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YuvEats – Food Ordering System in University Campus

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Abstract*—University campuses in India are shifting every task online, even when it comes to ordering food from campus canteens. There is a rising concern that after using digital methods to order food in the campuses, students have to wait in long queues in order to get their food, the quality and quantity of the food remaining uncertain. This contributes to a lack of enthusiasm among students for eating food, which is a reason for health issues they face on a daily basis. The idea behind this is to enhance the existing online ordering system to make it more student-friendly. The aim is to provide an all-in-one solution to this and create a mobile application that allows the students to give feedbacks, cancel their orders and schedule them according to their preferences along with some updates to the existing features like secured payments and proper feedback system, with a more user-friendly design. This article proposes conducting a survey among students regarding their views on waiting times, quality, quantity and price of food, and then creating a revised data model for a more user friendly mobile application. YuvEats has been proposed to ensure that it serves as a platform which reduces long queues at food outlets, provides secure and convenient payments, sales management. YuvEats also aims to expand its features in future to allow students to start their own food delivery system / businesses, hence providing an opportunity to put their talent to some good use.

Keywords*—Mobile Application, Digitalization, Campus-Dining, Data Modelling, Food Quality, Queue Management, User Feedback

I. INTRODUCTION

In huge universities which have numerous food outlets inside the campus, the efficiency and convenience of food should be a priority. Students and faculty members often find themselves occupied with lectures, extracurricular activities and other events, hence have no or little time for breaks. This research paper aims to provide a solution to all these problems faced by the students on a regular basis using a mobile application: "YuvEats". YuvEats is a mobile based application designed exclusively for university campuses. It aims on providing a solution to all these problems faced in the university on a day-to-day basis. YuvEats serves as a centralized platform where users can order, instruct, suggest, cancel, customize their food as per needed. The sellers can get feedback, prevent business losses and food wastage.

II. LITERATURE SURVEY

"e-Runner: A Mobile Application for Campus Food Delivery Service" [1] is a paper that presents a mobile application in which a student can order food and get it delivered at the doorstep. Shahirah Mohamed Hatim [2] reports a mobile-based online food ordering application which plans to create a virtual shop which serves as an all-in-one platform that has functions such as clients can easily view their previous orders,client can get their food delivered in front of their rooms, and vendors can advertise their goods. Prof. Ramesh Shahabade [3] concludes that Most popular features of Food Ordering Apps which make them even more likeable include: Online Catalogue, Geolocation, Online Orderings and Payments, Scheduled Delivery, Push Notifications and Loyalty Programs. Hemant Kumar [4] describes how AI & ML implementation can foster Real-time, micro-optimization of dynamic demand-supply, millions of times every day. It also mentions the frameworks which could be used in creating a fully-functional application. M. S. Pavan [5] highlights the benefits of self-pickup and delivery options, especially for students with dietary

preferences (veg / non-veg / gluten-free / dairy-free) or health problems, stressing on the importance of convenience and flexibility in online food ordering platforms. "Canteen Management Using Intelligent Feedback System" [6] explored Sentiment analysis and opinion mining concepts are used to examine people's views. It also focused on the good predictive accuracy and other benefits of the Naïve Bayes Classifier and explained how it is more accurate than Linear SVM (Support Vector Machine). Rishab Singh [7] proposes an android application for the Sheroes Cafe using a firebase database run by acid attack survivors. The application also contains a donation page for acid attack survivors. Scott Taylor, Jr. [8] studies and discusses the performance expectancy, effort expectancy, risk perceptions, hedonic motivations, trust, and social influence on students' adoption intentions toward a mobile food-ordering app on campus. Varsha Chavan [9] presents a digital restaurants and inter-restaurant navigation using smart phones to customers. The research displays the usage of smart phones or tablet to provide necessary interfaces for customer to view and order menu. It shows the capabilities of wireless communication and smart phone technology in fulfilling and improving business management and service delivery. Anitta Abraham [10] looks upon the effectiveness of online food apps on registered restaurants, and found that Zomato is preferred by most of the restaurants, because of helping the restaurants in boosting their sales. The study lists out the common food products and cuisines among the restaurants. Additionally, it suggests that the online platforms must be made user friendly towards the restaurant owners, and that restaurants consider this online platform just as a channel to expand their business since it does not affect the direct delivery services. Mr. M. Mukesh Krishnan [11] proposes a system for maintaining the canteen system and also regulate the orders in ease by solving the major problems like overcrowding, lack in efficiency of the previous system, and hence creates an application which is feasible to both, the user and the admin. Michael Yosep Rickey [12] uses the Waterfall method of System Development Life Cycle (SDLC) to design the application and a Unified Modelling Language (UML) to make the application design workflow for customer side.

