Messmate: Affordable and Hygienic Food Near College Campus

Ranjeet Kumar Sahani, Rajnish Yadav, Kripa Shankar and Naveen Kushwaha, Mr. Ramakant Katiyar

Axis Institute of Technology and Management, Kanpur, India
ranjeet07sahani@gmail.com, rajanishyadav404@gmail.com, naveenkushwaha349@gmail.com, Ks622328@gmail.com

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Abstract

Finding clean, nutritious, and affordable food remains one of the major concerns for college students, particularly for those living away from home. Conventional food options—such as nearby stalls, canteens, or restaurants—often provide limited information regarding hygiene standards, food quality, and pricing. To address these challenges, this study proposes a digital platform that connects students with verified, hygienic, and affordable food providers located around college campuses.

The system integrates four key modules: **Online Mess Searching**, **Mess Booking**, **Tiffin Delivery**, and **Job Opportunities**. It enables users to explore verified food services, compare meal plans, and book or customize their orders online. Additionally, the platform includes a job module that allows students to find part-time employment in local food services. Through real-time data access, hygiene ratings, and feedback-based verification, the proposed solution enhances both convenience and food safety. The study discusses the design, development, and implementation of the system, emphasizing its contribution to improving food accessibility and affordability near educational institutions.

Keywords: Affordable Food, Hygienic Meals, Online Mess Booking, Tiffin Delivery, Student Employment, Campus Services.

1. Introduction

In the current academic environment, students often face difficulties in finding affordable, hygienic, and home-style food near their college campuses. Many depend on local stalls or small messes that may not always maintain proper hygiene or transparent pricing. The process of locating and booking these services is also largely manual, consuming both time and effort.

The **Affordable and Hygienic Food Near College Campus** system offers a unified digital platform that simplifies this process. It provides students with a user-friendly web and mobile interface to browse nearby food providers, compare meal plans, book services, and even apply for part-time jobs in local food establishments.

Time management is a key concern for most students. To address this, the system integrates **real-time tracking** for tiffin deliveries, ensuring that users can monitor their orders until they arrive. The platform eliminates the need for daily calls or manual confirmations with mess providers by automating order updates and notifications.

The system, built using **HTML, CSS, Node.js, and SQLite**, ensures affordability, reliability, and user convenience. Daily menu updates, GPS-based location tracking, and an integrated feedback system contribute to transparency and service improvement. Overall, the platform bridges the gap between food providers and students while promoting hygiene, affordability, and trust.

2. Literature Review

The growing demand for affordable and hygienic meals among students has encouraged significant research into digital food management systems. While popular platforms such as **Zomato**, **Swiggy**, and **Food Panda** serve urban consumers efficiently, they are not specifically designed to cater to college students' needs for low-cost, hygienic, and campus-accessible meals.

According to **Sharma et al. (2021)**, establishing campus-based food networks can reduce student meal costs by connecting them directly with verified local messes. Similarly, **Bansal (2022)** emphasized that affordability and trust strongly influence food preferences among students and that verified hygiene standards increase user satisfaction.

Previous studies on mess management systems, such as those by **Kumar and Singh (2020)**, primarily focused on booking and attendance tracking but lacked hygiene monitoring or job facilitation features. **Verma and Thakur (2023)** further highlighted that food hygiene and nutrition are key concerns among hostel students due to limited meal options.

Recent developments advocate for **hybrid digital platforms** that combine affordability, hygiene monitoring, and service efficiency. The present project builds upon these studies by introducing an integrated platform that combines real-time mess search, booking, hygiene evaluation, and employment facilitation. This approach ensures that students can easily access safe, affordable, and reliable food options within and around college campuses.

