

A PROJECT REPORT

ON

” AssistU : Recommendation Of Services For Students”



**SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE PROJECT BASED LEARNING (SE, 2nd Semester)**

OF

**BACHELOR OF ENGINEERING
IN
ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

BY

- 1. SUJAL GOSAVI (SAI&DA56)**
- 4. KAJAL JADHAO (SAI&DA65)**
- 3. MAYURI NIKADE (SAI&DA73)**
- 2. ASIM PATHAN (SAI&DA75)**

**UNDER THE GUIDANCE OF
MRS. SONALI SAWARDEKAR**



**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
DR. D. Y. PATIL INSTITUTE OF TECHNOLOGY, PIMPRI, PUNE-411018**

(2023-2024)



CERTIFICATE

This is to certify that the project report entitled “**AssistU : Recommendation Of Services For Students**” is a bonafide work carried out by **Sujal Gosavi, Kajal Jadhav, Asim Pathan, Mayuri Nikade** under the guidance of **Prof. Sonali Sawardekar** in partial fulfillment of the requirements for the subject Project Based Learning (SE, 2nd Semester) of degree of Bachelor of Engineering in Second Year Engineering from Dr. D. Y. Patil Institute of Technology, Pimpri during the academic year 2023-2024.

Prof. Sonali Sawardekar
Guide
Department of
Artificial Intelligence & Data Science
Dr. DYPIT, Pune

Prof. (Dr.) Mithra Venkatesan
Head of Department
Department of
Artificial Intelligence & Data Science
Dr. DYPIT, Pune

Prof. (Dr.) Lalit Kumar Wadhwa
Principal
Dr. DYPIT, Pune

Date:

Place:

Acknowledgements

We take this opportunity to thank all those who have contributed in successful completion of this project work. I sincerely wish to express gratitude to our Project Guide **Prof. SONALI SAWARDEKAR** for full support, expert guidance, and encouragement and kind cooperation throughout the project work. I am greatly indebted to him/her for his help throughout project work. We are also very thankful to our Head of Department for their constant support and guidance.

1. **Sujal Gosavi**
2. **Asim Pathan**
3. **Mayuri Nikade**
4. **Kajal Jadhao**

Abstract

”AssistU : Recommendation Of Services For Students ”

AssistU is an innovative project designed to simplify the lives of college students by providing a centralized platform for accessing essential services near their campus. AssistU offers personalized recommendations tailored to individual student preferences for services such as mess facilities, PG accommodations, laundry services, and medical facilities. The platform ensures the accuracy of recommendations through user ratings and feedback mechanisms, enhancing the overall user experience. By addressing the need for convenience, personalization, and reliability in service discovery, AssistU aims to save students time and effort while improving access to essential amenities. With a focus on technological integration and community impact, AssistU demonstrates a commitment to innovation and enhancing the well-being of the student community.

Contents

Acknowledgements	iii
Abstract	iv
1 INTRODUCTION	1
1.1 Domain	1
1.2 Objectives	1
1.3 Problem Specification	2
1.3.1 Motivation	2
1.3.2 Problem Specification	2
2 LITERATURE SURVEY	4
3 PROBLEM DEFINITION	8
3.1 Problem Definition:	8
4 METHODOLOGY	9
4.1 Algorithm Used	9
4.2 Software & Hardware Requirements	9
4.3 Advantages	10
4.4 Limitations	11
4.5 Applications	12
5 SYSTEM DESIGN	14
5.1 System Architecture	14
6 IMPLEMENTATION	16

7 Conclusion	17
7.1 Conclusion	17
7.2 Future Scope	17
References	19

List of Figures

5.1	AssistU:Architecture	15
-----	--------------------------------	----

List of Abbreviations

- UI - User Interface
- PG : Paying Guest
- API : Application Programming Interface
- ID: Identifier
- GUI: Graphical User Interface
- HTML: Hypertext Markup Language

Chapter 1

INTRODUCTION

1.1 DOMAIN

The domain "Student Services" encompasses a platform dedicated to catering to the diverse needs of college students. It involves offering a wide range of essential services and assistance tailored specifically to the student demographic within the campus environment. This domain focuses on providing convenience, efficiency, and personalized support to students in accessing amenities such as mess facilities, accommodation, laundry services, and medical assistance. By centralizing these services and leveraging technology like machine learning, the Student Services domain aims to streamline student life, enhance the overall campus experience, and contribute to the well-being and success of the student community.

