). • This helps shop owners verify order accuracy and manage fulfillment efficiently. <p>3. Updating Order Status</p> <ul style="list-style-type: none"> • Shop owners can update the order status throughout its lifecycle (e.g., Pending → Processing → Shipped → Delivered → Completed). • Each status change is recorded for tracking purposes and can trigger customer notifications. • The system may allow marking orders as Cancelled or Refunded when necessary. <p>4. Order Fulfillment and Shipping Management</p> <ul style="list-style-type: none"> • Shop owners can assign shipping details, update tracking numbers, and confirm shipment. • The system provides visibility into orders that require packaging, shipping, or delivery confirmation. • Integration with delivery services (if available) ensures real-time updates. <p>5. Order Search and Filtering</p> <ul style="list-style-type: none"> • A powerful search tool enables shop owners to quickly locate specific orders using keywords, customer names, or order IDs. • Filters allow narrowing results by status, date range, payment type, or fulfillment progress. <p>6. Managing Cancellations and Refunds</p> <ul style="list-style-type: none"> • Shop owners can cancel orders before shipment or issue refunds for returned items. • The system records all cancellation or refund actions for auditing and customer support purposes. <p>7. Order History and Reporting</p> <ul style="list-style-type: none"> • A record of all past orders is maintained for review and reporting. 	
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		<ul style="list-style-type: none"> Shop owners can analyze order data to identify trends such as best-selling products, frequent customers, or peak sales periods. <p>8. Customer Communication</p> <ul style="list-style-type: none"> Shop owners can send updates or messages to customers regarding their order status. Automatic notifications may be generated when an order's status changes, enhancing transparency and customer satisfaction. 	
3	Staff management (Root admin)	<p>This feature allows the Root Administrator to perform account management and role-assignment tasks for staff within the system:</p> <ul style="list-style-type: none"> Create Custom Roles: Enables the Root Admin to create and define roles with specific sets of permissions, suitable for each staff position (e.g., Product Manager, Order Manager, etc.). Create Staff Accounts: Enables the Root Admin to create new accounts for staff members. Delete Staff Accounts: Enables the Root Admin to delete staff accounts when necessary. 	
4	Authentication	<p>This feature ensures secure and controlled access to the platform for all user types (Customer, Staff, Shop Owner):</p> <ul style="list-style-type: none"> Secure Registration: Allows new Customers to sign up with email and a strong password, including input validation. User Login: Provides secure sign-in via email/password. Password Recovery: Enables users to securely reset forgotten passwords via email verification. Multi-Factor Authentication (MFA): (Shop Owner/Staff) An optional layer of security requiring a second verification step during login. 	Medium

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5	Profile management	<p>This feature allows authenticated users to personalize and manage their individual account information and settings.</p> <ul style="list-style-type: none"> • View & Edit Personal Profile: Allows users to view and update key details like Full Name, Phone Number, Email Address, and Shipping/Billing Address. The User ID and Member Status are also clearly displayed. • Order History Dashboard: Integrates a summary dashboard showing the user's past orders, including Order ID, items purchased, total cost, and the current Order Status (e.g., Delivered). Users can filter by Order or Status. • Profile Picture Management: Allows the user to upload or change their profile picture. • Logout Function: Provides a secure way for the user to end their current session. 	
6	View product	<p>This feature allows buyers to explore and view fashion products available on the platform:</p> <ul style="list-style-type: none"> • Browse Product Listings: Enables users to view all available items, including product images, names, prices, and descriptions. • Search and Filter: Allows buyers to quickly find products by category, price range, or other attributes. • View Product Details: Provides detailed information for each item, including size options, materials, and availability. 	
7	Order and payment	<p>This feature allows buyers to complete their purchase securely and conveniently:</p> <ul style="list-style-type: none"> • Cart Management: Enables users to review selected items, update quantities, or remove products before placing an order. • Order Checkout: Guides buyers through confirming their shipping details and reviewing order summaries. • Payment Processing: Allows users to complete transactions using supported payment methods, ensuring a smooth and secure purchasing experience. 	Medium
8	Chatbot	Suggest available suitable products based on user request.	Low

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		<p>Users can virtually try on clothes directly on the product page of the selected item and preview their appearance.</p> <p>Users can also try on outfits suggested by the chatbot for a more personalized shopping experience.</p>	
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5. Non-Functional Requirements

5.1 Performance Requirements

- Page load time < 5 seconds under normal conditions.
- Support for 100+ concurrent users.
- 90% uptime availability.
- Real-time synchronization between client, chatbot, and backend services.
- Virtual try-on rendering time < 100 seconds for standard images.
- Database queries optimized for response < 500ms.

5.2 Usability Requirements

- Intuitive interface that requires no user training.
- Mobile-responsive design.
- Accessibility compliance (WCAG 2.1 level AA).
- Consistent UI/UX across all modules (product, dressroom, order, etc.).
- Seamless virtual try-on flow with clear instructions and feedback.
- User-friendly dashboard for shop owners (clear product/order management).

5.3 Security Requirements

- HTTPS encryption for all communications
- Secure password hashing (bcrypt)
- Protection against common web vulnerabilities (XSS, CSRF, SQL Injection)
- JWT-based authentication with session timeout
- Role-based access control (RBAC) for admin, shop owner, and customer

5.4 Scalability Requirements

- Horizontal scaling to support future growth in users and products.
- CDN integration for faster global content delivery.
- Efficient caching (Redis or equivalent) for frequently accessed data.
- Database partitioning and indexing for large datasets.

5.5 Quality Requirements

- Comprehensive testing: unit, integration, and UI tests
- Continuous Integration/Deployment (CI/CD) pipeline enabled
- Automated error logging and performance monitoring
- Regular code review and static analysis enforcement
- User feedback mechanism for usability improvements
- Fault tolerance: system recovers automatically from service failures within 30 seconds

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5.6 Technology stack & Platform Requirements

- Compatible with major browsers (Chrome, Safari, Edge, Firefox)
- Server environment: Node.js (LTS), Next.js 15, NestJS, PostgreSQL
- Deployment environment: Cloud-based (Vercel for NextJs and Mau for NestJs)
- AI:
 - Chatbot: Utilizes LLM (using Groq (model: groq/compound, llama-3.3-70b-versatile))
 - Virtual Try-on (VTO): using Hugging Face inference (OOTDiff or Stable ViTON models)
 - Embedding: using Hugging Face inference (dangvantuan/vietnamese-embedding)
 - **Deployment:** GPU Computing: Utilizes Cloud-based GPU nodes (AWS EC2 G5 instances with NVIDIA A10G) to perform image synthesis and diffusion model inference. Storage for AI Assets: Cloudinary or AWS S3 for managing high-resolution product images and user-uploaded photos for the virtual dressroom.