

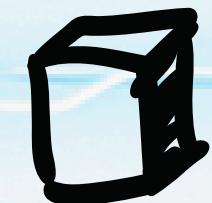
# AI-Powered Fashion Recommendation System

BY  
**ABHISHEK CHANGDE**  
**SRI HARINI GALI**



# PROBLEM STATEMENT

- Traditional fashion recommenders are limited
- Most e-commerce sites rely on simple category filters or collaborative filtering.
- They do not understand visual style, fabric, color tone, or event-based context.
- Users often see mismatched outfits, leading to poor engagement & low conversion.



# ZARA

A woman is modeling a white cable-knit jumper with a waistcoat detail and blue jeans.

SEARCH

LOG IN HELP SHOPPING BAG

FROM 27.11 TO 28.11  
JUMPER WITH WAISTCOAT DETAIL

₹2,950.00 -40% ₹ 1,770.00

MRP INCL. OF ALL TAXES

ECRU | 5644/942/712

LOOK   
+ FROM 27.11 TO 28.11 LEATHER COW...   
₹ 8,550.00

LOOK   
+ LEATHER BELT ...   
₹ 3,550.00

LOOK   
+ FROM 27.11 TO 28.11 WONDER ROS...   
₹ 2,150.00

LOOK   
+ COMBINED RIB...   
₹ 2,950.00

FROM 27.11 TO 28.11 JUMPER WITH ...   
₹ 2,950.00

# H&M

LADIES MEN KIDS HOME BEAUTY

SHORT PRINTED T-SHIRT  
Rs. 799.00  
MRP inclusive of all taxes

COLOUR: Light yellow/Sportsclub

SELECT SIZE

XXS	XS	S	M
XL			

**ADD**

Find in store [CHECK](#)

REVIEWS [55]

STYLE WITH

# PROJECT OBJECTIVES

BUILD AN AI PERSONAL STYLIST FOR EVERY USER

GENERATE CONTEXT-AWARE OUTFIT COMPLETION SUGGESTIONS.

PROVIDE CLEAN TEXTUAL STYLE GUIDANCE + ITEM PREVIEW IMAGES.

1

3

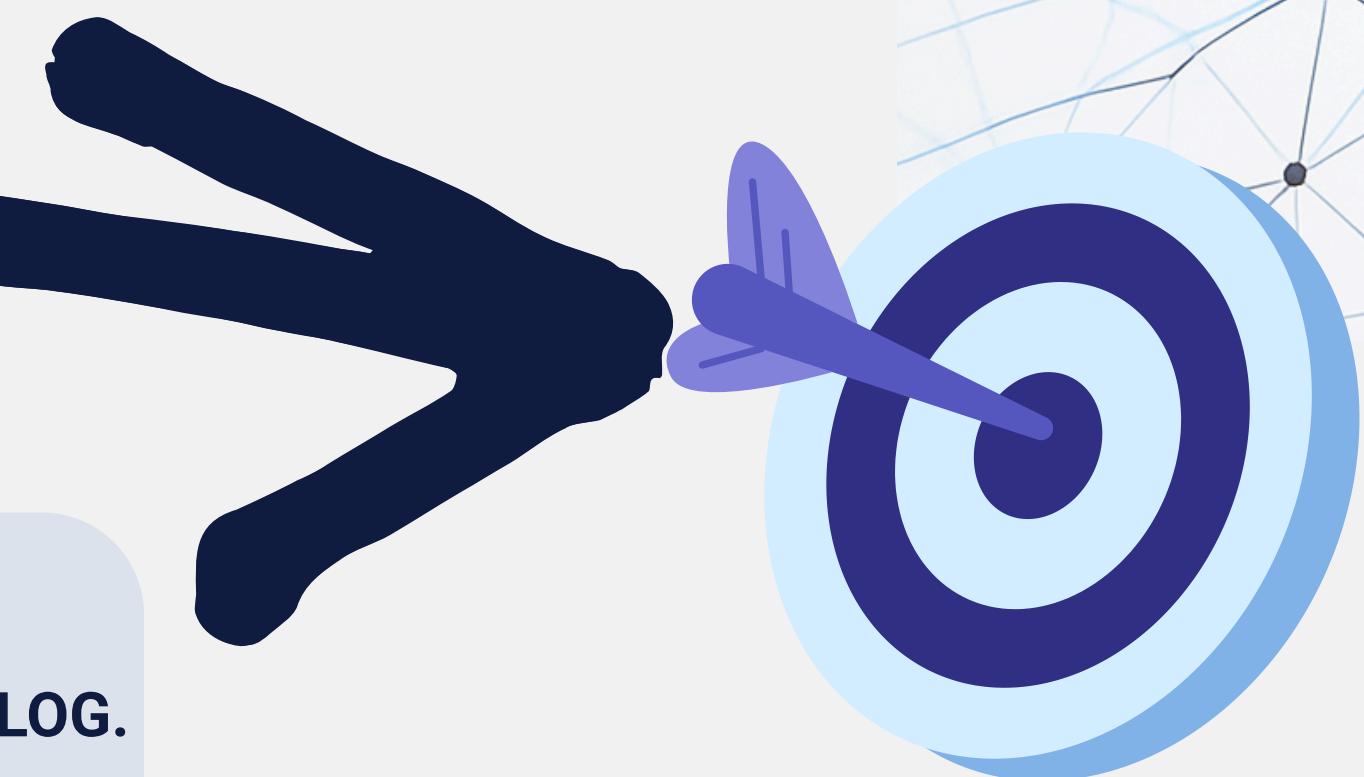
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2

