FashionViz

AI-Driven Fashion Recommendation Platform

November 2023

63%

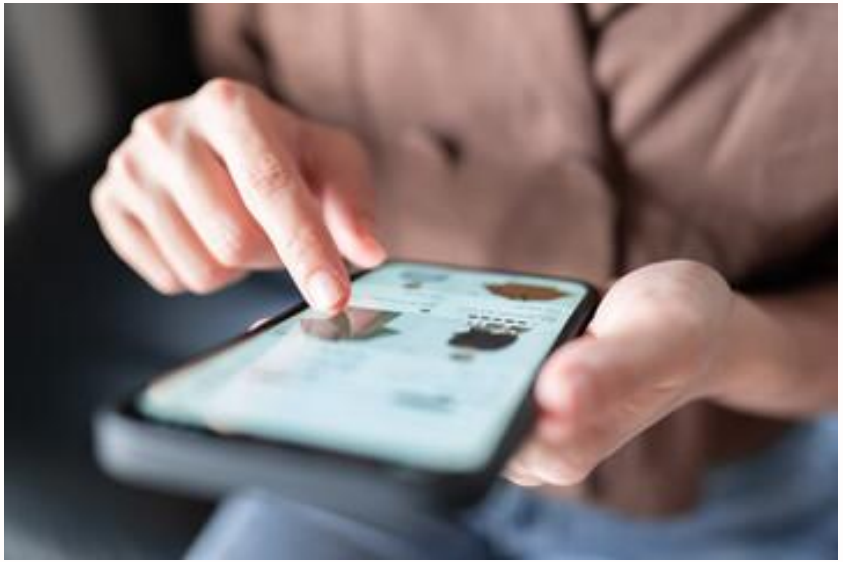
63% of millennials in the United States are interested in using AR to customize clothing items

13.4%

The global AR in fashion market is projected to witness a CAGR of 13.4% during the forecast period 2021-2026

35.9 million

As of 2023, an estimated 65.9 million people in the United States have adopted augmented reality technology



FashionViz

Fashion Retail with AI-Driven Recommendations and Immersive Shopping Experiences

Who are our stakeholders?

Tech firms seeking innovation in fashion-tech integration

What is the Business Problem?

Improving customer engagement and sales in E-commerce fashion by attracting new customers

What we do?

FashionViz creates a highly immersive and personalized shopping experience using recommendation systems.

