

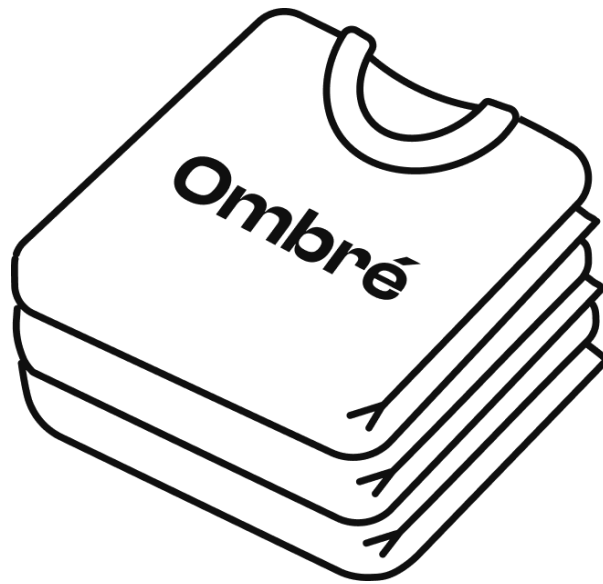
# **OMBRE: A MACHINE LEARNING-BASED FASHION MOBILE APPLICATION FOR CLASSIFYING APPAREL COMBINATIONS**



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User Guide/Manual

# OMBRE: A MACHINE LEARNING-BASED FASHION MOBILE APPLICATION FOR CLASSIFYING APPAREL COMBINATIONS



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## DISCLAIMER

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# Ombré Mobile Application Deployment and User Guide

## Getting Started

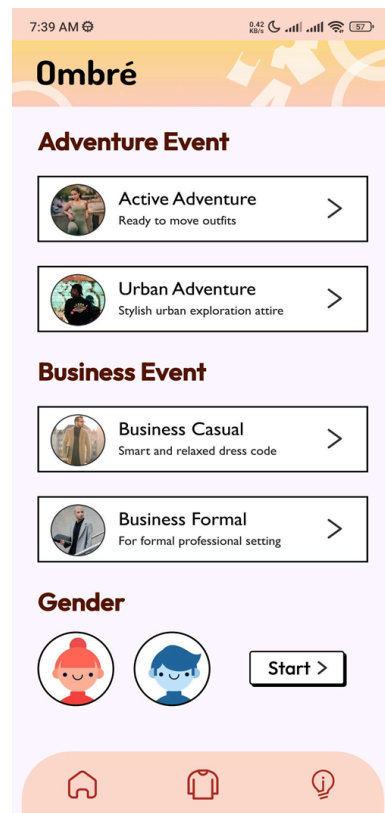
Welcome to Ombré, a machine learning-based mobile fashion assistant that helps users classify outfit suitability for specific events and recommends alternative clothing based on personalized preferences. This guide will walk you through the steps to deploy, install, and effectively use the core features of the Ombré application.

## Introduction

Ombré is a mobile application developed using a machine learning model to classify user outfit images and suggest appropriate alternatives for various occasions, such as:

- Business Casual
- Business Formal
- Active Adventure
- Urban Adventure

The app is designed for Android devices and integrates Firebase services for cloud storage and real-time outfit recommendations.



## System Requirements

### Hardware Requirements

- Android Smartphone
  - OS: Android 8.0 (Oreo) or higher
  - RAM: Minimum 4 GB (8 GB recommended)
  - Camera: Required for image input
  - Storage: Minimum 150 MB available space

### Software Requirements

- Android Studio (for developers)
- Kotlin (development language)
- TensorFlow Lite (embedded ML model)
- Firebase (Firestore and Firebase Storage)

### For Users

- Google Play Store access or direct APK installation
- Internet connection (required for:
  - Accessing recommendations
  - Saving results to Firebase)

### Offline usage is supported for:

- Outfit classification
- Viewing previously saved images

## Installation

### For End Users

#### Option 1: From APK (Beta Testers)

1. Download the Ombré APK file.
2. Enable "Install from Unknown Sources" on your Android device.
3. Open the APK and follow the prompts to install the app.

#### Option 2: From Google Play Store (when published)

1. Search for "Ombré Fashion Assistant."
2. Tap Install.
3. Open the app after installation.

### For Developers

1. Clone the project from GitHub.
2. Open the project in Android Studio.
3. Configure the Firebase project credentials.
4. Train or integrate the TensorFlow Lite CNN model.
5. Build and deploy the APK to a test device.

