



CURU APP CAPSTONE PROJECT



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Introduction

In this current digital world, users can gather information about any product in a span of few seconds. However, there is no guarantee that the information available over the internet is intended to the right user at the right moment and about the right product. Businesses are keen to resolve this issue by providing personalised recommendations about their products to their consumers across industries like Retail, Finance, Entertainment and so on. Similarly, beauty applications aren't left behind especially with the use of Artificial Intelligence where they are shaping the modern-age beauty industry with a focus on customer experience and engagement by making some significant impacts. Some of them are personalized recommendations to recommend products specific to each customer, where in the application would analyse the customer data and previous purchases, apart from this there are some applications who uses image recognition and machine learning to understand the customer's skin tone and facial features to present them the best possible products or skincare routines & some create customer engagement in the similar fashion by providing the option of virtual try-ons. Hence, we are seeing a huge trend and increased use of AI and Machine Learning in the world of cosmetic industry where brands are seeing increased customer retention, improved sales, more and more insights are gained about the customers, overall strengthening the brand image. Use of AI & despite the fact it gives them competitive edge, brings its own difficulties and challenges altogether such as data security & privacy, bias in the algorithms used, explainability of the recommendations provided & lastly striking a sweet balance between customer sentiment etc [2].

Partner/Client

Our partner for this project is **Curu App**. The app was founded in the year 2021 by Rachael Thien with a sole purpose of providing personal assistance to the users while making smarter skincare choices. Basically, it's a combination of curated recommendations and a pocket beauty guru all in one. The app intends to provide recommendations about beauty products to their users based on their skin type and their preferences. These recommendations are made analysing various data such as the skin texture, product type, reviews from other buyers with no intention of providing any bias towards any product/consumer. This application is specially designed for people who are confused and overwhelmed with the number of products that we have currently in the market in a way that they are struggling to find the best fit products for themselves or based on their skin, or possibly tired of endless scrolling with various products due to lack of time or busy lifestyle and lastly, not trusting the external sources or recommendations by various people and website or on social media [1].

The app has been designed with a list of skincare products and based on the user skin type which can be analysed by taking a quiz where a set of questions have been asked to understand user's preference and skin type, and accordingly it provides a comprehensive insight about them to the user which includes basic information about the product, analysis on the ingredients of the products, safety metrics, reviews, and ratings about the product. At

the same time, it also provides some product highlights, whether that product would match their preference or skin type and lastly also provides the details of the website to buy it along with ratings and reviews. This information will help the user to make informed decisions while opting for any beauty products without any uncertainty about them. So, to enhance this experience to their user, our client uses the information to analyse the product and reviews data and create more personalized solutions using machine learning models. Curu App also has the section for users to chat making it more interactive, also has a feature to scan the product which automatically gives us the rest of the information rather than user search and type for the product. There are already a few similar applications that provide kind off the same set of services, but Curu plans to be different and showcase their uniqueness by becoming a credible platform, empowering the users for more usage of the application, they don't want to market it as a selling app like not playing as a Chemist, making it a free to download on multiple sources without any buy-in subscription model. Overall, Curu App has developed a solid background and base for their success and users but considering that its relatively new brings its own challenges and limitations that are discussed in the following sections.

Background

Since the application has been live in the market since April 2023, there have been some pain points or challenges that have been holding our partners from succeeding and following is the identified list of issues [1]:

- **No Customer Reviews:** In today's world, considering the number of products we have in each sector regardless just skincare is quite booming hence to establish some sense of trust and credibility within the market, customers reviews plays a big role as a smaller number of customer reviews leads to create an impression of less trustworthy compared to other products/competitors. Secondly, reviews play a pivotal role for development of the application too, lacking to set the overall benchmark in comparison to other service providers in the same space.
- **Recommendations:** As mentioned above, Curu App runs along a certain recommendation model where it recommends certain products based on user preference, currently the app can do so but it all comes down with the providing deeper understanding of user behaviour & preferences when more user start using the platform, also when the client has a huge database, then the algorithm needs to identify and recommend the right product also considering all aspects or factors on a real-time basis, seamless data integration while maintaining data security and privacy, and not creating any ethical bias allowing users to build trust.
- **Product Database:** Curu App currently has around 170 products in the product database which isn't sufficient when we look at products in any beauty shops or marketplace, hence the app isn't scalable to a bigger measure due to a smaller number of products. Some of the challenges are to integrate data from multiple sources which is complex, and as the business grows, the app should be able to maintain database with up-to-date products hence regular updates, data cleansing, and version control are essential to ensure data