Data Explanation

Data Source

Kaggle.com

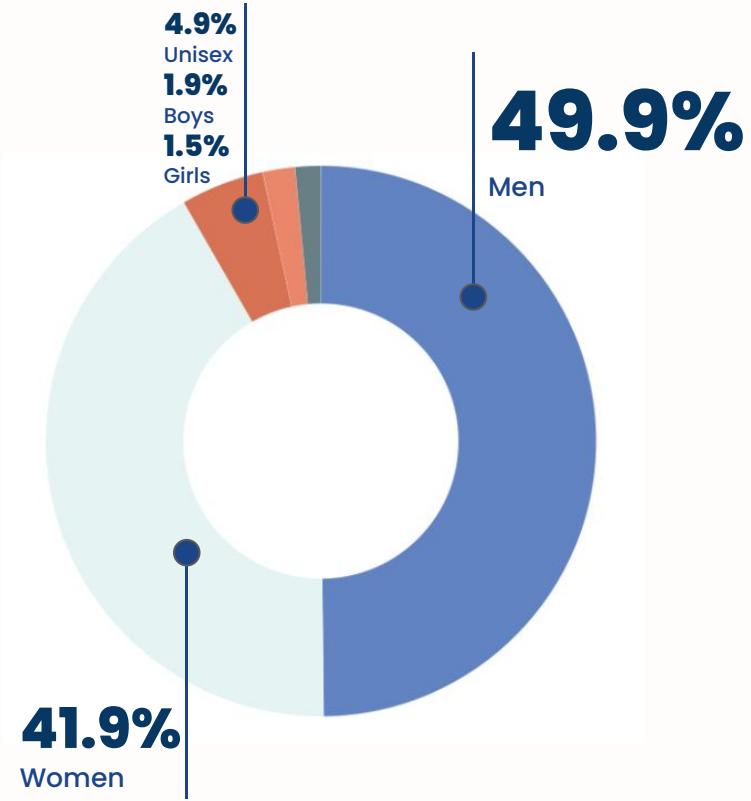
Image Folder

Comprises more than 44.4k high-resolution images (2400x1600) of fashion products

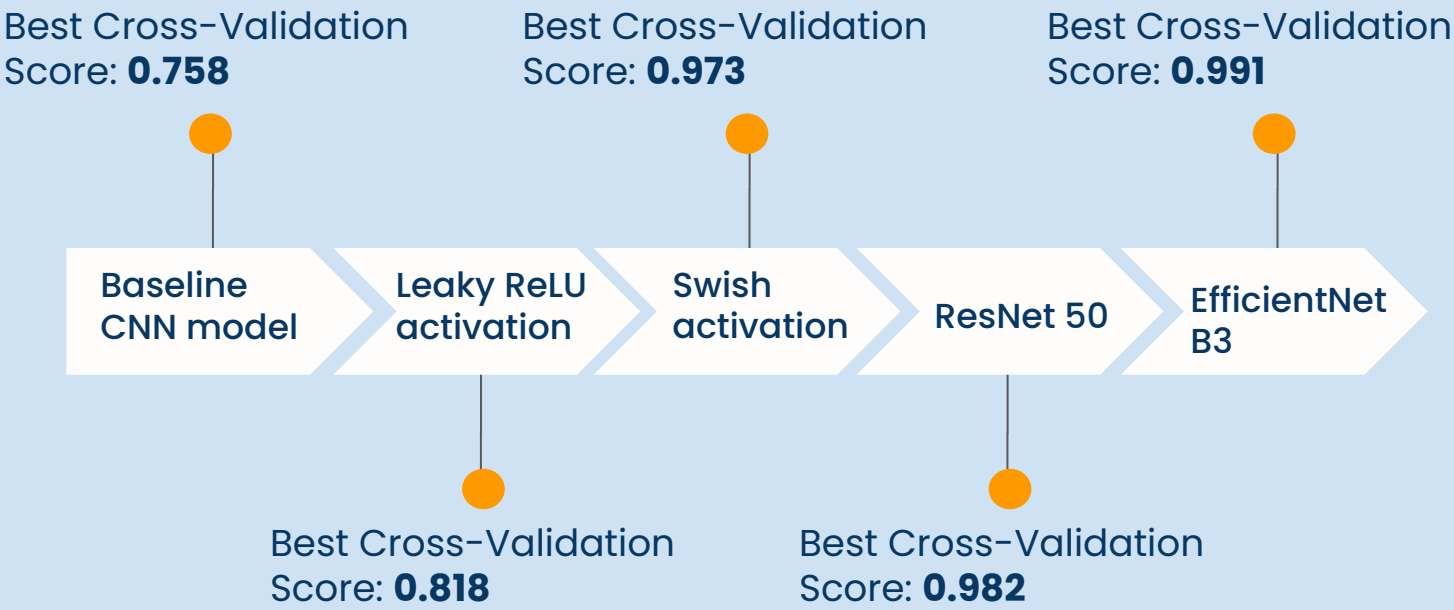
By exclusively targeting Men and Women in binary classification, we address data imbalance for enhanced model performance

1. Gender Classification

- The dataset is highly imbalanced in terms of gender representation
- The Men and Women categories dominate the dataset

