



STUDIO
SHODWE

E-COMMERCE SYSTEM RECOMMENDATION USING FUZZY LOGIC FOR USERS PREFERENCES UTILIZATION

GROUP 5

JOANNES JASON S - 2702259090

DJUHAR GEUSAN HM - 2702324253

NISA JAMALIA HANIF - 2702275604





BACKGROUND

In recent years, the rapid growth of e-commerce has transformed the way people shop. Now, users can easily access millions of products with just a few clicks, providing significant opportunities for e-commerce platforms to expand their reach and boost sales. However, with so many choices available, it's often overwhelming to decide on the right product. Among countless options, it can be challenging to determine which ones are truly worth buying. In this context, AI-based recommendation systems come into play. These systems don't just offer random suggestions—they base their recommendations on product popularity, ratings, and reviews from other users. This ensures that the recommended products are not only popular but also proven to be of high quality according to the experiences of many people.





GOAL

OBJECTIVE

Giving product recommendation to users, that match their preferences and satisfy their needs, in hope of enchanting user's experience in shopping

- Analyzing user's searching algorithm
- Generates an algorithm that let user find things that match with their preferences, based on their searching algorithm
- Recommending the best out of the best matching products, based on the ratings given by other users





DATA

Full Dataset Link : <https://www.kaggle.com/datasets/karkavelrajaj/amazon-sales-dataset>

Content

This is a dataset related to over 2 Million customer reviews and ratings of Beauty related products sold on their website. It contains :

- the unique **UserId** (Customer Identification),
- the product **ASIN** (Amazon's unique product identification code for each product),
- **Ratings** (ranging from 1-5 based on customer satisfaction)
- **Timestamp** of the rating (in UNIX time)

This dataset contains product reviews and metadata from Amazon, including 142.8 million reviews spanning May 1996 - July 2014.





DATA SAMPLE

amazon.csv (4.74 MB) Download CSV JSON XLSX

Detail Compact Column 10 of 16 columns

product_id	product_name	category	discounted_price	actual_price	discount_percent...
Product ID	Name of the Product	Category of the Product	Discounted Price of the Product	Actual Price of the Product	Percentage of Discount for the Product
1351 unique values	1337 unique values	Computers&Accessories Electronics Wearables Other (1156)	₹199 4% ₹299 5% Other (1156) 79%	₹999 8% ₹499 5% Other (1366) 93%	50% 4% 60% 4% Other (1274) 87% Other (1353) 92%
	iPhone 13, 12, 11, X, 8, 7, 6, ...	s			
B08HDJ86NZ	boAt Deuce USB 300 2 in 1 Type-C & Micro USB Stress Resistant, Tangle-Free, Sturdy Cable with 3A Fas...	Computers&Accessories Accessories&Peripherals Cables&Accessories Cables USBCables	₹329	₹699	53%
B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 Pin USB Cable with Charge & Sync Function for iPhone, i...	Computers&Accessories Accessories&Peripherals Cables&Accessories Cables USBCables	₹154	₹399	61%
B08Y1TFSP6	pTron Solero TB301 3A Type-C Data and Fast Charging Cable, Made in India, 480Mbps Data Sync, Strong ...	Computers&Accessories Accessories&Peripherals Cables&Accessories Cables USBCables	₹149	₹1,000	85%
B08WRWPM22	boAt Micro USB 55 Tangle-free, Sturdy Micro USB Cable with 3A Fast Charging &	Computers&Accessories Accessories&Peripherals Cables&Accessories Cables USBCable	₹176.63	₹499	65%





DATA SAMPLE

amazon.csv (4.74 MB) Download Open More

Detail Compact Column 10 of 16 columns ▾

About this file Add Suggestion

This CSV file is having the data of 1K+ Amazon Product's Ratings and Reviews.