## Usage Guide (Per Main Feature)

### A. Outfit Classification

Purpose: Classify whether your clothing combination is suitable for a chosen event.

Steps:

1. Launch the Ombré app.
2. On the main screen, select an event (e.g., Business Casual).
3. Choose gender and click Start.
4. Upload an image:
  - From the gallery OR
  - Take a photo using the camera.
5. Tap the “Classify” button.
6. View results: The app will display whether the outfit is suitable or not.
7. If suitable, tap “Save” to store it in the Saved Outfits screen.

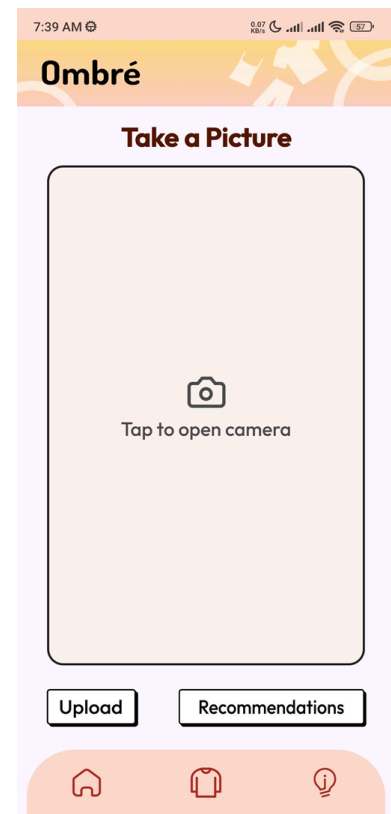


### B. Outfit Recommendation

Purpose: Get fashion suggestions if your outfit is unsuitable or directly browse recommended styles.

Steps:

1. Go to the Recommendation section (available after classification or directly from the main screen).
2. Select preferences:
  - Event subcategory (e.g., Business Formal)
  - Clothing type (e.g., shirt, dress)
  - Color





- Pattern

3. Tap "Get Recommendations."
4. Browse through 3–5 suggestions.
5. Tap "Save" if you wish to store a recommendation in Saved Recommendations.

### C. Saved Outfits

Purpose: View all previously saved outfit classifications.

Steps:

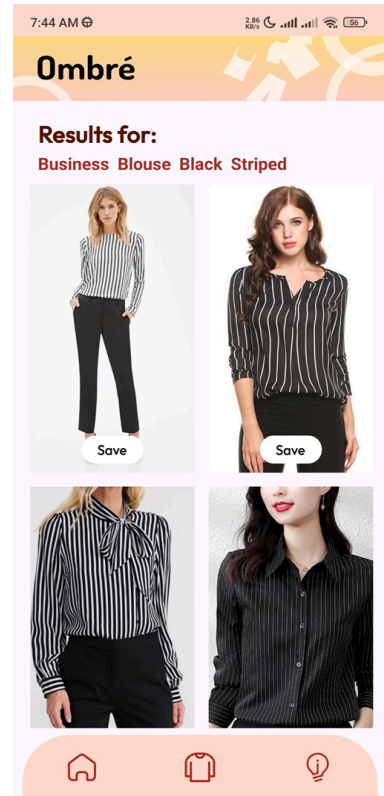
1. Tap the middle icon on the bottom navigation bar.
2. Navigate between Business and Adventure categories.
3. Tap any saved image to review its event classification.

### D. Saved Recommendations

Purpose: Review and revisit previous outfit suggestions.

Steps:

1. Tap the third icon on the bottom navigation bar.
2. Browse saved recommended outfits by event.
3. Tap on each item to view details or remove unwanted entries.



## Troubleshooting Guide: Ombré Mobile Application

This section outlines common bugs, issues, and possible fixes encountered while using the Ombré app, especially during outfit classification, recommendation retrieval, and data storage.

### 1. Image Upload Not Working

Symptoms:

- App crashes when selecting an image.
- Image preview doesn't appear.
- Camera does not open.

Possible Causes:

- App lacks permission to access the camera/gallery.
- Unsupported image format or corrupted image.
- Device OS below Android 8.0.

Fixes:

- Go to Settings > Apps > Ombré > Permissions and enable Camera and Storage.
- Use .jpg or .png formats.
- Restart the app or reinstall if problem persists.

### 2. Outfit Not Classifying (Stuck or Error Message)

Symptoms:

- Classification freezes after tapping "Classify."
- Error like "Unable to process image" appears.

Possible Causes:

- Large image size or unsupported resolution.
- Poor lighting or incorrect image orientation.
- Issue with TensorFlow Lite model loading.

