

Fragrance Advisor: A Smart Fragrance Recommender

Dimalanta | Ofalsa | Saet | Villa

Stat 280 (Practical Machine Learning) Project



The Team



John Bertrand Ofalsa
Data Engineer



Ariz Dimalanta
Data Scientist



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Data Scientist



Hancee Villa
Subject Matter Expert

Introduction

\$51B

Perfume industry worth globally in 2022

"**PERFUME IS A
STORY IN ODOR,
SOMETIMES
POETRY IN
MEMORY.**"

—JEAN-CLAUDE ELLENA



Introduction

\$104

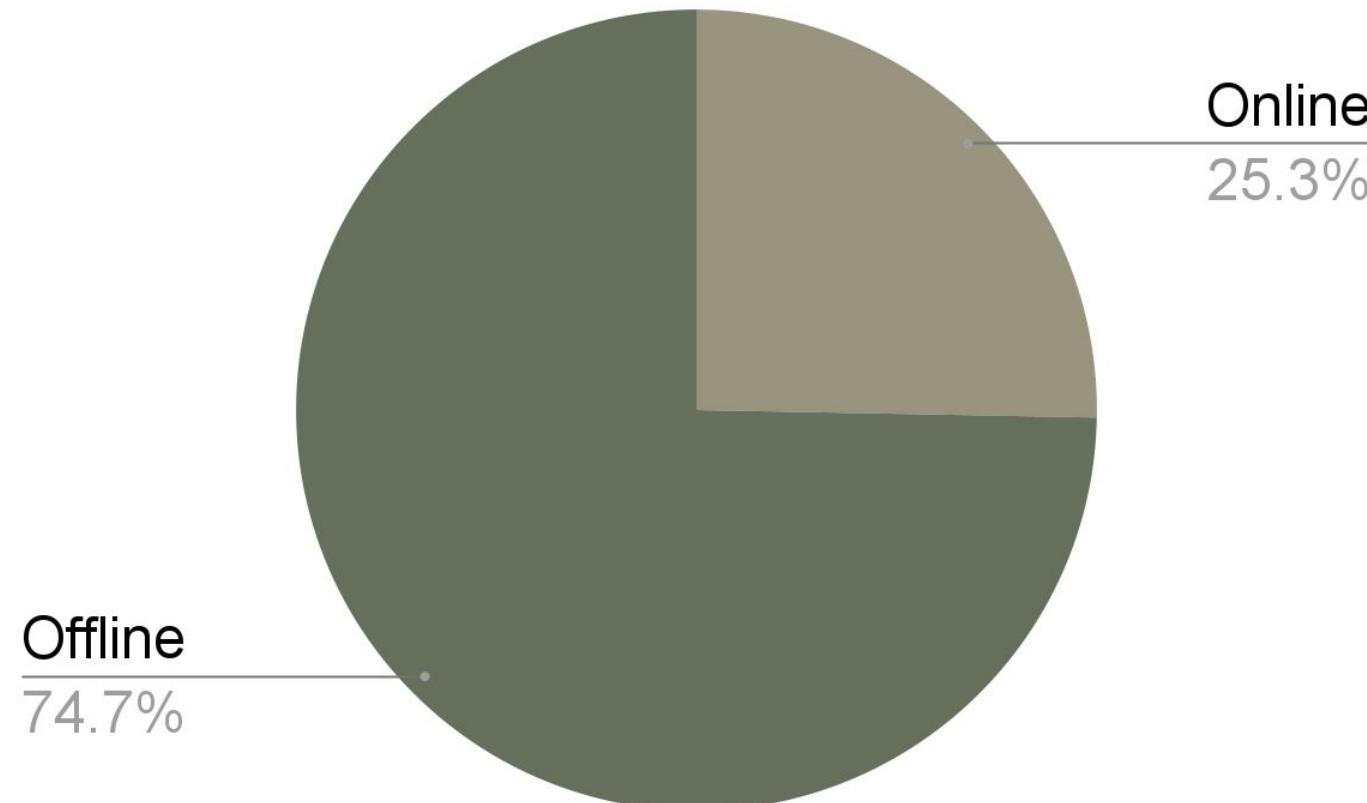
Average price of Top 20 best-selling perfumes according to Sephora



New Brands Makeup Skincare Hair Fragrance Tools & Brushes Bath & Body Mini Size Gifts & Gift Cards Beauty Under \$20 Sale & Offers

Bestsellers > Fragrance			
Fragrance Bestsellers	Makeup	Skincare	Fragrance
			
Sol de Janeiro Brazilian Crush Cheirosa '40 Bom Dia Hair & Body Fragrance Mist ★★★★★ 1.8K \$24.00	Sol de Janeiro Brazilian Crush Cheirosa '62 Bum Bum Hair & Body Fragrance Mist ★★★★★ 2.4K \$38.00	Sol de Janeiro Brazilian Crush Cheirosa '68 Beija Flor™ Hair & Body Fragrance Mist ★★★★★ 870 \$38.00	Valentino Donna Born In Roma Eau de Parfum ★★★★★ 2.3K \$130.00
			
Glossier Glossier You Eau de Parfum ★★★★★ 843 \$68.00	Dior Sauvage Eau de Toilette ★★★★★ 917 \$100.00	Dior Miss Dior Blooming Bouquet ★★★★★ 2.5K \$85.00	Yves Saint Laurent MYSLF Eau de Parfum ★★★★★ 2.2K \$89.00
			
Carolina Herrera Good Girl Eau de Parfum ★★★★★ 754 \$117.00	Dior Miss Dior Eau de Parfum ★★★★★ 2.3K \$160.00	Yves Saint Laurent Libre Eau De Parfum ★★★★★ 3.7K \$130.00	KAYALI EDEN SPARKLING LYCHEE 39 Eau de Parfum Travel Spray ★★★★★ 86 \$27.00

Introduction



Offline sales accounted for more sales but online distribution channel segment is expected to expand.



Main pain point of online channel is replicating in-person **sniff sessions**.