4

UNDERSTAND THE VISUAL AESTHETIC OF A CHOSEN ITEM.

RECOMMEND ONLY ITEMS THAT EXIST WITHIN THE CATALOG.



# DATA SOURCE

## Zara Product Dataset (~3,000+ images)

Stored in:

- **AWS S3** → All product images
- **CSV (store\_zara\_processed.csv)** :
  - item\_name
  - product\_description
  - image\_filename
  - Florence-2 aesthetic text

Each item contains:

- Primary product image
- Catalog description
- Florence-2 extracted color/style features

# MODELS USED

## GEMINI 2.0 FLASH (GOOGLE)

**ROLE:** OUTFIT REASONING & GENERATION

- TAKES THE USER-SELECTED IMAGE
- UNDERSTANDS COLOR, CONTEXT, EVENT, AND STYLE
- GENERATES COMPATIBLE OUTFIT PIECES
- PRODUCES STYLIST EXPLANATION
- OUTPUT EMBEDDINGS USED FOR RETRIEVAL

**WHY:** FAST, MULTIMODAL, LOW-COST, EXCELLENT FOR GENERATIVE REASONING

## FLORENCE-2 (MICROSOFT)

**ROLE:** VISUAL AESTHETIC EXTRACTION (PREPROCESSING)

- PROCESSES 3,000+ CATALOG IMAGES
- EXTRACTS COLORS, TEXTURES, MATERIALS
- IDENTIFIES STYLE (MINIMAL, STREETWEAR, FORMAL, ETC.)
- CREATES STRUCTURED VISUAL DESCRIPTIONS FOR EACH ITEM

**WHY:** STATE-OF-THE-ART OPEN-SOURCE VISION-LANGUAGE MODEL

## ALL-MINILM-L6-V2 (SENTENCE TRANSFORMERS)

**ROLE:** TEXT EMBEDDING + RETRIEVAL

- EMBEDS:
  - GEMINI SUGGESTIONS
  - PRODUCT DESCRIPTIONS
  - FLORENCE-2 AESTHETIC TEXT
- ENABLES FAST SEMANTIC SEARCH
- RETRIEVES TOP MATCHING CATALOG ITEMS