Fixes:

- Ensure image is front-facing, well-lit, and clearly shows the outfit.
- Resize image before uploading (recommended: 224x224 px).
- Restart the app. If still stuck, reinstall or clear cache.

### 3. Recommendation Feature Not Loading

Symptoms:

- Spinning loader doesn't stop.
- No results returned even after setting preferences.

Possible Causes:

- No internet connection.
- Firebase database connection error.
- Missing or incomplete user input.

Fixes:

- Ensure stable internet connection (Wi-Fi or mobile data).
- Fill out all required fields (event, type, color, pattern).
- Try again after restarting the app.
- If still failing, check Firebase API configuration (for developers).



#### 4. Cannot Save Outfits or Recommendations

Symptoms:

- Tapping “Save” does nothing.
- Saved outfits don’t appear in the Saved section.

Possible Causes:

- No internet connection (for cloud save).
- Firebase write permission error.
- Full local storage or corrupted local cache.

Fixes:

- Confirm internet connection is active.
- Free up device storage if full.
- Clear app cache under Settings > Apps > Ombré > Storage > Clear Cache.
- Developers: Ensure Firestore write permissions are correctly configured in Firebase.



#### 5. UI Display Issues on Some Devices

Symptoms:

- Buttons overlap or are missing.
- Image previews are cut off or stretched.
- App not scaling on tablet screens.

Possible Causes:

- Inconsistent screen resolution handling.
- Device-specific UI scaling not supported.

Fixes:

- Developers: Implement responsive layouts using ConstraintLayout and dp/sp units.
- Users: Report device model and Android version for support updates.

## 6. Low Accuracy in Classification

### Symptoms:

- Wrong outfit category shown.
- Same image produces inconsistent results.

### Possible Causes:

- Input image quality is too low.
- Model hasn't seen similar examples in the dataset.
- Model not retrained or fine-tuned.

### Fixes:

- Use high-resolution, clear, front-facing images.
- Developers: Expand and retrain dataset with diverse images.
- Add preprocessing steps (e.g., image normalization, lighting adjustment).

## 7. App Crashes on Launch or After Update

### Symptoms:

- Immediate crash when opening the app.
- Crash during classification or saving results.

### Possible Causes:

- Cached data from previous version is incompatible.
- Bug in code after update or corrupted installation.

### Fixes:

- Clear cache and data:  
Settings > Apps > Ombré > Storage > Clear Data & Clear Cache.
- Uninstall and reinstall the app.
- Developers: Check crash logs using Logcat in Android Studio.

## 8. Recommendation Results Not Matching Preferences

### Symptoms:

- Suggested clothes don't align with selected filters.
- Results are repeated or limited.

### Possible Causes:

- Limited dataset for that combination.
- Faulty logic in filtering system.

### Fixes:

- Try selecting different combinations.
- Developers: Expand Firestore dataset and review recommendation logic.
- Add fallback recommendations when exact match isn't found.

## 9. Firebase Authentication or Access Errors

Symptoms:

- App fails to fetch or store data.
- Error messages like “permission denied” or “unauthorized access.”

Possible Causes:

- Firebase rules misconfiguration.
- User not authenticated (if required).

Fixes:

Developers: Review Firebase Firestore security rules.

Example for read/write access during testing:

```
service cloud.firestore {  
  match /databases/{database}/documents {  
    match /{document=**} {  
      allow read, write: if true; // NOT for production  
    }  
  }  
}
```

- Enable Firebase Authentication if restricted access is required.

## FAQ (Frequently Asked Questions)

### 1. What is Ombré?

Ombré is a mobile fashion assistant application that uses machine learning to help users determine whether their outfit is suitable for a specific event. It leverages machine learning to classify images of clothing into categories such as Business Casual, Business Formal, Urban Adventure, and Active Adventure. In addition to classification, the app provides users with outfit recommendations when their current outfit is not appropriate for the selected event.

### 2. How does the app determine if my outfit is suitable?

The app uses a trained machine learning which analyze uploaded images of outfits to detect patterns, textures, and clothing features. Based on this analysis, it categorizes the outfit according to the event types supported by the application. The classification model was trained on a diverse dataset to ensure it recognizes a wide range of fashion styles, improving its accuracy in identifying whether an outfit fits a particular occasion.

### 3. What types of events can I choose from?

Users can select from two major event categories: Business and Adventure. Each of these is further divided into two subcategories. For Business, the options include Business Formal and Business Casual. For Adventure, users can choose between Urban Adventure and Active Adventure. These categories help tailor outfit classification and recommendations according to the user's specific needs and settings.