Introduction

51K, 32K

Members of Fraghead Philippines, PERFUME COLLECTORS PH

Niche market with individuals who are ready to spend on the right product

Common conversation topics include:

DECANT

DUPES

BLIND BUY

**FOR SALE:
PARTIAL**

Introduction

[← Top Products](#)

	Best Selling	Best Price
	[DECANT] BIANCO LATTE By giardini di Toscana EDP -NOT FU... Monthly Sales: 312 ₱185	
	Baccarat rouge 540 edp perfume for men and women Decant samp... Monthly Sales: 237 ₱179	
	Ariana Grande Cloud Decant EDP (1mL, 2mL, 3mL & 5mL only) Monthly Sales: 216 ₱50	
	(DECANT) GOOD GIRL edp - CAROLINA HERRERA Monthly Sales: 211 ₱105	
	(DECANT) EA Stronger With You Intensely edp- NOT FULL BOTTLE! Monthly Sales: 199	

[← Search products, shop, and more...](#)

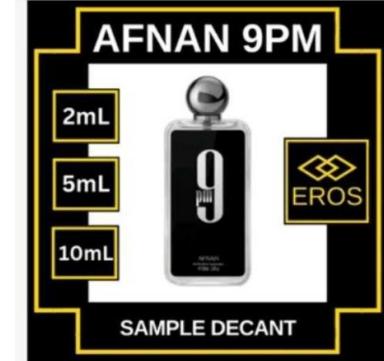
	Popular	Latest	Top Sales	Price ⬇
	Le labo Santal 33 eau de parfum 2ml 3ml 5ml perfum... Free Gift Change of Mind ₱222 ~ ₱1,110 ★★★★★ 144 Sold/Month		Le Labo Another 13 1ml 2ml 3ml 5ml perfume Free Gift Change of Mind ₱249 ~ ₱1,245 ★★★★★ 81 Sold/Month	
	Byredo blanche perfume 2ml 3ml 5ml sample tester worn ... Free Gift Change of Mind ₱195 ~ ₱975 ★★★★★ 44 Sold/Month		Diptyque Ilio eau de toilette 1ml 2ml 3ml 5ml decant Change of Mind ₱183 ~ ₱915 ★★★★★ 44 Sold/Month	
				2% OFF

[← EROS PH.FRAGRANCE >](#)

Search In shop Active 11 minutes ago

Follow Chat

5.0/5.0 | 15K Followers

Shop	Products	Categories
	Afnan 9pm 2mL/5mL/10mL decant sample perfume tak... Change of Mind ₱35	SAMPLE DECANT
	Rasasi Hawas DECANT 2mL/5mL/10ml sample perfume ... Change of Mind ₱44	SAMPLE DECANT
	Lattafa Khamrah (Kilian Angel's Share clone) 2mL/5... Change of Mind ₱35	SAMPLE DECANT
	Lattafa Asad (Sauvage Elixir clone) 2mL/5mL decant perf... Change of Mind ₱35	SAMPLE DECANT

The expensive commitment for full sized perfume bottles created a demand for **decants** and **dups**.

Business Problem



Sales Team

How do we improve customer experience with their monthly blind buys?

Current Process

Take a fragrance quiz. Receive a perfume list that match your profile (**rule-based recommendations**).



Pick perfume/s you want to try from the list.



Register and pay for fragrance subscription. Receive atomized perfumes monthly **based on customer feedback (same bottle or change perfume)**.

Recommendations from the quiz **do not match customer** preference.

Current Process

Take a fragrance quiz. Receive a perfume list that match your profile (**rule-based recommendations**).



Pick perfume/s you want to try from the list.



Register and pay for fragrance subscription. Receive atomized perfumes monthly **based on customer feedback (same bottle or change perfume)**.

Customers receive hit-or-miss recommendations that are not specifically curated for them. Customers cancel subscriptions.

Current Process: Sample Quiz



Describe Your Personal Style

Girly

Sporty

Bold

Trendy

.....



What's Your Ideal Vacation?

Laying on the beach

Visiting the countryside/winery

Camping in the mountains

Exploring a new city

.....



What Word Describes You Best?

Kind

Bold

Unique

Easy-going

.....



Choose Your Go-To Self-Care Method

Candlelit bubble bath and face mask

Treating myself to a shopping spree

Journaling and/or meditating

A walk out in nature

.....

Proposed Process

Take a fragrance quiz. Receive a perfume list that match your profile (**model-based recommendations**).



Pick perfume/s you want to try from the list.



Register and pay for fragrance subscription. Receive atomized perfumes monthly **based on customer historical perfume ratings**.

Recommendations from the quiz will be **more accurate** and reflect actual customer preferences.

Data from perfume selection in this step will be used to assess and further improve the model.

Proposed Process

Take a fragrance quiz. Receive a perfume list that match your profile (**model-based recommendations**).



Pick perfume/s you want to try from the list.

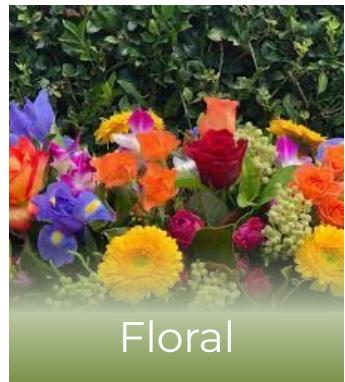


Register and pay for fragrance subscription. Receive atomized perfumes monthly **based on customer historical perfume ratings**.

Customers will receive **more personalized** set of perfumes and are more likely to continue subscription.