3. Proposed System

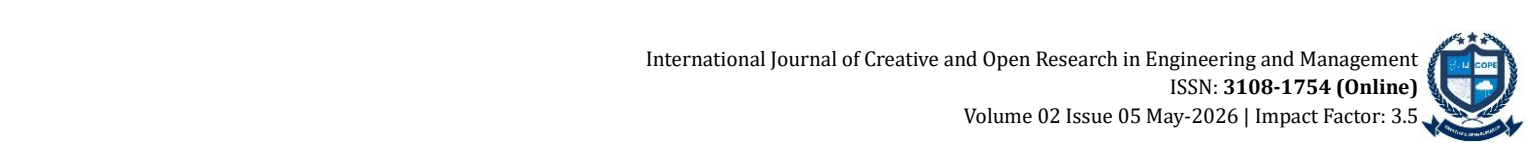
The proposed system connects students with verified food providers through four core modules:

3.1 Online Mess Searching

- Enables users to find nearby messes or canteens based on cost, hygiene rating, and cuisine type.
- Displays complete details such as menu, distance, operating hours, and customer reviews.
- Integrates **Google Maps** to display the shortest route from the user's location to the mess.

3.2 Online Mess Booking

- Allows users to register and book daily, weekly, or monthly meal plans.
- Provides secure online payment options.



- Sends instant booking confirmations and reminders via email or SMS.
- Users can modify or cancel bookings through the dashboard.

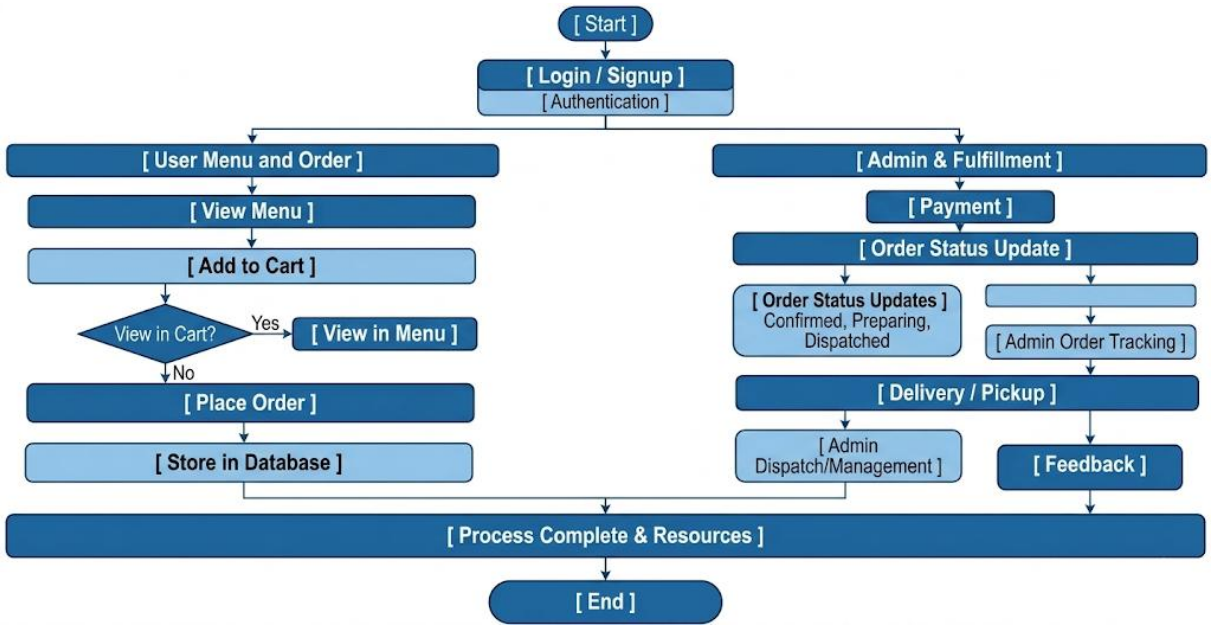
3.3 Tiffin Delivery

- Offers doorstep delivery of verified hygienic meals for hostel and PG students.
- Provides real-time delivery tracking and status updates.
- Allows customizable meal plans (vegetarian/non-vegetarian).
- Collects user feedback for maintaining hygiene and quality standards.

