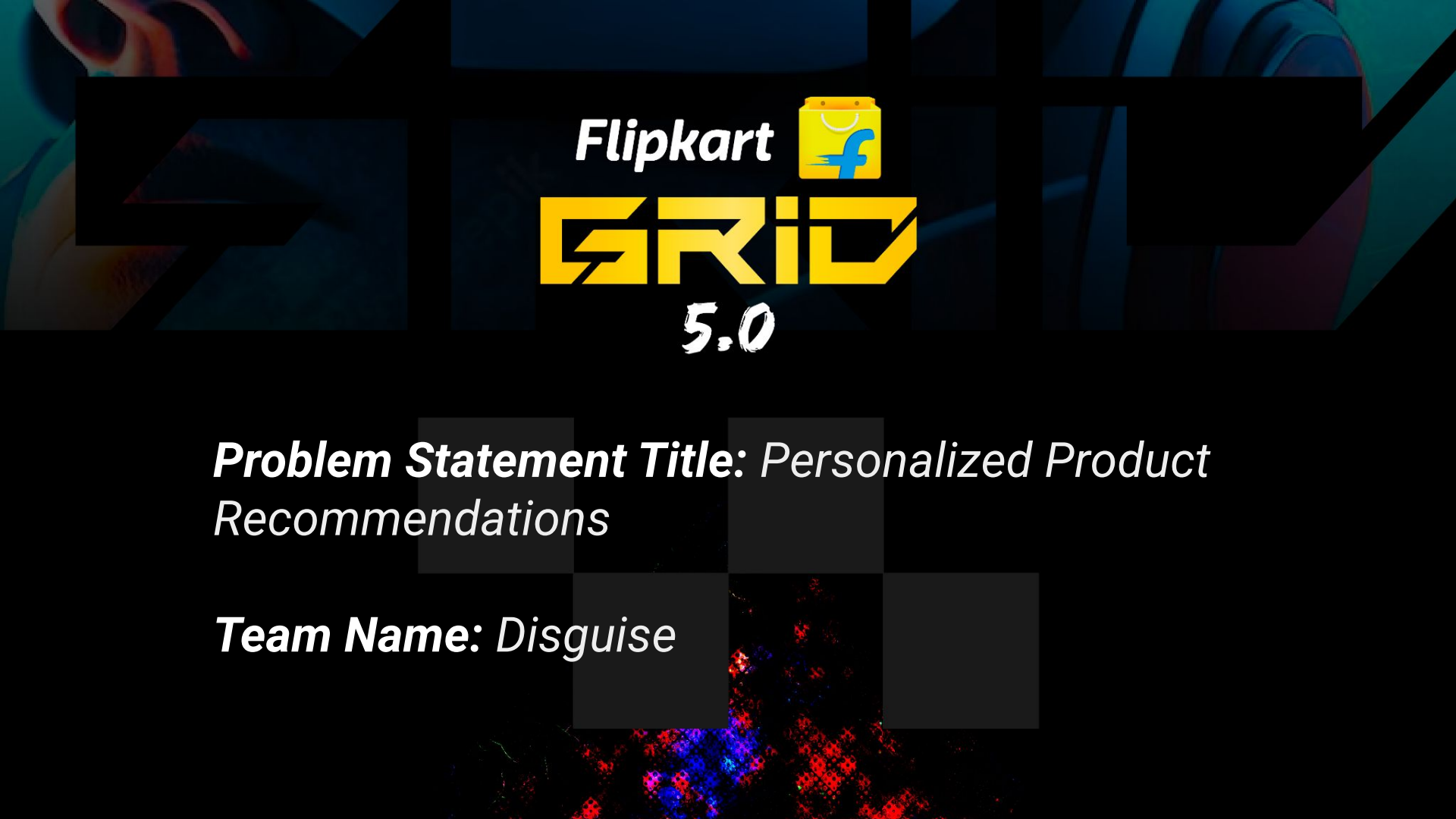
Flipkart GRiD 5.0

Problem Statement Title: *Personalized Product Recommendations*

Team Name: *Disguise*



Team members details

Team Name	Disguise		
Institute Name/Names	Malaviya National Institute of Technology Jaipur (MNIT)		
Team Members >	**1 (Leader)**	**2**	**3**
Name	Jeel N Patel	Raman	Himesh Maniyar
Batch	Cse - 2024	Cse - 2024	Cse - 2024

Deliverables/Expectations for Level 2 (Idea + Code Submission)

Aim

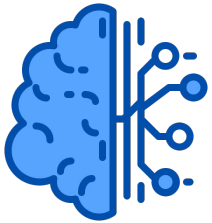
- The aim is to enhance user experience by implementing a personalized product ranking system using a model that generates accurate product rankings for individual users.