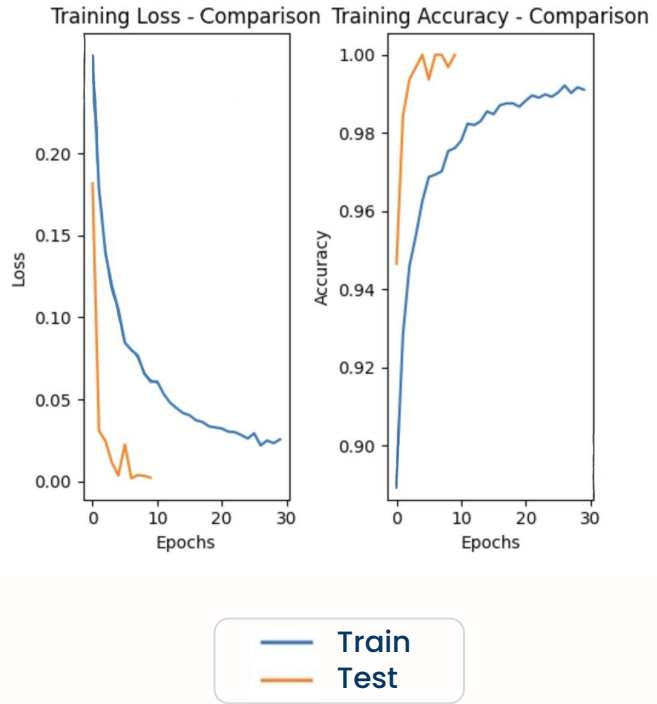


Gender Binary Classification Analysis

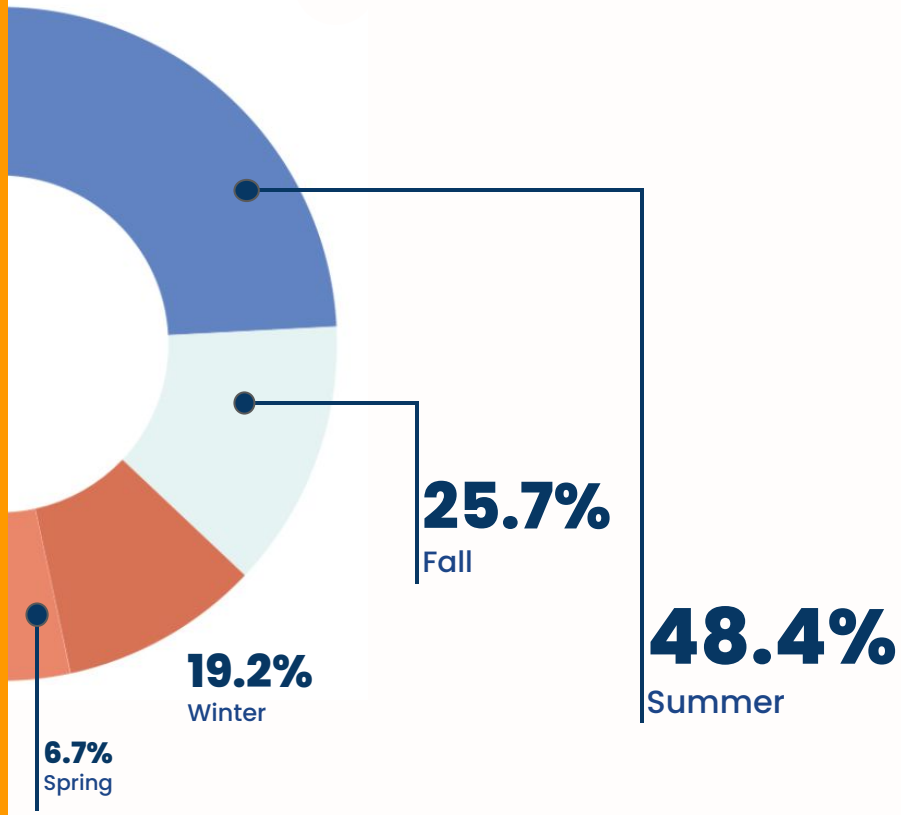


EfficientNet B3 Achieves 99.1% Cross-Validation Accuracy in Training and 99.9% in Test

- Fine-tuning played a crucial role in enhancing model performance
- The loss continues to decrease consistently across epochs reaching 0.0150
- The model learned the features effectively, fitting exceedingly well to the test dataset