3.4 Job Opportunities

- Lists nearby part-time job openings in local messes, canteens, and food stalls.
- Enables students to apply for delivery, kitchen, or management roles online.
- Vendors can post verified job openings approved by the admin.
- Encourages self-employment and local engagement among students.

4. Methodology



Messmate's workflow is centred on creating a smart and user-friendly platform for managing daily mess activities, reducing food wastage, and improving accessibility for students. The system integrates digital ordering, subscription management, and feedback mechanisms to streamline communication between students and mess providers. By offering real-time updates, structured meal planning, and user-centric features, Messmate ensures affordability, convenience, and transparency in mess operations.

i. Registration and Profile Creation

The process begins with users signing up on the platform and creating their profiles. During registration, users provide essential details such as name, college, hostel, and food preferences. This information helps the system personalize the experience for each user. Mess owners can also register to manage menus, orders, and subscriptions. The platform stores user data securely and uses it to deliver customized services.

ii. Menu Management and Food Browsing

Messmate allows mess providers to upload daily or weekly menus with detailed information about meals. Users can browse available food items, check meal timings, and view pricing. The system ensures transparency by displaying updated menus in real time, helping users make informed decisions about their meals.

iii. Meal Booking and Subscription Plans

The platform provides flexible meal booking options. Users can either order individual meals or subscribe to weekly/monthly plans based on their needs. The subscription system helps reduce last-minute confusion and ensures better meal planning for both users and mess providers. Automated scheduling improves efficiency and minimizes food wastage.

iv. Order Management and Tracking

Messmate includes an order management system where users can place, track, and manage their orders. Once an order is placed, it is recorded in the system and sent to the mess provider for preparation. Users can view order history and receive updates regarding their meals, ensuring a smooth and organized process.

v. Payment Integration

The platform supports secure online payment methods, allowing users to pay for meals and subscriptions digitally. This reduces dependency on cash transactions and ensures a seamless payment experience. Payment records are maintained for transparency and easy tracking.

vi. Feedback and Rating System

Messmate includes a feedback mechanism where users can rate meals and provide reviews. This helps mess providers understand user preferences and improve food quality and services. The system uses feedback data to maintain service standards and enhance user satisfaction.

vii. Notifications and Updates

The system sends notifications regarding menu updates, order confirmations, subscription reminders, and special announcements. These real-time alerts keep users informed and improve overall engagement with the platform.

viii. Data Management and Optimization

Messmate collects and manages data related to orders, user preferences, and consumption patterns. This data helps mess providers optimize food preparation, reduce wastage, and improve operational efficiency. The system continuously evolves based on usage patterns and feedback.

By integrating these modules into a single platform, Messmate provides a comprehensive and efficient solution for mess management. The system enhances user convenience, ensures better food planning, and creates a transparent and organized environment for both students and mess providers.

5. System Architecture

The system architecture is divided into five functional layers:

1. **User Interface Layer** – Offers interactive dashboards for students, vendors, and administrators with intuitive controls.
2. **Application Layer** – Handles mess searching, booking, and delivery processes, ensuring smooth coordination.

3. **Database Layer** – Manages and stores data including user profiles, menus, transactions, and feedback securely.
4. **Communication Layer** – Connects the system with external APIs such as Google Maps and online payment gateways.
5. **Admin Layer** – Oversees data verification, hygiene audits, and system reporting to maintain service quality.

6. Implementation

The system was deployed as a **responsive web application** compatible with both desktop and mobile devices. Key implemented features include:

- User registration and login authentication.
- Mess listing with advanced search and filtering options.
- Online booking and transaction management.
- Tiffin delivery scheduling and live tracking.
- Vendor verification and admin approval.
- Job posting and student application management.