quality and relevance otherwise it could lead to customer dissatisfaction, returns, and negative feedback.

- **User Data:** Not having enough data can be a bit challenging especially when it comes to building an application, because it hinders the ability to understand the market and the customer's needs to create an environment for personalized experiences or identify certain trends wherein we could highlight some products

Currently, the app has minimal user interaction as it is relatively newer to the market. To increase the customer base for the app, the client intends to strengthen their approach of providing more curated reviews and insights about products to their customers. Also, by analysing and incorporating the reviews available across ecommerce sites the app can provide more accurate information about the 'Bestsellers' or 'New to market' products which can boost their customer growth. Some of the problems will be picked up by our team as part of our capstone project to help the partner and the application to make more decisive decisions and grow in the right direction [3].

Project Aim

Considering the current problems with the application & after initial discussion with our industry partner, they had set certain expectations or aim to be achieved from this project as:

- Review & Analysing Insights from External Sources
- Optimising the Recommendation Algorithm
- Data Cleaning
- Organising the Product Database
- Application Development

We want to narrow down the project within the scope of data science which is achievable in the time span of 12 weeks, hence we plan and aim to conduct analysis of the customer reviews, where we will extract data from multiple external sources and try to provide certain insights that will eventually help our partner to enhance their application. Some of the benefits of doing this analysis are [4]:

- **Customer Satisfaction Level:** This analysis could provide us what aspects customers appreciate and where improvements are needed, possibly the most important insights that we could gain from analysing the customer reviews.
- **Understanding Customer Preferences:** To understand if there are any features or brand or products that are more desirable to customers but at the same time also checking if there certain things that concern them which could potentially be avoided to be incorporated in the application.
- **Trends and Patterns:** To check trends and patterns in terms of any products or reviews that are inclined to complaints and negative feedback.
- **Improving Customer Experience:** If possible, to understand from review for the areas where we can improve the overall customer experience, from product design and features to customer support.

Accordingly, it will also be helpful for our partners in terms of doing this market research as they will have a better understanding in terms of driving the product development, like building up their database and adding more products to showcase, along with customer insights and preferences ultimately helping to enhance customer experience enabling them to take more data-driven decision-making and proactive strategies.

Expected Outcome

To achieve the above aim, as a team we are targeting to finish the following outcomes first:

- **Sentiment Analysis:** Through sentiment analysis, our objective is to understand and assess the overall sentiment of the customer in the reviews towards any specific product or brand and try to get insights about any positive/negative aspects amongst the customer & if there are any changes or improvements that happen over time [5].
- **Keywords Extraction:** The objective here is to identify prioritize key topics, issues, or themes by extracting common words in form of some word clouds or cluster those words to categorize the reviews into some meaningful theme. Lastly, this could also help us to understand specific terminology in terms of the sentiment shared across the customers leading to their satisfaction or dissatisfaction [6].

We are also planning to enhance the deliverables, if we have some spare time is to research and find a way to club the combination of words which have a similar meaning in such a way that if our partner plans to integrate them into their application, then if any users search any product then based on the customer review it will highlight those keywords of that product. Lastly, we do plan to build a dashboard to combine all the three aspects if possible so that we can have all three insights in one place rather than having it scattered across three different platforms.