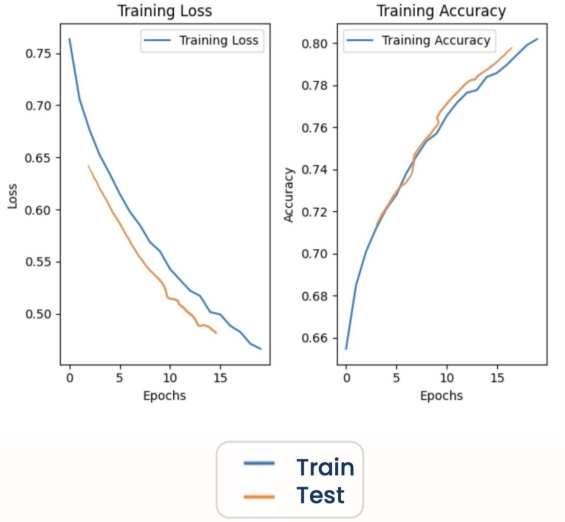
Seasonal categories showed a significant imbalance, posing a challenge for accurate model training

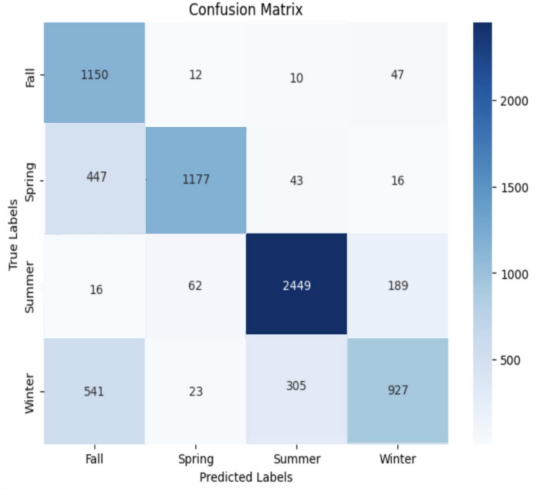


2. Seasonal Classification

- **ImageDataGenerator** was used to balance the dataset by applying diverse transformations, such as rotation, shifting, and flipping
- **Class weights** addressed data imbalance, ensuring fair learning for accurate fashion classification

Enhanced EfficientNetB3 model achieved 80% accuracy on training and test sets.





47.7% Baseline CNN model

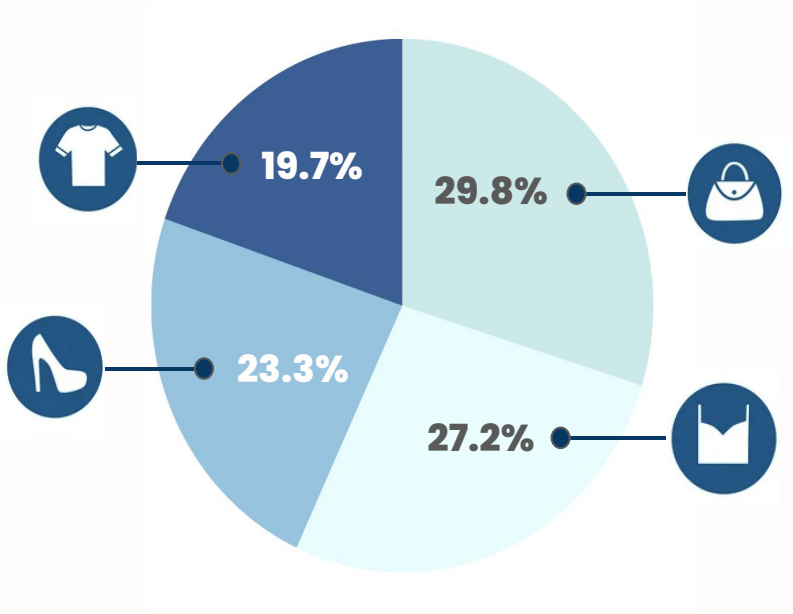
57.8% EfficientNetB3 Baseline model

54.5% VGG16 model

80.1% Deeper EfficientNetB3

- Despite a longer training duration, the model effectively minimizes loss without overfitting