III. PROBLEM STATEMENT

- The current ordering process does not allow the user to cancel an order, hence making it inconvenient for the users.
- The outlets serve food with inconsistent quality and quantity, creating a disinterest among its customers.
- Students usually have to wait for quite a while or stand in long queues to receive their order. This wait is tiresome, making it difficult for the students to enjoy the food.
- The existing system lacks a proper suggestion box, hence creating a gap of communication between the students and the sellers.

IV. OBJECTIVES OF STUDY

1. To enhance the existing system of food ordering in university campuses.
2. To strategize the prices of food items in order to make it beneficial for the students as well as the sellers.
3. To add an active review system and suggestion box to map the satisfaction of customers.
4. To advance the ordering process by adding new features.

V. RESEARCH METHODOLOGY

1. The existing process serving the similar solution will be reviewed and studied properly.
2. A survey will be conducted among the students regarding the problems faced by them during the existing process, and it will be taken into consideration.
3. To build a stronger software model, and provide a solution to the anomalies in the existing software.
4. Based on the research, a proposal of a mobile application will be designed proposing the solution to the existing issues faced.

VI. OBSERVATIONS

A survey was conducted among the college students through Google Forms, and the responses were analysed as follows:

Issues	**No. of students facing it (out of 69)**
Overpriced	57
Not Enough quantity	42
Quality Issues	46
Long Queues	39

65 students (94.2%) agree on the fact that their order should be cancelled and the money should be refunded if they do not receive the order by EOD.

VII. PROPOSED SYSTEM

YuvEats aims to improve the dining experience in the university campus by allotting specific time to food orders and hence minimizing the queues, thus

enhancing overall efficiency of food outlets. This system allows user to place their orders online, lets them to queue the order as per choice, thereby preventing long queues and overcrowding at food outlets, which not only helps in maintaining operational efficiency but also improves customer satisfaction.

Key Features:

1. *Scheduling the order:* Users have the flexibility to schedule their order as per their convenience. This ensures that the food is prepared just at that time, hence reducing wait times and avoiding long queues in front of the outlet.

2. *Scan and Pay Option:* By introducing a Scan and Pay Option, users can easily pay using the scanner if facing internet connection issues. This feature is also a plus point for users if someone doesn't have enough money in their account or having internet issues while payment.

3. *Feedback and Improvements:* The idea includes creating a strong feedback system where users can rate their meals and provide suggestions. This is important for the seller to maintain quality, improve their services and ensure consistent standards in terms of food and its delivery.

4. *Convenience and Cancellation Options:* This method will make eating food very convenient for the users. The active cancellation feature will also prevent wastage of food as well as keep the order count in check, hence preventing fake acceptance of any orders.

VIII. ALGORITHM

Algorithms are a set of instructions that tell a computer how to perform a specific task. Algorithms are essential for mobile app development, as they define the logic, functionality, and behaviour of the app. For example, an algorithm can determine how a user can navigate through different screens, how data is stored and retrieved, or how a game responds to user input.

Here is the algorithm for *YuvEats:*

Consumer Algorithm

- Step 1: If a daily user, click User and sign in / register, else use as a Guest.
- Step 2: Select the campus.
- Step 3: The homepage displays all the food outlets in the campus. Select an outlet to order.
- Step 4: Finalize order and add items to the cart. If no items selected, go to step 3.
- Step 5: Select whether to queue the order and specify the time or proceed anyway.
- Step 6: A screen displaying the details (list of items ordered, price, waiting time, customizations) will appear.
- Step 7: Confirm the order (accept / cancel).
- Step 8: If accepted, choose a payment method :
    - Yuv-wallet: Not available for Guest.
    - Credit / Debit Card
    - Scan and Pay
    - UPI Methods (GPay, Paytm, etc)
- Step 9: If cancelled, go to step 3.
- Step 10: If payment successful, continue else return.
- Step 11: Wait till the order gets prepared.
- Step 12: Pick up the order when notified.
- Step 13: Give feedback regarding the order and service.

IX. SYSTEM ARCHITECTURE

The idea behind the making of the prototype, ***YuvEats***, is to create a system which allows the outlet owners to get real feedbacks and hence find the best way to deliver good quality food at justified prices

A state UML diagram representing the workflow of the proposed application has been shown below.

ABOUT THE STATE DIAGRAM: A state diagram is used to represent the condition of the system or part of the system at finite instances of time. It's a behavioural diagram and it represents the behaviour using finite state transitions.