Deliverables

- Documented architecture and training approach.
- Processed user profiles, product data, interactions for training and testing.
- ReactJS for a beautiful Frontend. Flask backend for real-time serving.

Click to download code

Click to download datasets



Click to download Model preparation

Glossary

- Interaction matrix - Matrix containing user_id as rows and product_id as columns and the intersecting cell as sum of weights of interactions(Click, Purchase and Rating).
- Tech-savvy - Person who likes to use modern technology.

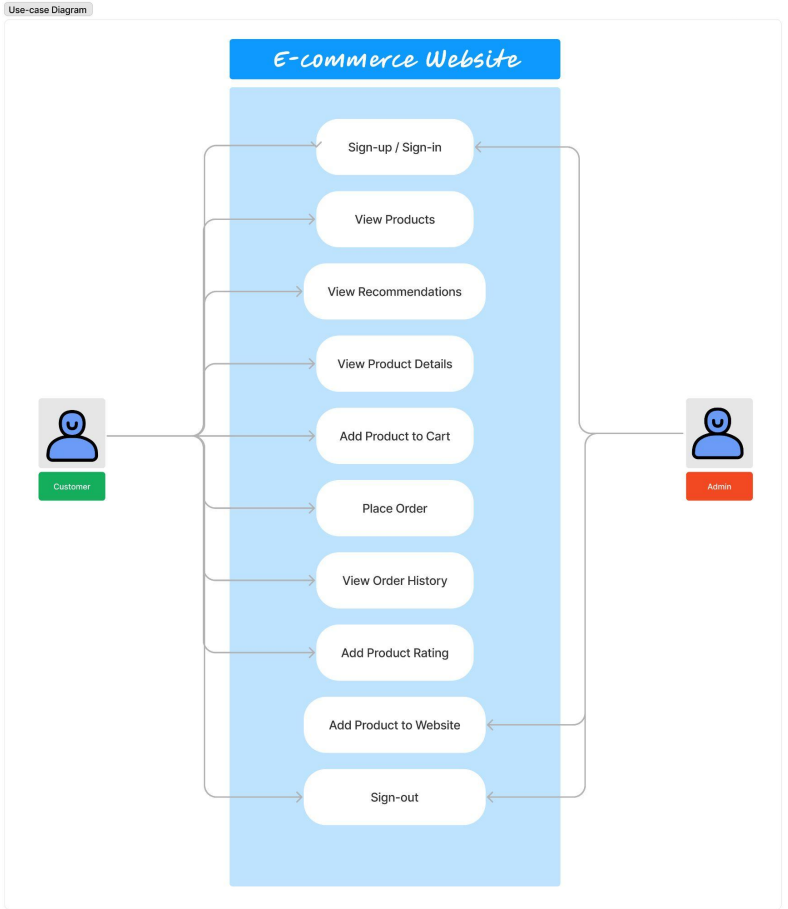
Use-cases

Customer

- Create Account (Sign-up & Sign-in).
- Add preferences.
- View products listed on the platform.
- View recommended products.
- View product details.
- Add products to their cart.
- Purchase that product.
- View Order History.
- Give relevant rating to a purchased product.
- Sign-out

Admin

- Sign-in
- Add products
- Sign-out



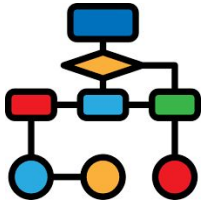
Solution statement/ Proposed approach

1) **Dataset Generation**

- User dataset- Generated user profiles using minesis python library
- Product dataset- Flipkart products dataset + used image processing for colour detection of products.
- Interaction dataset- Generated in python with interactions like click, purchase, rating.

2) **Factors affecting the ranking of products**

- User similarity- Comparing users based on their age, gender, favourite colour, favourite category.
- Product interactions- Manipulating weights for each user interaction with the products and storing in a interaction matrix.
- Product popularity- Considering the rating of product for ranking.