Proposed Process: Sample Quiz

Pick top 5 scents that appeal to you most



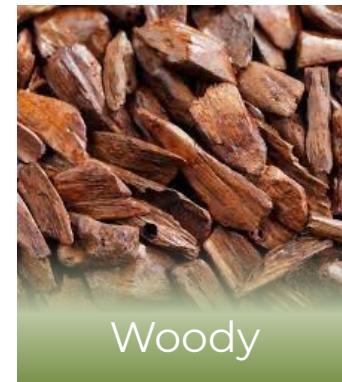
Floral



Spicy



Sweet



Woody



Fresh



Fruity



Citrus



Green



Powdery



Synthetic



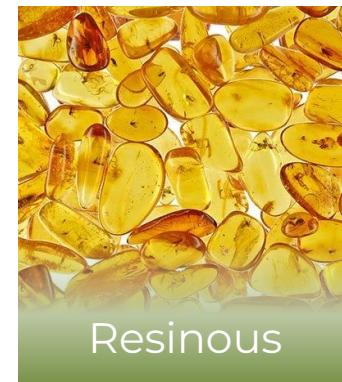
Oriental



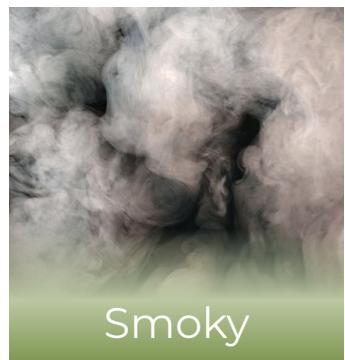
Gourmand



Creamy



Resinous



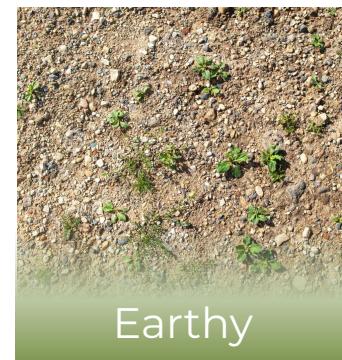
Smoky



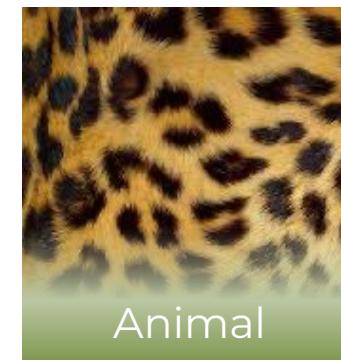
Aquatic



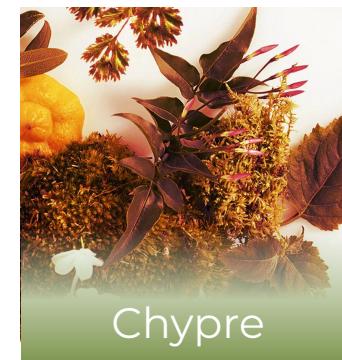
Leathery



Earthy



Animal

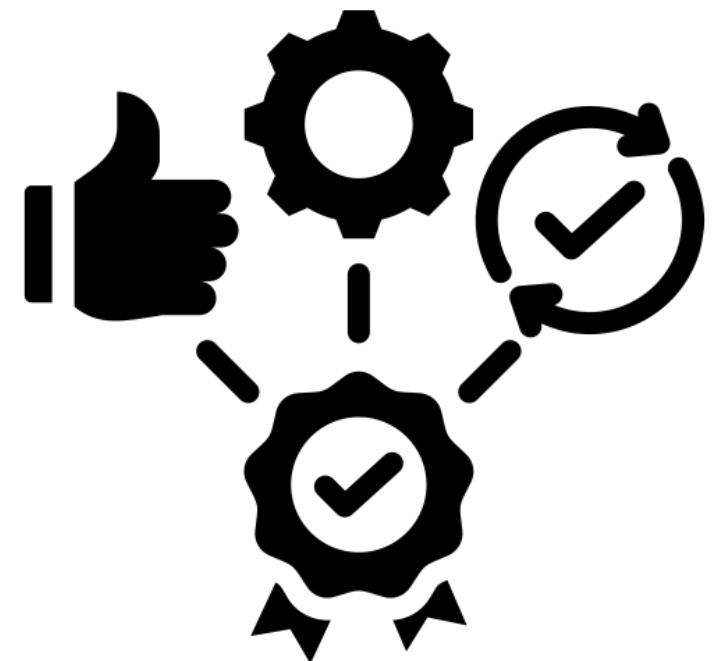


Chypre

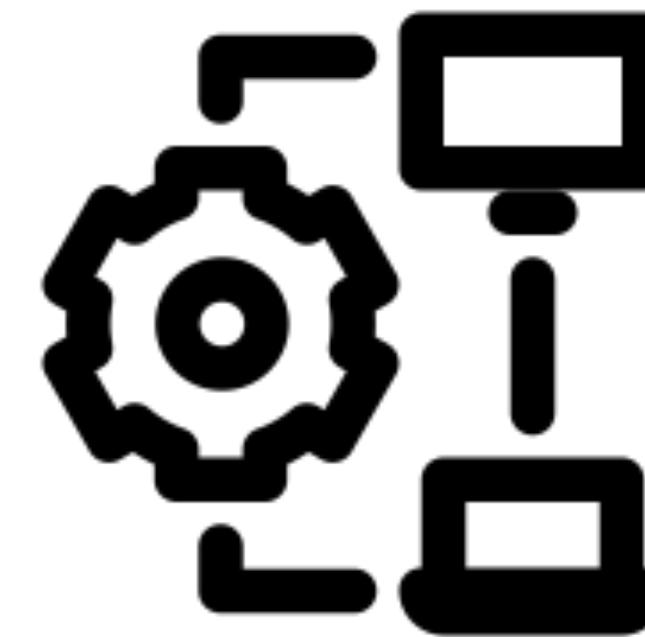


Fougère

Analytics Problem



Recommend perfumes base on initial perfume quiz (content-based filtering)



Recommend perfumes base on customer perfume ratings (collaborative filtering)

Data Understanding: The Datasource



The screenshot shows the Parfumo website. At the top left is the Parfumo logo, which consists of three overlapping colored petals (pink, blue, and light blue) followed by the word "parfumo". To the right of the logo is a search bar with a magnifying glass icon and the placeholder text "Search perfume...". Below the search bar is a horizontal navigation menu with six items: "HOME" (which is highlighted in a grey box), "PERFUME", "FORUM", "COMMUNITY", "DIRECTORY", and "RESEARCH".

Explore the world of perfumes and share your passion with others!

<https://www.parfumo.com/>

Parfumo is a popular website for fragrance enthusiasts. It has a massive database of perfumes, with information on notes, brands, perfumers, and more. Users can also write reviews, create fragrance collections, and participate in forum discussions.

Data Understanding: Sample Data



Daisy Eau So Fresh

Marc Jacobs 2011 EAU DE TOILETTE ▾

7.4 / 10 380 Ratings

Daisy Eau So Fresh (Eau de Toilette) is a perfume by Marc Jacobs for women and was released in 2011. The scent is floral-fresh. It is being marketed by Coty.

right now on ebay More >

Bottle Design Wilhelm Liden, Marc Jacobs

SEE PRICES



Main accords

- Floral
- Fresh
- Fruity
- Sweet
- Powdery

Fragrance Pyramid

▲ Top Notes Pear Grapefruit Raspberry

▲ Heart Notes Apple blossom Violet Wild rose

▲ Base Notes Musk Plum Virginia cedar

Perfumers

Alberto Morillas, Firmenich



Ratings



7.4 380 RATINGS ▾ 6.1 297 RATINGS ▾



5.5 274 RATINGS ▾ 8.1 304 RATINGS ▾



7.1 90 RATINGS ▾

Sillage vs Longevity

Sillage is the trail/wake that the fragrance leaves while longevity is how long the fragrance lasts.