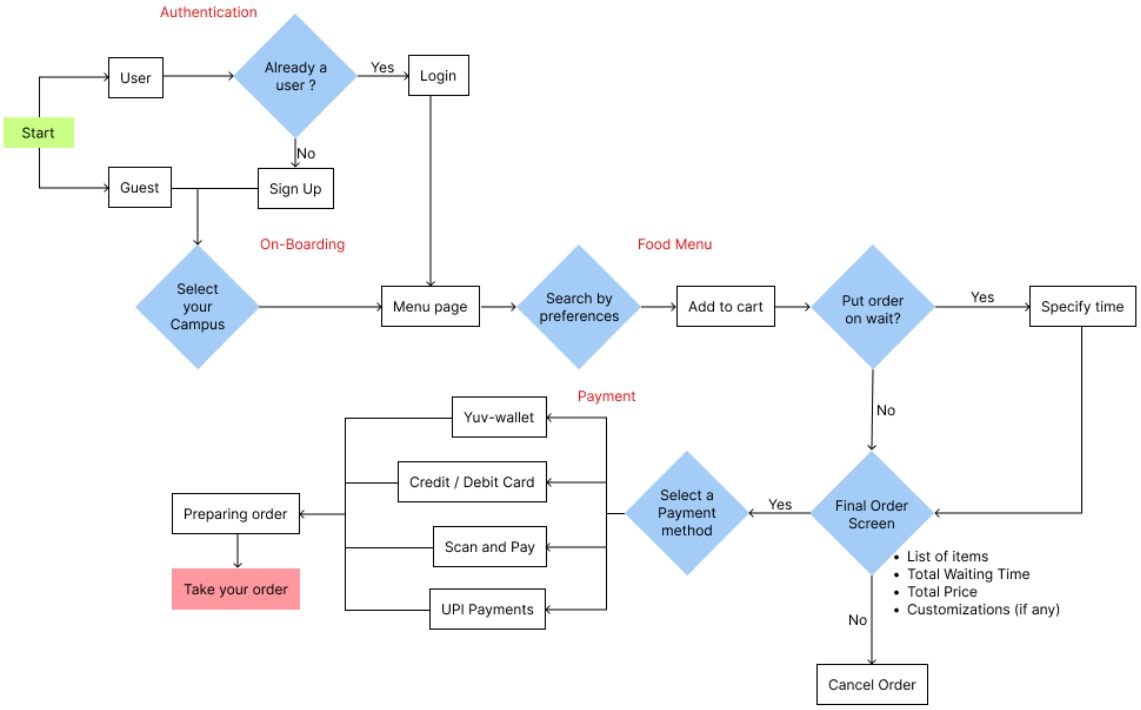
The diagram includes four main sections:

1. *On- Boarding and Authentication:* The user is first directed towards registering for the application. Students need to fill in their phone number and a password to register, then choose the campus. People not from the university campus also have the option to use it as a guest and select the campus. After selecting the campus, the users are directed towards the menu page.

2. *Food Menu:* The food menu has features - sort/filter the food according to user's preferences, and add the selected items to cart. The user is then asked if the order is to be scheduled for later or to be taken immediately. Then the screen displays order summary which includes the total items, payment, preparation time, discounts and coupons (if any) and a confirmation button.

3. *Payment:* After confirming the order, the user is directed to the payment screen which contains mainly 4 modes of payment, namely, Yuv-wallet, Credit/ Debit Card, UPI payments or Scan and Pay. The Scan and pay mode implies that there will be a scanner displayed containing the UPI ID of the outlet, hence making it easier to pay through other mobiles if facing internet issues. After the

payment is successful and the order prepared, the user can take the order and enjoy the food.



X. RESULTS AND DISCUSSIONS

The implementation of this app will demonstrate notable improvements in on-campus dining. It aims on increasing the visibility for on-campus outlets, leading to increase in sales. The research focuses on sustaining user engagement, refining feedback analysis, ensuring scalability, and including rational practices. The continuous commitment to innovation and user satisfaction will guide the app's evolution to meet the dynamic needs of university campuses.

XI. CONCLUSION

This research paper reports a mobile-based online food ordering application for university campuses, YuvEats. YuvEats is an advanced and user-friendly food ordering application. The aim of this application is to help the students as well as boost the income of the sellers. Students no longer have to wait for their food and can eat hygienic food at pocket-friendly prices. They can issue complaints regarding food, get refunds easily and also give recommendations. The sellers can acknowledge the demand of the students, prevent food wastage and provide good quality meals which will further increase their ratings and hence profit. The choice in mode of payments will make it even more accessible and adaptable.

XII. FUTURE SCOPE

The future scope of YuvEats is to achieve all the goals that are currently not possible. Some of them are:

A. Including voice based ordering: The app after getting developed, will be later updated to allow the user to use voice search for their orders.

B. Implementing it in multiple universities: The aim is to make YuvEats, a food ordering application for all the universities and colleges.

C. Introducing monthly subscriptions: Monthly subscriptions for mess food / specialized meals will be added as a feature later in this app.

D. Posting reviews publically on the app: Students will be able to publically post their review regarding a food item or an outlet.

E. Helping students in starting their small businesses: The app also aims in providing a common platform and hence helping students to start their food delivery businesses as a side hustle.

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