Unlike Seasonal categories, Multi-Class Women's Fashion Essentials boast a balanced distribution, optimizing accuracy in model training



3. Categorical Classification

- **Wunderlabel.com**'s statistics highlight women's frequent purchases in Handbags, Tops, Heels, and Tshirts, leading us to prioritize these categories
- All four categories exhibit a **balanced distribution**, ideal for effective modeling and strategic decision-making

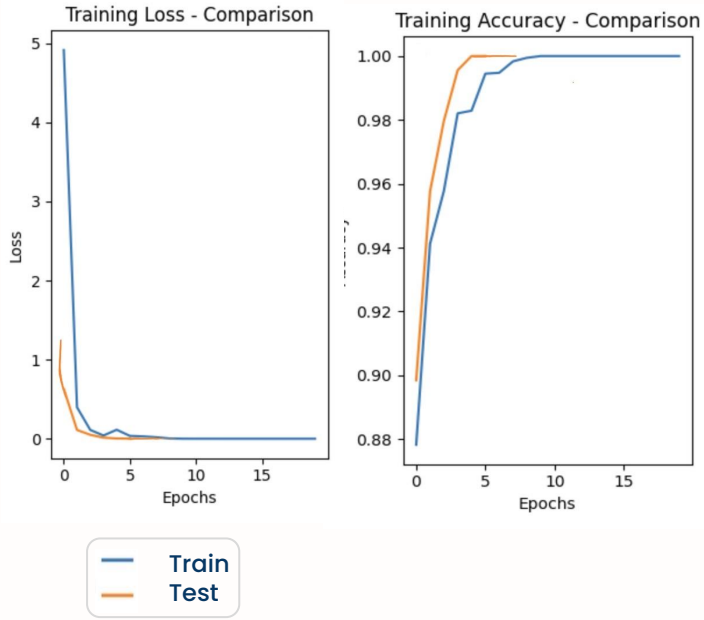
The VGG16 model demonstrates great results both on the training and test sets, reaching close to 100% accuracy

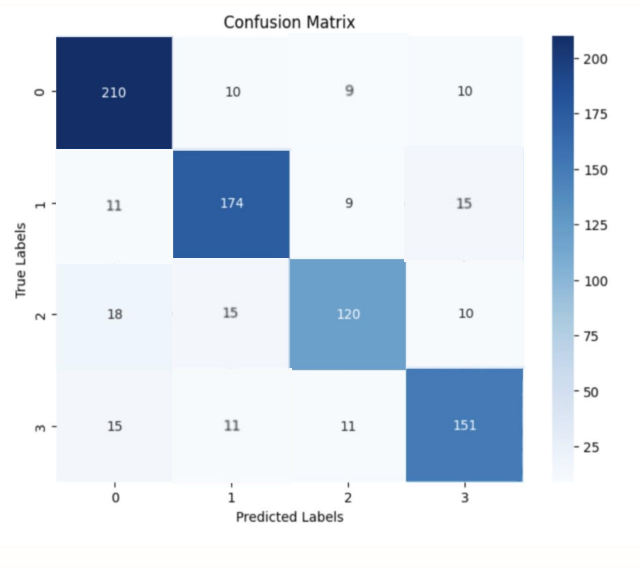
97.8%
MobileNet

98.6%
Best CNN

99.6%
ResNet50

99.9%
VGG16





0. Shoes 1.Bags 2. Tops 3.T-Shirts

- Efficiently trained in just 8 minutes per epoch, this model showcases both speed and accuracy

FashionViz

Future Innovations in Fashion Industry

- Expand and diversify the dataset for improved model accuracy
- Create an AR fashion app for immersive virtual try-ons and tailored recommendations.
- Craft personalized fashion tools for tailored advice, boosting customer engagement
- Partner with fashion brands for interactive, personalized shopping