### 4. Can I use the app offline?

Yes, Ombré supports offline usage for some of its core functions. Users can perform outfit classification and view saved outfit results without an internet connection. However, certain features, such as fetching outfit recommendations and saving classified outfits to the cloud, require an internet connection because they rely on Firebase services and cloud-stored datasets.

### 5. What should I do if classification results are inaccurate?

If the classification results seem incorrect, it may be due to the quality or angle of the uploaded image. For the most accurate results, users should ensure that their outfit photo is well-lit, front-facing, and shows both the top and bottom pieces clearly. Avoid using blurry images or those with complex backgrounds. Additionally, consistent inaccuracies could be due to limitations in the current dataset, which the developers aim to improve over time.

#### 6. How do I get outfit recommendations?

Users can access outfit recommendations either after receiving an “unsuitable” classification or by directly navigating to the Recommendation section from the app’s interface. Once there, users will be asked to select their preferences, including the event subcategory, clothing type, color, and pattern. The system then uses these inputs to suggest 3 to 5 relevant outfits sourced from curated datasets and fashion websites.

#### 7. Are the outfit recommendations generated or curated?

Ombré provides curated outfit recommendations rather than generating them randomly. These suggestions are collected from fashion brand websites and the DeepFashion dataset, ensuring that they are realistic, fashionable, and aligned with current trends. Each recommendation is filtered based on the user’s preferences to maintain relevance and personalization.

#### 8. Where are my saved outfits stored?

Outfits and recommendations saved by users are stored both locally on the device and in the Firebase cloud (when connected to the internet). Users can access these saved items at any time through the "Saved Outfits" and "Saved Recommendations" sections of the app. This dual storage system ensures data accessibility even when the device is offline.

#### 9. What devices are supported?

The Ombré app is designed for Android smartphones running on Android 8.0 (Oreo) or later. While it is optimized for various screen sizes and hardware configurations, performance may vary slightly depending on the processing power, memory, and screen resolution of the device used.

#### 10. Is my personal information safe?

Yes, Ombré values user privacy and does not collect any personally identifiable information. The app only processes the clothing images uploaded by users and selections such as gender and event type, which are used solely for classification and recommendation purposes. All data is handled securely using Firebase’s cloud infrastructure.

#### 11. Why does my app crash or freeze sometimes?

Crashes or freezes may occur due to several factors such as lack of storage space, missing permissions, or device incompatibility. It is recommended to check that the app has access to the device’s camera and storage. If problems persist, users can try clearing the cache, restarting the app, or reinstalling it. Ensuring that the app is updated to the latest version can also resolve performance issues.

12. How often is the model updated?

The classification model used in Ombré is updated periodically as the developers collect more fashion data and refine the machine learning algorithm. These updates aim to improve the accuracy of outfit classification and expand the diversity of recognizable clothing styles. Updates may also introduce new event categories or enhance recommendation quality.

13. Can I suggest new clothing categories or features?

Yes, the development team welcomes feedback and suggestions from users. Whether it's a request for new outfit categories, features, or improvements to existing functionality, users are encouraged to share their ideas by emailing the development team. User input helps guide future development and ensures the app continues to meet real-world needs.

14. Where can I report bugs or issues?

Bugs or technical issues can be reported through multiple channels. Users can email the development team with a description of the problem and device details. Developers and testers may also submit issues directly to the app's GitHub repository if available. Prompt reporting helps the team identify and fix issues more efficiently.



## Contact Details – Ombré Development Team

For questions, feedback, technical support, or bug reports, feel free to reach out to the Ombré development team using the contact information below:

### Email:

[jed.divinagracia@wvsu.edu.ph](mailto:jed.divinagracia@wvsu.edu.ph)

[quianjay.lapating@wvsu.edu.ph](mailto:quianjay.lapating@wvsu.edu.ph)

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[hebele.pacaco@wvsu.edu.ph](mailto:hebele.pacaco@wvsu.edu.ph)

For all inquiries related to app usage, troubleshooting, feature requests, or technical support.

### GitHub (for developers & contributors):

[https://github.com/Ennui23/Ombre\\_App](https://github.com/Ennui23/Ombre_App)

Use this platform to report bugs, suggest enhancements, or contribute to the project (if public).

### Office Address (for formal communications):

Ombré Project Team

College of Information and Communications Technology

West Visayas State University

La Paz, Iloilo City, Philippines