Data Understanding: Sample Data

James Collections

I have 64 I had 42 Wish List 10 Watch List 97 Tested 476 Decants 229

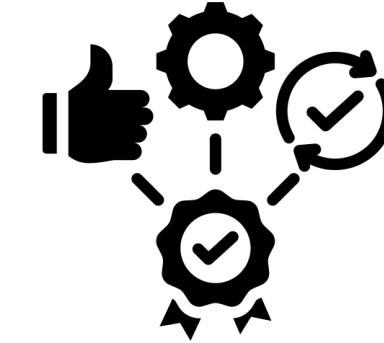
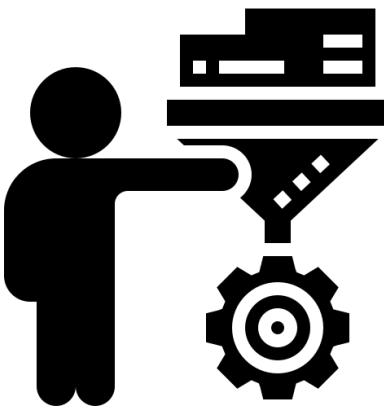
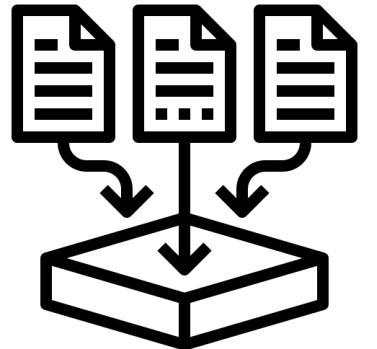
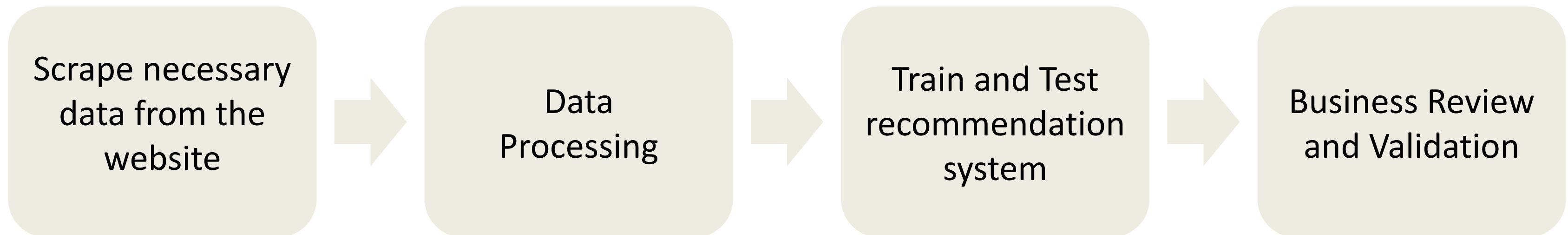
Shelves 3 ▾

FILTER & SORT LIST

I have



Method



Method: Scraper

We scraped...



81,898
out of
173,536 perfumes



21
scent accords



2,583
sample user
collections

Method: Scraper

Raw fragrance data

url	fragrance	brand	perfumer	sex	rating	scent	longevity	sillage	bottle	value_for_money	main_accords	notes	top_notes	heart_notes	base_notes	all_reviews
https://www.parfi.ru Truth	Truth	Calvin Klein		Female	6.9	6.9	7.3		6.1		['Fresh', 'Green', 'Sweet', 'Woody', 'Powdery']	['Bamboo', 'Musk', 'Sandalwood', 'Bergamot']				
https://www.parfi.ru Obsession for Men	Obsession for Men	Calvin Klein	Bob Slattery	Male	8.0	8.0	6.5		5.2		['Gourmand', 'Spicy', 'Woody', 'Sweet']		['Cinnamon', 'Coriander', 'Lavender', 'Mandarin orange', 'Bergamot', 'Grapefruit', 'Lime']	['Clove', 'Jasmine', 'Myrrh', 'Nutmeg', 'Pine', 'Rosewood', 'Sage', 'Red berries']	['Amber', 'Musk', 'Vanilla', 'Patchouli', 'Sandalwood', 'Vetiver']	
https://www.parfi.ru My Euphoria	My Euphoria	Calvin Klein	Frank Voelkl	Female	6.7	6.7	7.5		7.2		['Sweet', 'Fruity', 'Floral', 'Synthetic', 'Woody']		['Blackcurrant']	['Tuberose', 'Black sesame', 'Orchid']	['Bamboo', 'Oud', 'Sandalwood']	
https://www.parfi.ru Euphoria Intense	Euphoria Intense	Calvin Klein		Female	7.8	7.8	7.3		8.0							
https://www.parfi.ru Euphoria	Euphoria	Calvin Klein		Female	6.7	6.7	7.3		6.7							
https://www.parfi.ru Euphoria Blush	Euphoria Blush	Calvin Klein	Jean-Marc Chaillan	Female	6.6	6.6	5.9		6.2							
https://www.parfi.ru Eternity Summer for Men 2020	Eternity Summer for Men 2020	Calvin Klein		Male	7.7	7.7	6.6		6.5							
https://www.parfi.ru Eternity for Women Summer Daze	Eternity for Women Summer Daze	Calvin Klein		Female						7.3						
https://www.parfi.ru Eternity for Men Summer Daze	Eternity for Men Summer Daze	Calvin Klein		Male	6.5	6.5	6.0			6.3						
https://www.parfi.ru Eternity Summer 2020	Eternity Summer 2020	Calvin Klein		Female	7.3	7.3	5.3			6.1						
https://www.parfi.ru Eternity for Women Reflections	Eternity for Women Reflections	Calvin Klein		Female	7.8	8.5	7.0	6.0		8.0						
https://www.parfi.ru Eternity for Women Eau Fresh	Eternity for Women Eau Fresh	Calvin Klein	Olivier Gillotin	Female	7.5	7.5	8.0			7.4						
https://www.parfi.ru Eternity for Men Reflections	Eternity for Men Reflections	Calvin Klein	Aliénor Massenet	Male	7.1	7.1	6.7			6.3						
https://www.parfi.ru Eternity for Men Parfum	Eternity for Men Parfum	Calvin Klein	Frank Voelkl	Male	6.6	7.0	8.0	6.0		5.0						



Daisy Eau So Fresh 

Marc Jacobs 2011 EAU DE TOILETTE

7.4 / 10 380 Ratings

Daisy Eau So Fresh (Eau de Toilette) is a perfume by Marc Jacobs for women and was released in 2011. The scent is floral-fresh. It is being marketed by Coty.