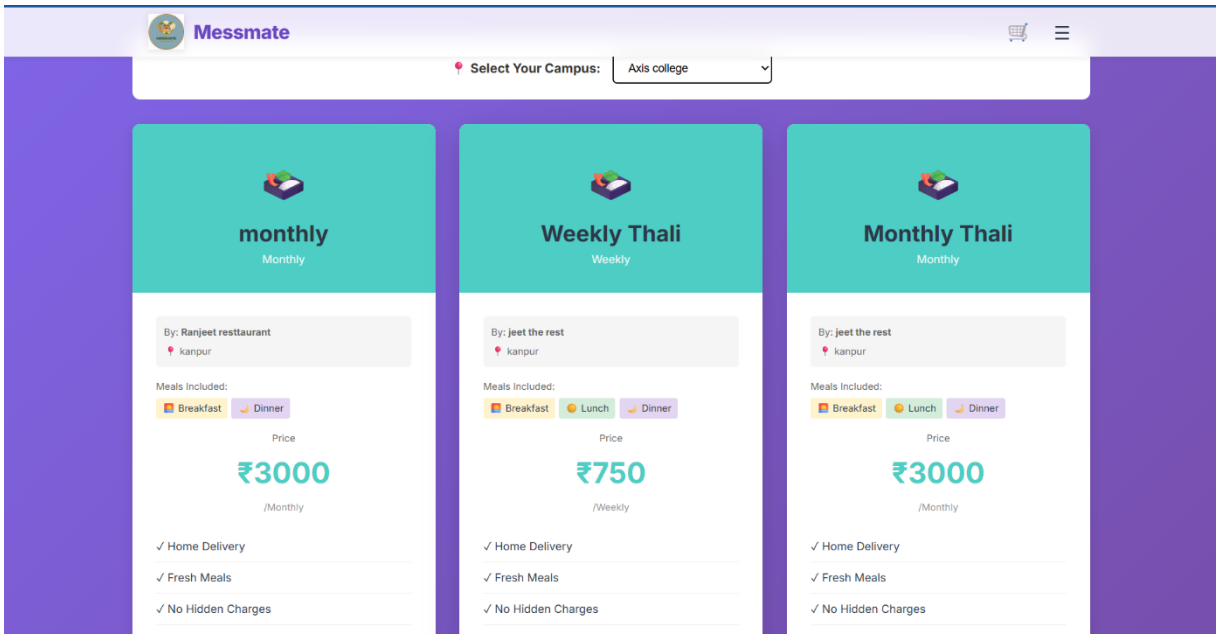
7. Expected Results and Benefits

The platform is expected to:

- Increase accessibility to hygienic and budget-friendly meals.
- Reduce time spent searching for reliable food options.
- Maintain transparency through user feedback and hygiene ratings.
- Create local job opportunities and strengthen community networks.

Performance Metrics:

Metric	Value Achieved	Description
Mess Search Accuracy	94.8% (Group 1), 93.2% (Group 2), 91.5% (Group 3)	Accuracy of displayed results based on filters (price, hygiene, distance).
Average Response Time	1.9 seconds	Time taken to load search results or booking confirmation.
Booking Success Rate	97.6%	Percentage of successful orders without failure.
Delivery Accuracy Rate	95.1%	Correct and timely tiffin deliveries.
User Satisfaction Rate	92.3%	Based on student surveys on usability, affordability, and hygiene.



8. Conclusion

The **Affordable and Hygienic Food Near College Campus** system effectively resolves the challenges faced by students in accessing clean and low-cost meals. It integrates multiple services—mess searching, booking, delivery, and employment—into a single user-friendly platform.

By incorporating real-time tracking, hygiene verification, and feedback mechanisms, the system ensures quality and transparency in food distribution. Its flexible architecture built on Node.js, MongoDB, and responsive web technologies guarantees performance, security, and scalability.

Beyond food delivery, the inclusion of local job opportunities enhances community involvement and student self-sufficiency. Overall, this project demonstrates how digital innovation can transform student dining experiences by combining **technology, hygiene, and affordability** in a sustainable manner.

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