▲ product_id	▲ product_name	▲ category	▲ discounted_price	▲ actual_price
Product ID	Name of the Product	Category of the Product	Discounted Price of the Product	Actual Price of the Product
1351 unique values	1337 unique values	Computers&Accessories Electronics Wearables Other (1156)	₹199 16% ₹299 5% Other (1366) 79%	₹999 4% ₹499 3% Other (1274) 93%
B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Charging and Data Sync Cable Compatible for iPhone 13, 12...	Computers&Accessories Accessories&Peripherals Cables&Accessories Cables USBCables	₹399	₹1,099
B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging 1.5m	Computers&Accessories Accessories&Peripherals Cables&Accesso...	₹199	₹349





METHOD EXPLANATION

Fuzzy Logic

Simple and Quick

Handling uncertainty

Computational Efficiency

Relatively Simple Design

It does not require a large dataset. The system can be implemented immediately based on practical knowledge.

Fuzzy logic is well-suited for handling uncertainty or variations in user preferences and needs, which are often unclear or uncertain.

Fuzzy logic requires lower computational power, making it easier to integrate into systems with limited resources.

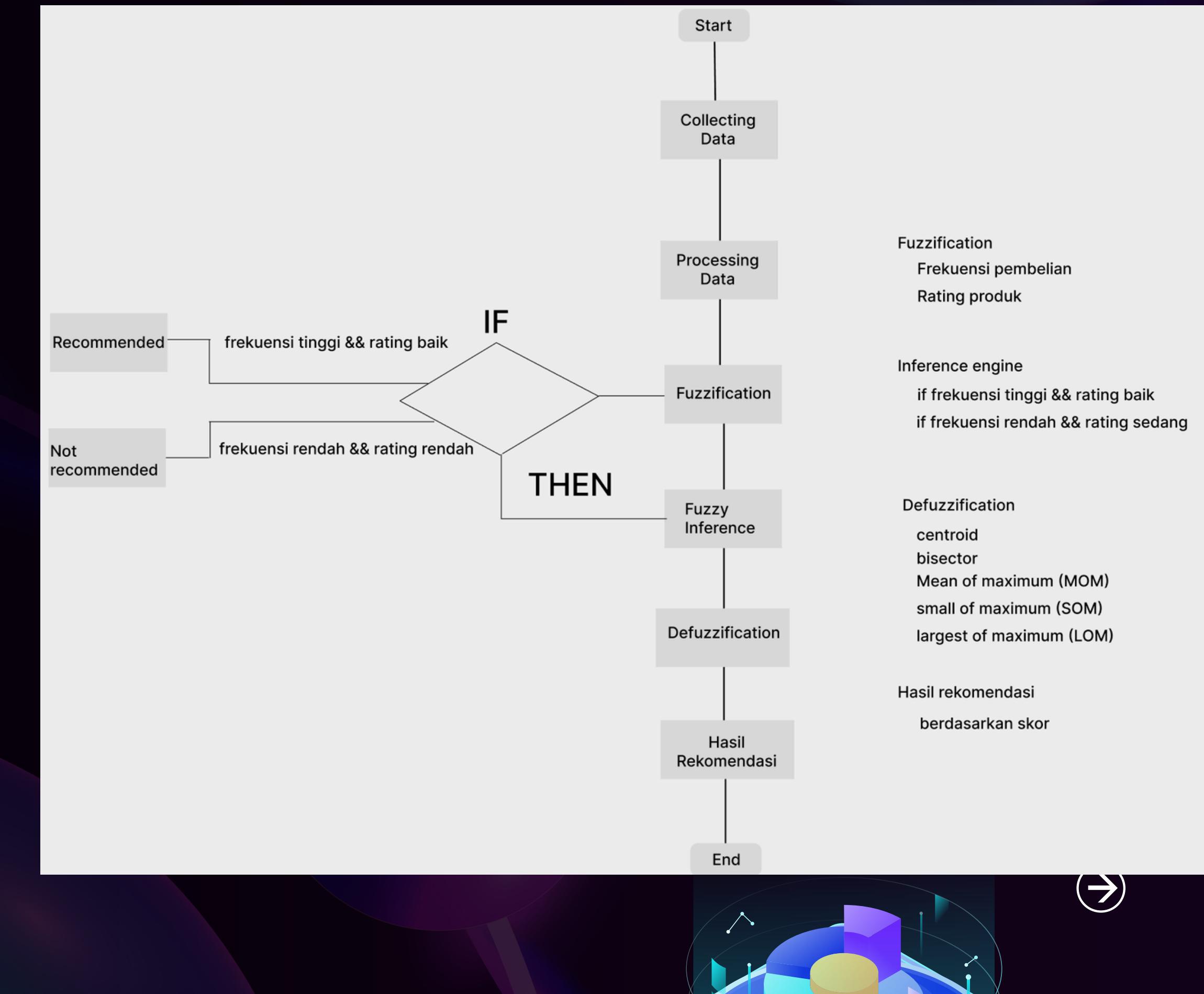
The rules are based on human logic, making them easier to understand and implement. The system is also more intuitive in grouping items and generating recommendations.