Bottle Design Wilhelm Liden, Marc Jacobs

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Main accords

- Floral ● Fresh ● Fruity ● Sweet ● Powdery

Fragrance Pyramid

- ▲ Top Notes ◆ Pear ◆ Grapefruit ◆ Raspberry
- ▲ Heart Notes ◆ Apple blossom ◆ Violet ◆ Wild rose
- ▲ Base Notes ◆ Musk ◆ Plum ◆ Virginia cedar

Ratings

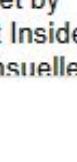
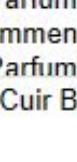
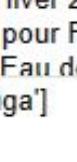
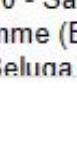
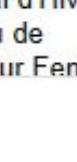
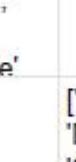
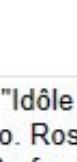
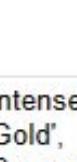
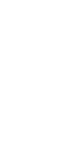
Scent	Longevity
7.4 380 RATINGS	6.1 297 RATINGS
Sillage	Bottle
5.5 274 RATINGS	8.1 304 RATINGS
Value for money	
7.1 90 RATINGS	

Perfumers

Alberto Morillas, Firmenich

Method: Scraper

Raw user data

user	i_have	i_had	wish_list	watch_list	tested
Brologne	['1 Million (Eau de Toilette)', '1 Million Lucky', 'Acqua di Giò pour Homme (Eau de Toilette)', 'Acqua di Giò Profumo (Parfum)', 'Jimmy Choo Man (Eau de	['Rawan']			['Joop! Homme (Eau de Toilette)']
Ed3n	['Cloud (Eau de Parfum)', 'R.E.M.', 'Omnia Crystalline (Eau de Toilette)', 'White Tea (Eau de Toilette)', 'For Her Pure Musc (Eau de Parfum)', 'Zara	['Sun Delight', 'Soft (Perfume Oil)', 'Golden Sand (Perfume Oil)', 'Choco Musk (Perfume Oil)', 'Mon Guerlain (Eau de Parfum)', 'Emorio Armani - In Love		['Kissing Burns 6.4 Calories A Minute. Wanna Workout?', 'Bad Boys Are No Good But Good Boys Are No Fun', 'Honour Woman (Eau de Parfum)', 'Dark	['Club Black', 'Pi (Eau de Toilette)', 'MCM (2021)', 'Moncler pour Femme', 'Choco Musk (Perfume Oil)', 'Replica - By the Fireplace', 'Signature (Eau de Parfum)']
LVCAS	['Reflection Man', 'Artisan Pure', 'Haciavat', 'XJ 1861 Naxos', '17/17 - Irisss', 'Gold Collection - II Sahara', 'Héritage (Eau de Parfum)', 'Ganymede	['Tommy (Cologne)', 'The One for Men (Eau de Toilette)', 'The One for Men Baroque Collector', 'The Secret Collection - Seta', '1 Million (Eau de		['Fat Electrician', 'Irises', 'Oro 1920', 'Young Hearts (Pure Essence)', 'Marcel', 'Cabochard (1995) (Eau de Toilette)', 'The Black Knight', 'Nuvolari', 'Oud	['Noir (Eau de Parfum)', 'Aqua Allegoria Nerolia Vetiver', 'Aqua Allegoria Mandarine Basilic', 'Nizam', 'Wúlóng Chá (Extrait de Parfum)', 'Replica - By the Icon']
 James Collections ▾ <div style="border: 2px solid red; padding: 5px; margin-top: 10px;"> ✓ I have 64 ✎ I had 42 ❤ Wish List 10 ⚡ Watch List 97 🌟 Tested 476 </div> Decants 229 Shelves 3 ▾ <div style="margin-top: 20px;"> FILTER & SORT ▾ </div> <p>I have</p> <div style="display: flex; justify-content: space-around; align-items: center;">                               <img alt="Thumbnail of a perfume bottle" data-bbox="6655 800 6675</div>					

Method: Data Processing

fragrance_identifier	main_accords	top_5_accords	Resinous	Fresh	Fougère	Powdery	Earthy	Animal	Floral	...
CrazyGirl by Parfums_Hashtag	['Fruity', 'Sweet']	[Fruity, Sweet]	-1	-1	-1	-1	-1	-1	-1	...
Rockit by Parfums_Hashtag	['Sweet', 'Spicy', 'Fruity', 'Floral', 'Resino...']	[Sweet, Spicy, Fruity, Floral, Resinous]	1	-1	-1	-1	-1	-1	-1	2 ...
Arabesque_Wood_Body_Mist by And_Other_Stories	['Citrus', 'Spicy', 'Oriental', 'Woody', 'Fresh']	[Citrus, Spicy, Oriental, Woody, Fresh]	-1	1	-1	-1	-1	-1	-1	...
Arabesque_Wood_Eau_de_Toilette by And_Other_St...	['Fresh', 'Citrus', 'Woody', 'Spicy', 'Green']	[Fresh, Citrus, Woody, Spicy, Green]	-1	5	-1	-1	-1	-1	-1	...