Click to view diagrams

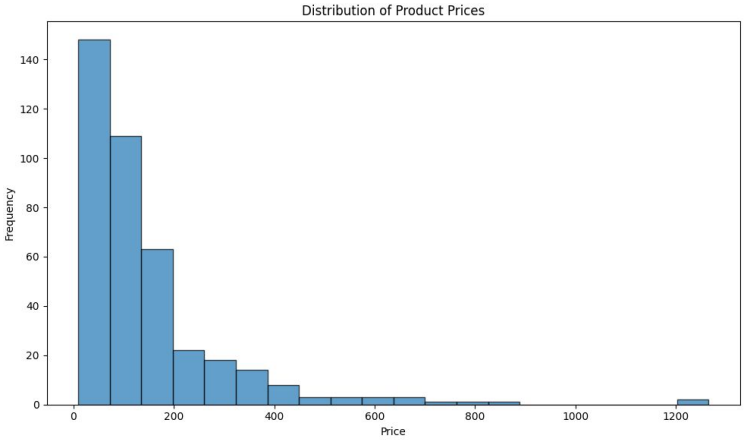
3) **Prediction of products**

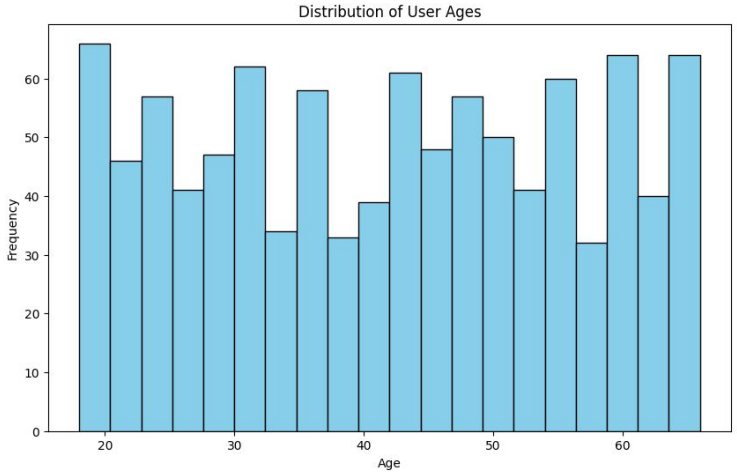
- New user- Recommendation based on user similarity.
- Long-term user- Calculating a recommendation score taking all above factors into consideration.

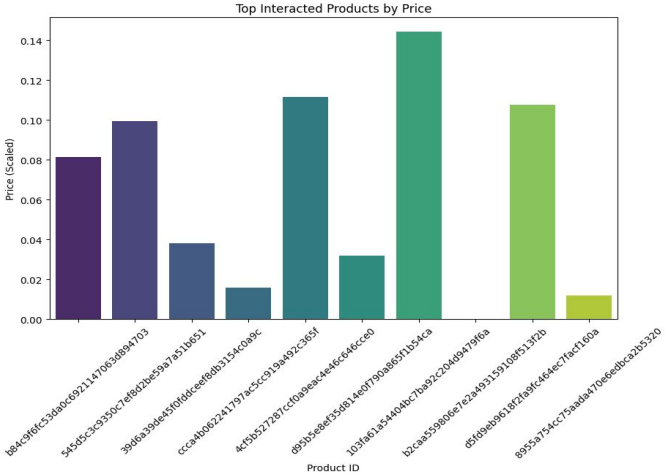
4) **Website creation**

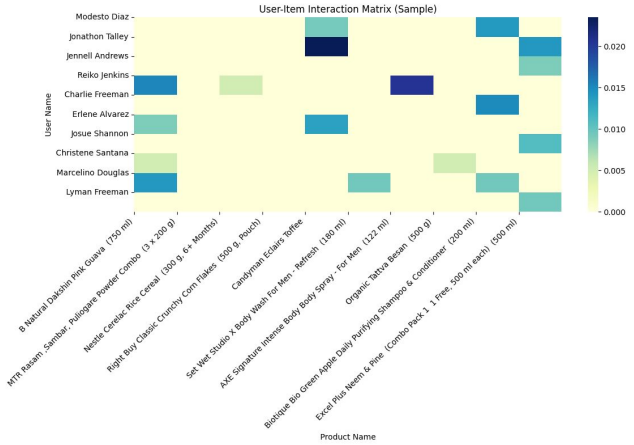
- For a better visualisation of idea website is created with React(frontend), Flask(backend) and MongoDB(database).

Model Statistics









Limitations

- Buying a product with large quantity in single order will have same recommendation score as buying a single product in that order.
- Products on sale are not given more priority in calculation of score.
- Image processing for colour detection might not capture all relevant product attributes that impact user preferences.
- Users with less activity like surfing products, ratings and buying, might receive less accurate recommendations.
- Customers can not view their profile details at this point.

Future Scope

- User similarity can be calculated based other factors too like tech-savvy, hobby, occupation, etc.
- Factors like time of purchase, user location and price range can also be considered for better performance of the model.
- More attributes can be added to products dataset for better performance.
- Incorporate additional data types such as text reviews, social media activity, and voice inputs for a more elaborated user profile.

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Thank You