**WHY:** LIGHTWEIGHT, FAST, WORKS WITHOUT GPU

# BACKEND INFRASTRUCTURE



Amazon  
EC2

AWS EC2  
HOSTS PYTHON BACKEND,  
RETRIEVAL PIPELINE, GEMINI LOGIC



Amazon S3

AWS S3  
STORES ALL PRODUCT IMAGES  
FAST RETRIEVAL DURING INFERENCE

FLASK  
EXPOSES OUTFIT RECOMMENDATION  
ENDPOINTS



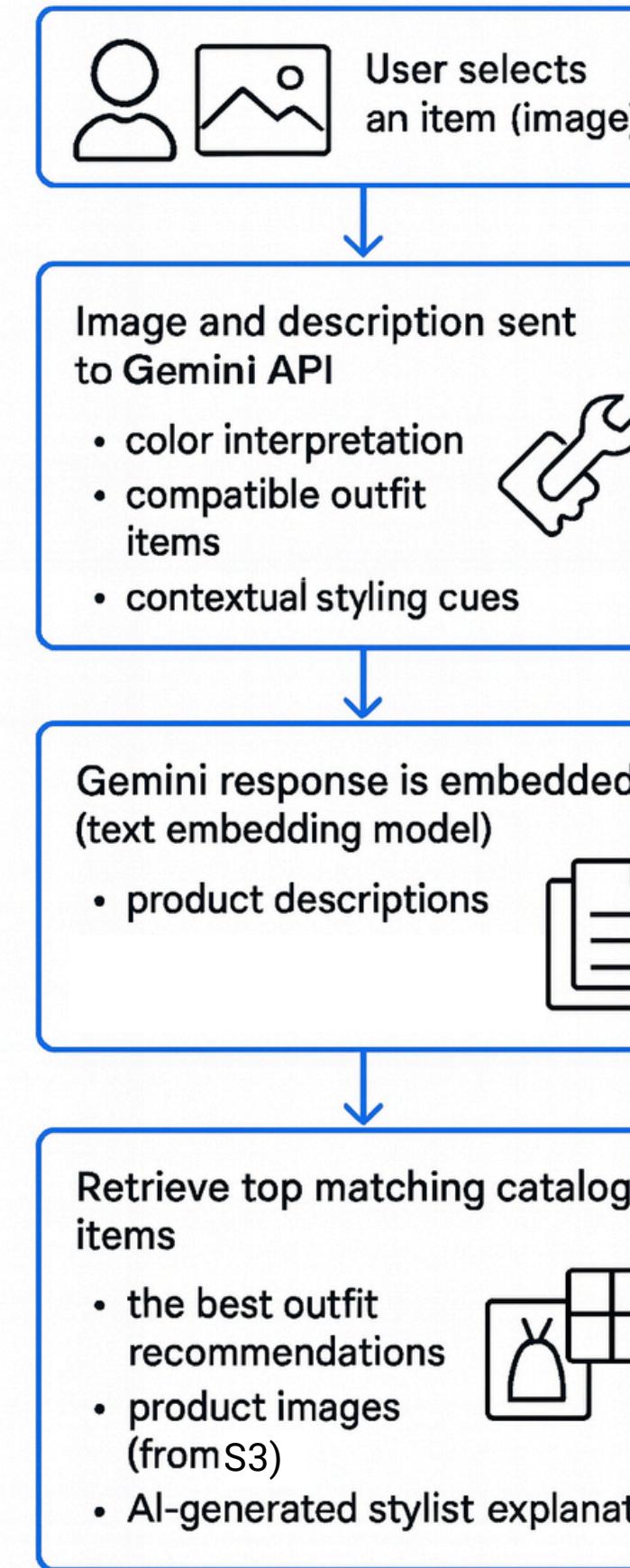
CHROMADB  
STORES CATALOG + AESTHETIC TEXT  
PERFORMS NEAREST-NEIGHBOR  
SEARCH



Chroma DB

# AI RECOMMENDATION PIPELINE

## End-to-End Recommendation Flow



# DEMO



Thank  
you