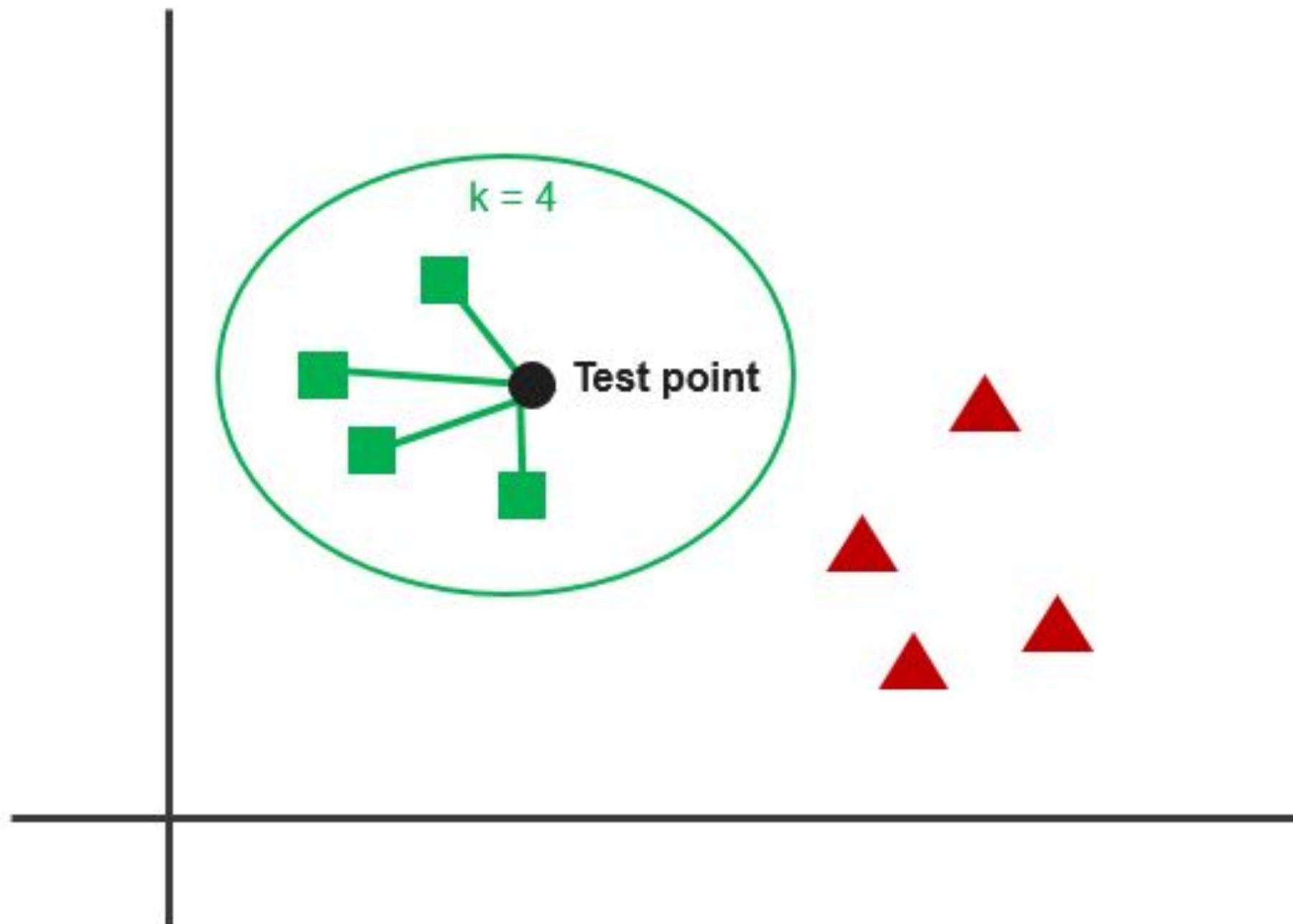
For content-based model, **perfumes were encoded base on their top 5 scent accord rankings**. Rankings were encoded in ascending order. **Accords not included in the perfume were encoded as -1**.

Method: Data Processing

	Acqua di Giò Profumo (Parfum)	Cool Water (Eau de Toilette)	Eros (Eau de Toilette)	La Nuit de L'Homme (Eau de Toilette)	Grand Soir	Baccarat Rouge 540 (Eau de Parfum)	Asad	Bade'e Al Oud - Oud for Glory	Green Irish Tweed	Aventus	...
user											
Brologue	1	1	1	1	1	1	1	1	1	1	...
Ed3n	0	0	0	0	0	0	0	1	0	0	...
LVCAS	0	0	0	0	0	0	0	0	0	1	...
Saru049	1	0	0	0	0	0	0	0	0	0	...
FabianO	0	-1	0	0	0	0	0	0	0	0	...

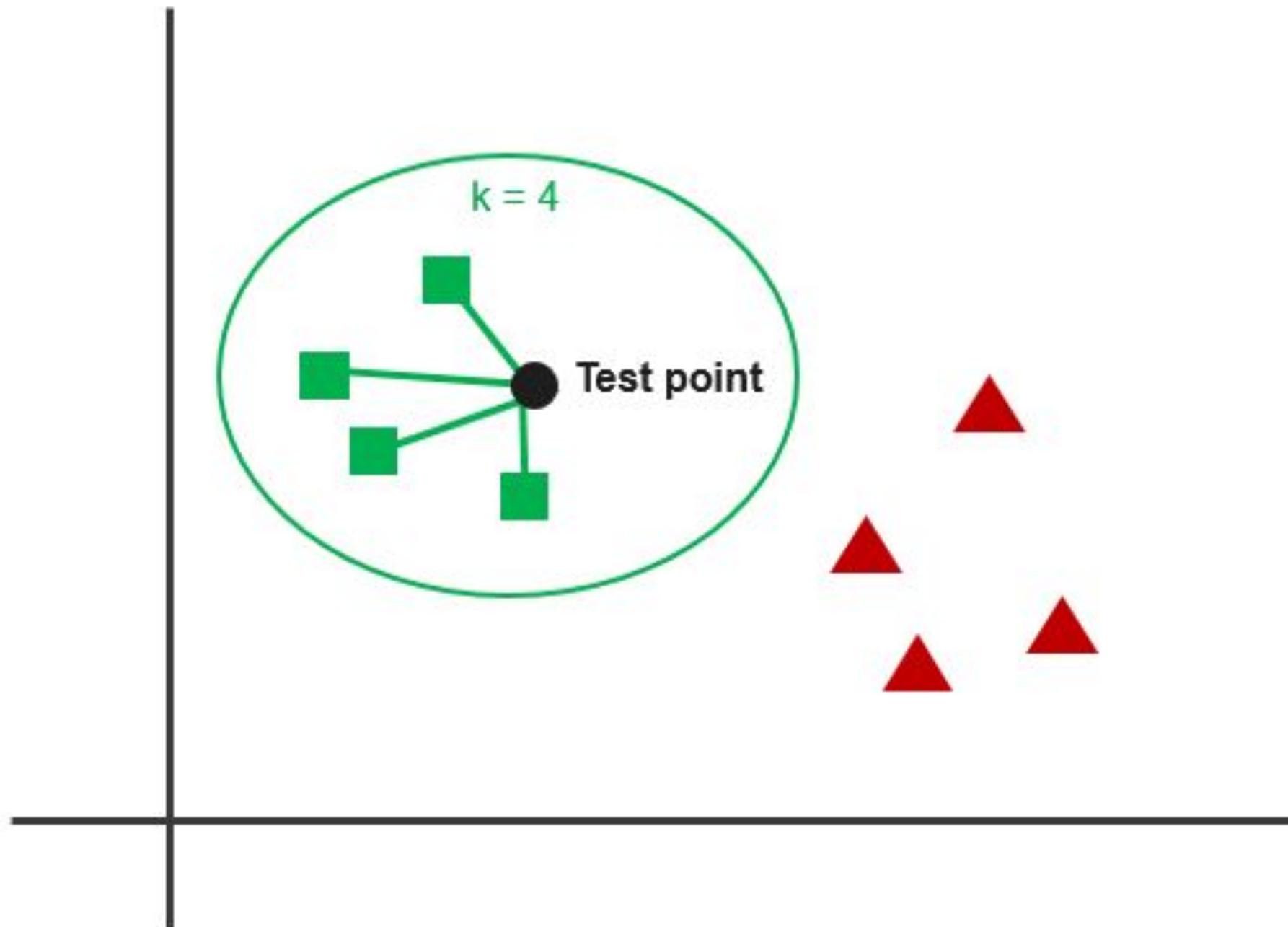
For user-based model, perfumes listed as “I have” in user’s collection were encoded as 1. Perfumes listed as “I had” were encoded as -1. Perfumes not in user’s collection were encoded as 0. Only perfumes listed as “I have” by at least 50 users will be recommended. User must have at least 5 “I have” and 5 perfumes in their wishlist.

