



Problem Statement Title: RecXpert

**Expert Recommendations with Movies, Location, Image
Recognition, and App Analytics**

Team Name: 686157-U9886SZM

Team members details

Team Name	686157-U9886SZM		
Institute Name/Names	KL Deemed to be University, Guntur, Andhra Pradesh		
Team Members >	1 (Leader)	2	3
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Batch	Y20	Y20	

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

- **User Recommendation by AppUsage:**

- Utilizes item-based collaborative filtering technique.
- Recommends products based on mobile app usage data.
- Calculates cosine similarity between users and product features.
- Provides recommendations for each user based on highest similarity.

- **User Recommendation by location:**

- Employs a blend of user-based collaborative filtering and content-based filtering.
- Recommends products based on user location and similar users' ratings.
- Uses TF-IDF to create product feature vectors.
- Finds similar users and suggests merchandise products.

- **User Recommendation by Movies:**

- Relies on user-based collaborative filtering.
- Recommends merchandise products based on movie ratings.
- Calculates user similarities using Pearson correlation.
- Filters similar users based on a set threshold.
- Provides top 5 recommended products using weighted averages.

Use-cases (Scenarios)

Movie-based Recommendations with Location Fusion (P0):

A user who enjoys Marvel movies rates one highly. They are subsequently recommended laptops along with Marvel merchandise and skins to align with their movie preference.

Location-based Recommendations (P1):

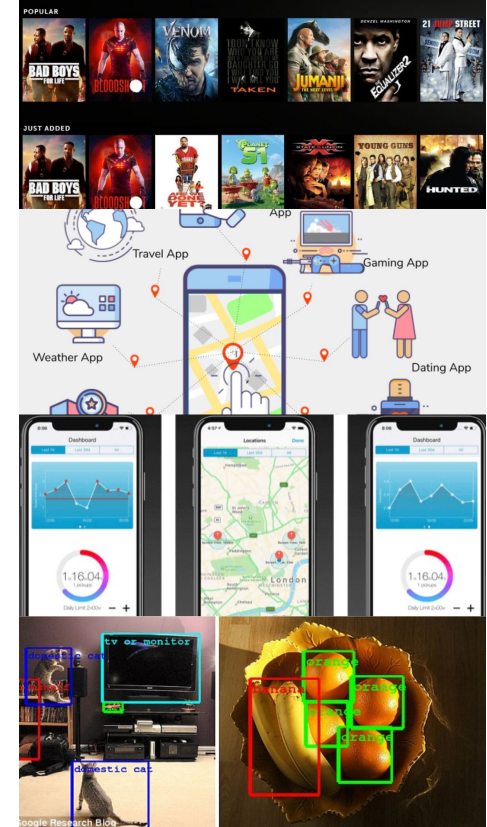
A users in different geographical areas receive tailored product suggestions based on their region-specific needs and preferences.

App Usage-driven Recommendations (P1):

A user who frequently engages with professional networking apps like LinkedIn might receive recommendations related to job search, such as formal clothing and ties.

Image Recognition-powered Recommendations (P2):

Utilizing image recognition technology, users are presented with products related to items they upload images of, enhancing their shopping experience.



Solution statement/ Proposed approach

Movie-based Recommendations with Location Fusion:

1. *Sub-Problem:* Integrating movie preferences and user location for personalized product recommendations.

Solution: Develop an algorithm that combines movie ratings with location data. Use collaborative filtering to find similar users' preferences, and incorporate location factors to enhance recommendations.

2. Location-based Recommendations:

Sub-Problem: Tailoring product suggestions based on user's geographical location.

Solution: Implement a geolocation algorithm that adapts recommendations to the user's region. Incorporate local preferences, weather data, and cultural aspects to improve relevance.

3. App Usage-driven Recommendations:

Sub-Problem: Utilizing user app usage patterns to enhance product suggestions.

Solution: Create a tracking mechanism for user app usage. Analyze frequency and types of apps used to build a profile. Integrate this profile into recommendations to offer products aligning with user interests.

4. Image Recognition-powered Recommendations:

Sub-Problem: Leveraging image recognition for improved product suggestions.

Solution: Develop an image recognition module. Users can upload images of desired items. Utilize deep learning models to identify objects and match with available products. Present relevant options based on recognized objects.

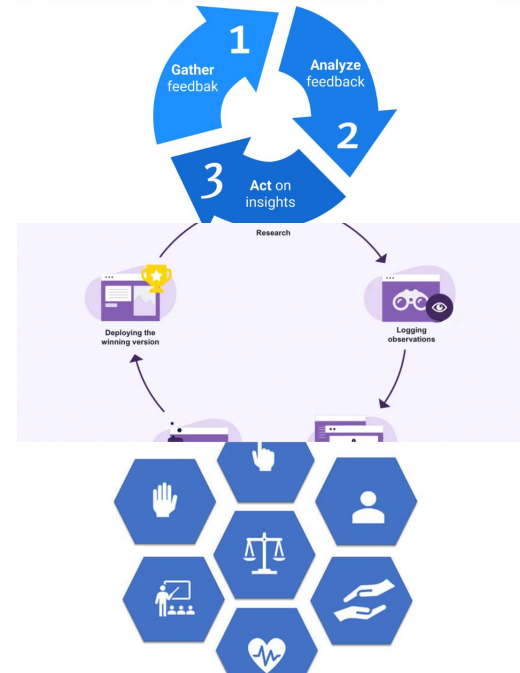
Limitations

- New User Challenge
- Privacy Worries
- Image Recognition Limits
- Context Oversight
- External Data Dependency
- Bias and Inclusion
- System Complexity
- Feedback Shortage
- Data Collection Challenges
- Handling Growth



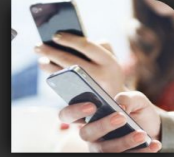
Future Scope

- *Advanced Personalization*: Employ advanced machine learning techniques for more tailored recommendations.
- *User Feedback Loop*: Establish continuous feedback to refine and optimize suggestions over time.
- *Real-time Contextualization*: Integrate dynamic data sources for up-to-date contextual recommendations.
- *User Engagement Strategies*: Innovate ways to encourage user participation and enhance data quality.
- *Ethical Considerations*: Implement fairness measures for unbiased and diverse recommendations.
- *Strengthen Partnerships*: Collaborate with third-party platforms to enhance data accuracy.
- *AI-powered Context Analysis*: Utilize AI to better understand user behaviors and refine recommendations.
- *Scalability and Infrastructure*: Optimize infrastructure to handle growing user demands and ensure efficiency.



Use case diagram

Customer starts using mobile application for some time



We receive data regarding the app usage



After getting the data we will recommend the data regarding his choice of interest

After getting the location of the consumer

We recommend the useful requirements for the consumer based on their location



We receive the data of the consumer who watches a movie



When that person rates a movie then we are going to show him the merchandise regarding that movie

After scanning an random object or q r code

We the person scans a random object or a q r code we will show the latestet update of that object or anything related to that.



Our project link

<https://github.com/nvsai/Flipkart-Grid-ProductRecommendation.git>



Thank You