FLOWCHART

IMPLEMENTATION :
[HTTPS://COLAB.RESEARCH.GOOGLE.COM/DRIVE/1BRCWD8KM1t3FHNQC6SHX-HLZXR3A6_Z?usp=sharing](https://colab.research.google.com/drive/1BRCWD8KM1t3FHNQC6SHX-HLZXR3A6_Z?usp=sharing)



DATA PROCESSING

6 A G E
1 3 / 1 5



S T U D I O
S H O D W E

fuzzy Al.ipynb

File Edit Lihat Sisipkan Runtime Fitur Bantuan Semua perubahan telah disimpan

+ Kode + Teks

Hubungkan Gemini

```
import pandas as pd

df = pd.read_csv("amazon.csv")

df.info()
```

class: 'pandas.core.frame.DataFrame'>
Index: 1465 entries, 0 to 1464
columns (total 16 columns):

Column	Non-Null Count	Dty
product_id	1465 non-null	obj
product_name	1465 non-null	obj
category	1465 non-null	obj
discounted_price	1465 non-null	obj
actual_price	1465 non-null	obj
discount_percentage	1465 non-null	obj
rating	1465 non-null	obj
rating_count	1463 non-null	obj
about_product	1465 non-null	obj
user_id	1465 non-null	obj
user_name	1465 non-null	obj
review_id	1465 non-null	obj
review_title	1465 non-null	obj
review_content	1465 non-null	obj
img_link	1465 non-null	obj
product_link	1465 non-null	obj

es: object(16)
cv usage: 183.2+ KB



```
[ ] df['rating'] = df['rating'].str.replace('|', '3.9').astype('float64')

[ ] df['rating_count'] = df['rating_count'].str.replace(',', '').astype('float64')

[ ] df.info()
      STUDIO
s 'pandas.core.frame.DataFrame'>
Index: 1465 entries, 0 to 1464
columns (total 16 columns):
Column           Non-Null Count Dty
-----
product_id       1465 non-null   obj
product_name     1465 non-null   obj
category         1465 non-null   obj
discounted_price 1465 non-null   flo
actual_price     1465 non-null   flo
discount_percentage 1465 non-null   flo
rating           1465 non-null   flo
rating_count     1463 non-null   flo
about_product    1465 non-null   obj
user_id          1465 non-null   obj
user_name         1465 non-null   obj
review_id         1465 non-null   obj
review_title      1465 non-null   obj
review_content    1465 non-null   obj
img_link          1465 non-null   obj
product_link      1465 non-null   obj
s: float64(5), object(11)
v usage: 183.2+ KB
```

```
[ ] df["rating_count"] = df.rating_count.fillna(value = df['rating_count'].median())

[ ] df.info()
s 'pandas.core.frame.DataFrame'>
Index: 1465 entries, 0 to 1464
columns (total 16 columns):
Column           Non-Null Count Dty
-----
product_id       1465 non-null   obj
product_name     1465 non-null   obj
category         1465 non-null   obj
discounted_price 1465 non-null   flo
actual_price     1465 non-null   flo
discount_percentage 1465 non-null   flo
rating           1465 non-null   flo
rating_count     1465 non-null   flo
about_product    1465 non-null   obj
user_id          1465 non-null   obj
user_name         1465 non-null   obj
review_id         1465 non-null   obj
review_title      1465 non-null   obj
review_content    1465 non-null   obj
img_link          1465 non-null   obj
product_link      1465 non-null   obj
s: float64(5), object(11)
v usage: 183.2+ KB
```



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THANK YOU!