Method: Train recommendation system



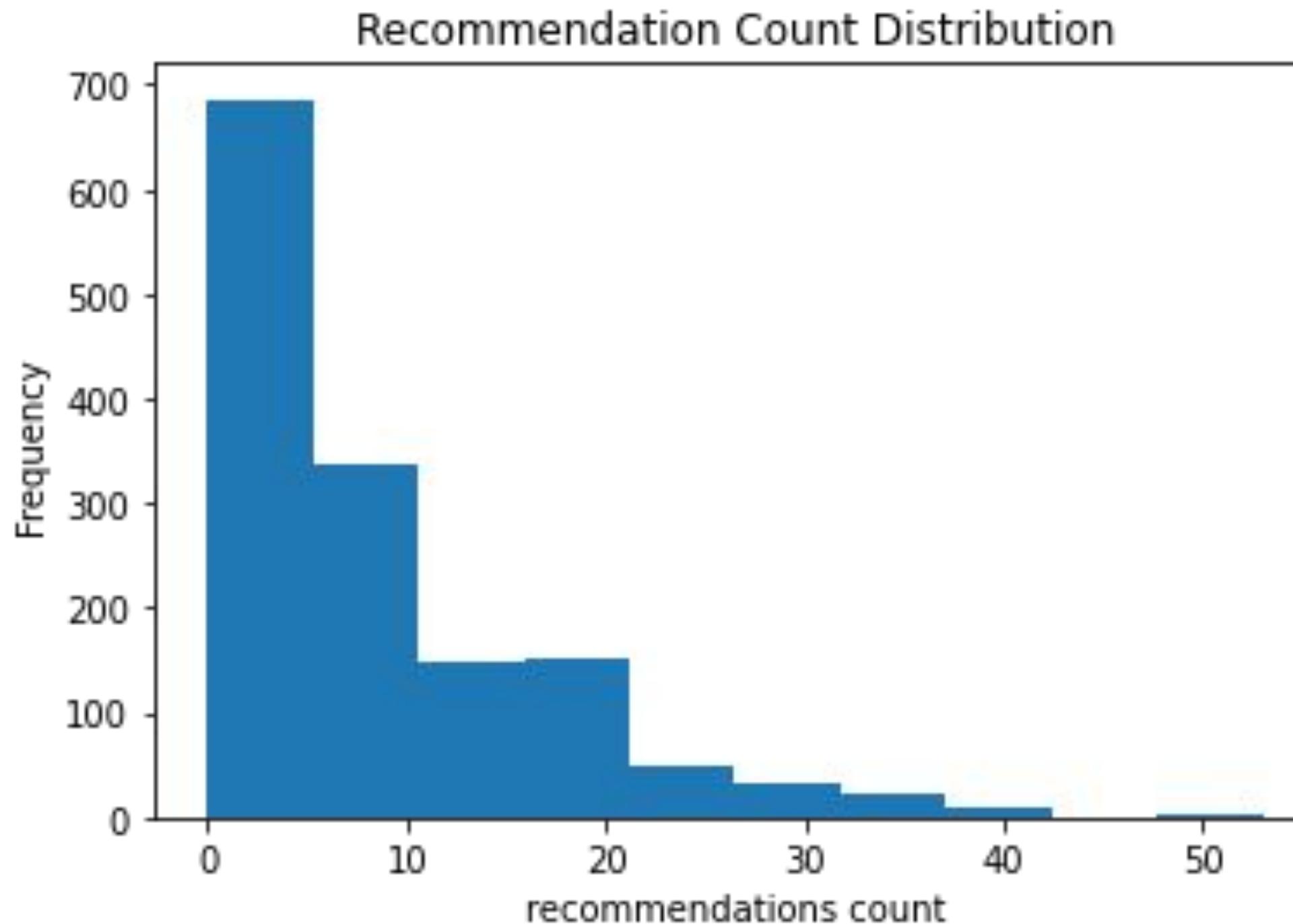
For making recommendations, **KNN algorithm** was used. For content-based, we recommend the **10 nearest perfumes**.

Method: Train recommendation system



For making recommendations, **KNN algorithm was used**. For user-collaborative filtering, we **recommend the perfumes from 3 most similar users** that has never been tested.

Method: Test recommendation system



70% of the time,
the model
recommends 10 or
less perfumes

Method: Test recommendation system

Hit rate:

Average(% of recommendations in user's wishlist)

Example:

User1 - 5% of recommendations are in user1's wishlist

User2 - 6% of recommendations are in user2's wishlist

User3 - 7% of recommendations are in user3's wishlist

So, hit rate = 6%

Method: Test recommendation system

On average, 4% (hit rate) of the generated recommendations are in the user's wishlist.