FashionViz AI-Driven Fashion Recommendation Platform

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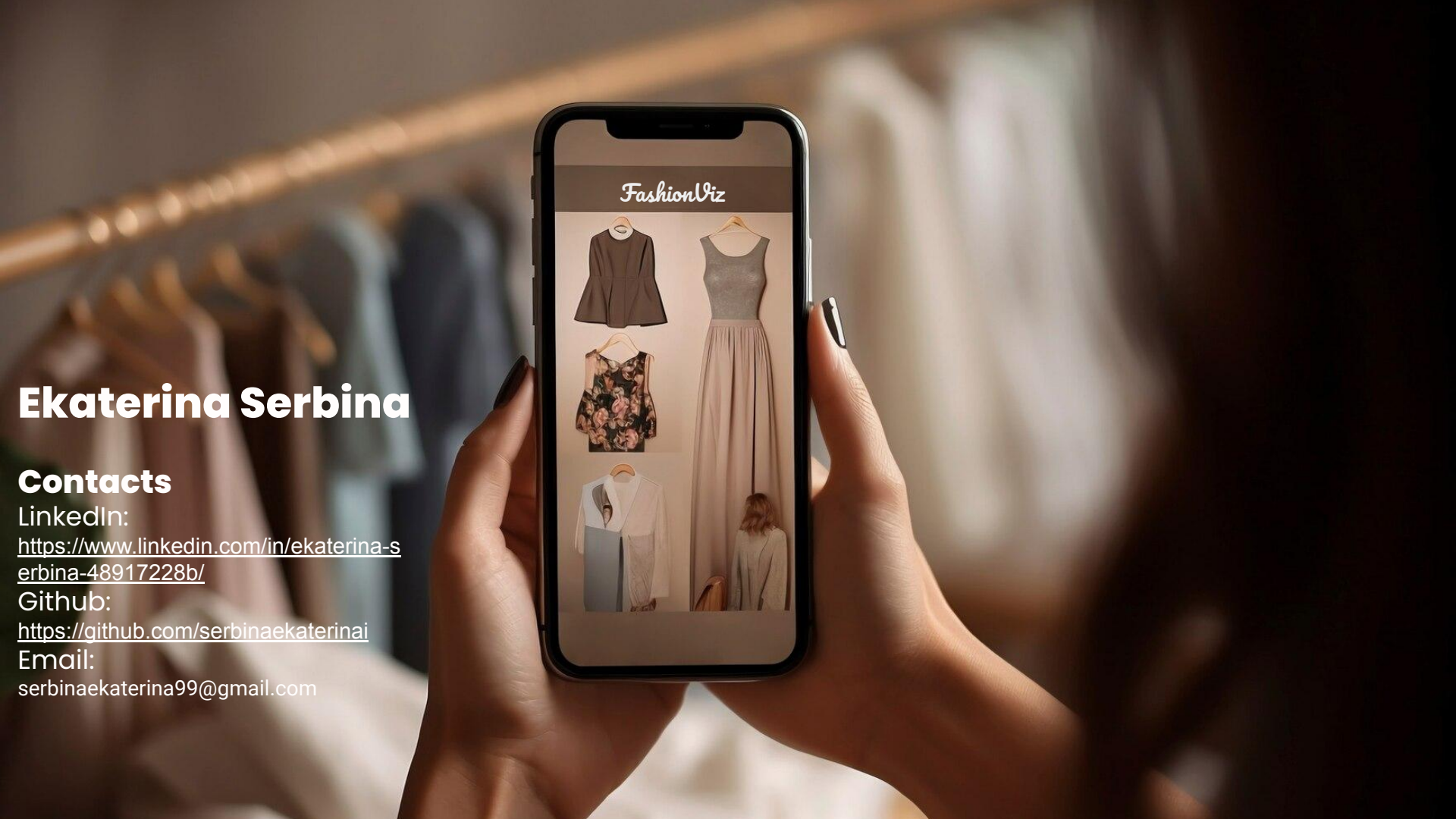

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