Project Plan

We had our initial discussion with our academic supervisor & industry partner in the first couple of weeks where we decided to take the project ahead in the direction of sentiment analysis and keywords extraction. Since, the world of beauty products is quite vast and filled with huge number of different brands, hence it would be a bit difficult for us to cover each one of them, hence we plan to target certain brands and website where we could possible and potentially cover most of them including publicly available website including marketplace and some private brands who have their own webpage separately. First, we plan to build a script for web scraping the data from these websites to extract the customer reviews. Currently, we have built some scripts but still some discussion going on as our partner isn't sure how they want the analysis to be built around, as in if they want us to target a particular skincare category as a whole or just individual products for each brand. We will be having follow-meetings for the same with our academic supervisor as well to understand whether this would be an achievable task within 12 weeks of time. Apart from this, once we have the necessary data with us, our next set of actions is to preprocess and clean the data, and then accordingly perform the sentiment analysis and build word clouds or check or co-occurrences

for keywords extraction. If only we have the spare time left, then we plan to build the dashboard and develop a logic with our partner wants the keyword extraction to be. We might change our approach following our weekly discussions with our supervisors & partner, but following is a tentative plan in form of a Gantt chart:

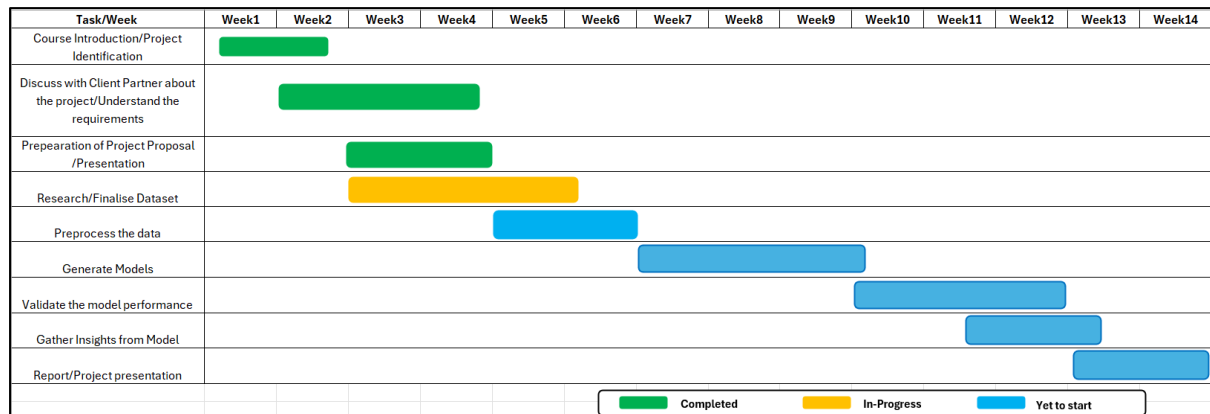


Figure 1: Tentative Plan of Action

We are a team of 4 members and to achieve our desired project outcome, we have assigned individual tasks to each team member based on individual preferences as below.

Name	Primary Task	Secondary/Additional Tasks
Aarthi Vijayakumar	Research and gather Data set	Co-ordinate with Client Partner/Supervisor, prepare documentation (such as report, ppt), provide ad-hoc help to other team members
Ajay Ugale	Data Preprocessing/Model Validation	
Mohammed Manzoor	Create insights based on model performance (Such as Dashboard, Web app script)	
Vaibhav Vijay Kulkarni	Model Generation	

Table 1: Task Distribution

To ensure timely project delivery, we will track all the activities and to enhance visibility with our client partner, we created a KANBAN dashboard in Trello where we added backlog for each task. As the team progresses, the task status will be updated, so that other members can refer it for further clarifications. Below is the link for our Trello board.

Trello Board Link - <https://trello.com/b/N9OrAII0/kanban-template>

Apart from this, to also ensure effective collaboration with the partner, we created slack channels with the Client partner and have a scheduled weekly connect. Among the team, to ensure file sharing and documentation of our progresses we also created SharePoint drive and GitHub is used for managing the deployment and version control.

References

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