Average ecommerce conversion rates are around 2.5% to 3% according to industry leaders... If you are above 3.3%, you have a very good ecommerce conversion rate—in the top 20% of all Shopify stores. ([Shopify, 2023](#))

Method: Business Review

If your most appealing scents are Citrus, Spicy, Fresh, Floral, and Green, we recommend...

fragrance_identifier	main_accords	top_5_accords
Douro_Eau_de_Portugal by Penhaligons	['Citrus', 'Spicy', 'Fresh', 'Floral', 'Green']	[Citrus, Spicy, Fresh, Floral, Green]
Spigo_1920 by Bois_1920	['Citrus', 'Spicy', 'Fresh', 'Floral', 'Green']	[Citrus, Spicy, Fresh, Floral, Green]
Selection_Eau_de_Toilette by Gerard_Danfre	['Citrus', 'Spicy', 'Fresh', 'Floral', 'Green']	[Citrus, Spicy, Fresh, Floral, Green]
lavender-citrus by niche-4-all	['Citrus', 'Fresh', 'Spicy', 'Floral', 'Green']	[Citrus, Fresh, Spicy, Floral, Green]
acqua-della-regina by Santa_Maria_Novella	['Citrus', 'Fresh', 'Spicy', 'Floral', 'Green']	[Citrus, Fresh, Spicy, Floral, Green]
Cologne_Nocturne by Le_Galion	['Citrus', 'Spicy', 'Floral', 'Fresh', 'Green']	[Citrus, Spicy, Floral, Fresh, Green]
Jeune_Homme_Eau_pour_le_Jeune_Homme by Maitre_...	['Citrus', 'Fresh', 'Spicy', 'Floral', 'Green']	[Citrus, Fresh, Spicy, Floral, Green]
Eau_de_Patou by Jean_Patou	['Citrus', 'Spicy', 'Floral', 'Fresh', 'Green']	[Citrus, Spicy, Floral, Fresh, Green]
Wellington_Cologne by Geo_F_Trumper	['Citrus', 'Fresh', 'Spicy', 'Floral', 'Green']	[Citrus, Fresh, Spicy, Floral, Green]
n-11-de-sacha-eau-de-parfum by Henry_Jacques	['Citrus', 'Spicy', 'Fresh', 'Green', 'Floral']	[Citrus, Spicy, Fresh, Green, Floral]
The_Dynamo by Arbonne	['Citrus', 'Spicy', 'Fresh', 'Floral']	[Citrus, Spicy, Fresh, Floral]

Method: Business Review

If your most appealing scents are Aquatic, Fresh, Citrus, Synthetic, and Spicy, we recommend...

fragrance_identifier	main_accords	top_5_accords
acqua-di-gio-profondo by Giorgio_Armani	['Aquatic', 'Fresh', 'Citrus', 'Synthetic', 'S...]	[Aquatic, Fresh, Citrus, Synthetic, Spicy]
Cool_Water_Ocean_Extreme by Davidoff	['Aquatic', 'Fresh', 'Citrus', 'Synthetic', 'S...]	[Aquatic, Fresh, Citrus, Synthetic, Spicy]
Polo_Ultra_Blue by Ralph_Lauren	['Aquatic', 'Fresh', 'Citrus', 'Synthetic', 'S...]	[Aquatic, Fresh, Citrus, Synthetic, Spicy]
Classica_Uomo_Eau_de_Parfum by Acqua_dellElba	['Aquatic', 'Citrus', 'Fresh', 'Synthetic', 'S...]	[Aquatic, Citrus, Fresh, Synthetic, Spicy]
hugo-now by Hugo_Boss	['Fresh', 'Aquatic', 'Citrus', 'Synthetic', 'S...]	[Fresh, Aquatic, Citrus, Synthetic, Spicy]
kokain-seemann-intense by Rammstein	['Aquatic', 'Fresh', 'Citrus', 'Spicy', 'Synth...']	[Aquatic, Fresh, Citrus, Spicy, Synthetic]
cool-water-aquaman-collector-edition by Davidoff	['Fresh', 'Aquatic', 'Citrus', 'Synthetic', 'S...']	[Fresh, Aquatic, Citrus, Synthetic, Spicy]
Versace_pour_Homme_Dylan_Blue_Eau_de_Toilette ...	['Fresh', 'Aquatic', 'Citrus', 'Synthetic', 'S...']	[Fresh, Aquatic, Citrus, Synthetic, Spicy]
Air by Axe	['Aquatic', 'Fresh', 'Synthetic', 'Citrus', 'S...']	[Aquatic, Fresh, Synthetic, Citrus, Spicy]
Aqva_pour_Homme_Atlantiqve by Bvlgari	['Aquatic', 'Fresh', 'Synthetic', 'Citrus', 'S...']	[Aquatic, Fresh, Synthetic, Citrus, Spicy]
Eau_Oceane by Biotherm	['Fresh', 'Aquatic', 'Citrus', 'Synthetic', 'S...']	[Fresh, Aquatic, Citrus, Synthetic, Spicy]

Method: Business Review

Perfume recommendations for user XXXXX

Le Bain (Eau de Parfum)	Sweet, Oriental, Powdery, Gourmand, Floral
Shalimar (Eau de Parfum)	Oriental, Spicy, Powdery, Smoky, Sweet
Le Mâle (Eau de Toilette)	Sweet, Spicy, Oriental, Fresh, Powdery
Samsara (Eau de Parfum)	Oriental, Floral, Woody, Spicy, Powdery
Coco (Eau de Parfum)	Spicy, Oriental, Floral, Woody, Powdery
Cašmir (Eau de Parfum)	Sweet, Oriental, Gourmand, Powdery, Floral

Scent	Frequency
Oriental	6
Powdery	6
Sweet	4
Floral	4
Spicy	4
Gourmand	2
Woody	2
Smoky	1
Fresh	1

All recommendations have oriental and powdery scents.

What's next?



Scrape more user and perfume data



Develop the web app



Set-up infrastructure that can handle bigger data volume so the system can easily scale up



Develop API for seamless integration with existing platforms



Deploy model for A/B testing



Continuous model improvements and monitoring (database for Ph users)



Build partnerships with perfume manufacturers/brands and suppliers