MODA MVP Technical Report

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1. Introduction

Moda MVP is a mobile application built using Expo React Native that enables users to experience virtual try-on functionality for clothing. The MVP aims to showcase virtual try-on accuracy, mix and match features, and provide a smooth and realistic user experience.

2. System Overview

2.1 Architecture

The application follows a client-server architecture where:

- The mobile application (frontend) is built using React Native (Expo).
- The backend service is built using Node.js with Express and interacts with the Fashion AI API hosted on Google Cloud Run for virtual try-on functionality.
- Firebase & Cloudinary are used for storage and image processing.
- Redux Toolkit manages the application's state.
- The application is uploaded on TestFlight for iOS testing.

3. Technology Stack

3.1 Frontend (Mobile App)

- Framework: React Native (Expo)
- State Management: Redux Toolkit
- Navigation: React Navigation
- UI Components: React Native Paper
- Image Processing & Storage: Firebase, Cloudinary
- Network Requests: Axios

4. Application Features & Components

4.1 Screens

1. GarmentsScreen.js

- Allows users to upload and manage garment images.
- Images are categorized into Tops, Bottoms, and One-pieces.
- Uses Redux Toolkit for state management.
- Users can delete uploaded images.
- Utilizes ImagePicker to allow multiple selections from the media library.

2. HomeScreen.js

- Displays selected user models.
- Allows users to zoom in and out of their selected images.
- Users can select an image for try-on.
- Uses Redux Toolkit to manage selected images.

3. MarketPlaceScreen.js

- Provides a marketplace for users to browse available garments.
- Displays products in a grid format.
- Users can favorite items and filter by categories.
- Uses FlatList for efficient item rendering.

4. TryOnScreen.js

- Allows users to select a model and try-on clothing items.
- Users can undo the last try-on.
- Implements zoom functionality.
- Uses Redux Toolkit to manage selected images.
- Contains modals for selecting user images and garments.

5. Backend Service for Moda API

5.1 Technology Stack

- Framework: Node.js with Express
- Middleware: Body-parser
- Image Processing API: Fashion AI API
- Hosting: Google Cloud Run (**Base URL**: **https://moda-api-830887657960.us-central1.run.app**)
- Secure Backend Deployment: The backend is deployed on Google Cloud Run with HTTPS encryption, authentication tokens, and firewall rules for restricted access.
- Environment Variables: dotenv

Endpoint	Method	Description
/api/try-on	POST	Processes virtual try-on requests using Fashion AI
/api/fashion-ai	POST	Processes virtual try-on with AI parameters

Github Links:

- Frontend Repository: GitHub Link
- Backend Repository: GitHub Link

5.3 Pricing Plan for Fashion AI API Calls

Plan	Price per API Call	Features
Free Plan	$0 (Up to 100 calls per month)	Limited access to AI try-on API.
Basic Plan	$0.01 per call	Faster processing and access to AI adjustments.
Pro Plan	$0.005 per call	Priority processing, enhanced AI capabilities.
Enterprise	Custom Pricing	Bulk API access, dedicated processing power.

6. Apple Developer & Google Play Store Pricing

6.1 Apple Developer Pricing

Plan	Price	Features
Individual	$99/yr	Single developer access, App Store submission.
Company	$299/yr	Team development, advanced distribution tools.

6.2 Google Play Store Pricing

Plan	Price	Features
Developer	$25 (one-time)	Publish unlimited apps.

7. Security & Privacy Considerations

- No mandatory unclothed images: AI must process fully clothed users.
- Authentication with Firebase to protect user data.
- Secure API Communication using HTTPS and authentication tokens.

8. Future Enhancements

- Custom AI Model for better clothing fit accuracy.
- Integration with fashion brands for a larger marketplace.
- Real-time virtual fitting with 3D avatars.

9. Documentation

Fashion AI Library

- API allows virtual try-on by overlaying clothing images onto user images.
- Supports NSFW filtering, background restoration, and clothing adjustments.
- **Configurable parameters:**
  - category: Clothing type (e.g., tops, bottoms)
  - mode: Try-on quality mode
  - seed: Random seed for AI processing
  - num_samples: Number of try-on results

Cloudinary Documentation

- Used for image storage, transformation, and optimization.
- Supports automatic background removal for garment images.
- Allows dynamic resizing and cropping for optimized image delivery.

Firebase Storage Documentation

- Used for storing user model images.
- Supports secure file uploads via Firebase authentication.
- Allows access control and real-time synchronization.

10. Conclusion

Moda MVP is a foundational step in developing a full-fledged virtual fashion try-on experience. The current implementation showcases core features like virtual try-on, mix & match, and virtual closets. Future iterations will enhance realism, speed, and brand partnerships to make it a robust fashion-tech solution.