1.2 OBJECTIVES

AssistU's primary aim is to alleviate the challenges faced by students by providing a centralized platform dedicated to accessing essential services in close proximity to their college campus. By consolidating a wide array of crucial amenities onto one user-friendly platform, AssistU endeavors to enhance convenience, streamline daily tasks, and ultimately contribute to a more efficient and fulfilling college experience for students.

Objectives:

- Simplify service discovery for students near the college campus.

- Encouraging user reviews and ratings to enhance listing credibility.
- Including more services under one platform.(PG/Hostel , Mess, Laundry, Medi-Clinics)
- Provide personalized recommendations based on user preferences using machine learning.
- Enhance the overall student experience by making essential services easily accessible.

1.3 PROBLEM SPECIFICATION

1.3.1 Motivation

The genesis of the AssistU project lies in acknowledging the myriad challenges students encounter when navigating essential services in unfamiliar environments. Recognizing the struggles students face in locating vital amenities near their college campus, AssistU endeavors to mitigate this hurdle by offering a centralized platform for streamlined access. Covering a diverse spectrum of services crucial to student life—including mess facilities, PG accommodations, laundry services, and medical facilities—AssistU aims to cater comprehensively to student needs. Its relevance to the target audience is evident in its direct response to the day-to-day challenges encountered by students. By addressing these needs head-on, AssistU emerges as an indispensable tool in enhancing student experiences, fostering efficiency, and ultimately contributing to a more seamless college journey.

1.3.2 Problem Specification

- **Accessibility:** Many students face challenges in accessing essential services near their college campus due to unfamiliarity with the local area or lack of information about available options. This lack of accessibility can lead to inconvenience and wasted time searching for services.
- **Reliability:** Students often struggle to determine the reliability and quality of service providers in areas such as mess facilities, PG accommodations, laundry

services, and medical facilities. Without reliable information or recommendations, students may end up choosing subpar or unsuitable options.

- **Personalization:** Existing platforms may not offer personalized recommendations tailored to individual student preferences, leading to frustration and dissatisfaction. Students have diverse needs and preferences, and a one-size-fits-all approach may not effectively address their requirements.
- **Data Privacy Concerns:** With the collection and storage of sensitive user data, there is a growing concern among travelers regarding the privacy and security of their information, necessitating robust measures to safeguard their personal data.
- **Feedback Mechanism:** Without a robust feedback mechanism, it can be challenging for students to gauge the credibility and trustworthiness of listed services. Lack of user reviews and ratings may result in uncertainty and hesitation when selecting service providers.

Chapter 2

LITERATURE SURVEY

1. Title :SmartLaundry: A Real-Time System for Public Laundry Allocation in Smart Cities

In this paper, a design for a real-time system is presented, aimed at better balancing loads across machines in internet-connected public laundries within smart cities. The design comprises three processing units: a data acquisition module, a forecasting module, and a real-time recommendation module. Users interact with the system via a mobile application to access real-time data. A data-driven approach is provided for forecasting device utilization based on data logs recorded by sensors attached to devices. An algorithm is proposed for selecting a list of suitable machines from all public laundry centers to prevent inefficient utilization, utilizing real-time device status and forecasted data for load balancing. Both traditional machine learning algorithms and a deep learning approach are employed for forecasting, demonstrating the potential of leveraging such data. A simulation of the system's interaction is created as a proof of concept.

[1]

2. Title: Development of a Web Application to Track the Food Quality and Service in the Hostel Mess.

In this paper, a Django-based web application is introduced to address the communication gap between students and the mess committee regarding cam-

pus canteen meals. The application facilitates students with food allergies to access ingredient information, helps international students familiarize themselves with local cuisine, and enables hostel residents to review the mess menu for informed meal decisions. Through a feedback mechanism, administrators can monitor and respond to user suggestions, aiming for continuous improvement. The app allows college students to rate food quality, service, and hygiene, while also providing a platform for suggesting improvements and reporting issues. This work aims to empower students to make informed food choices and provides a channel for mess administrators to address consumer concerns effectively. Additionally, the application assists parents in monitoring the menu, providing recommendations, and offering feedback on meal nutrition and quality for hostel-residing students. [2]

3. Title: Development of a Mobile-Based Hostel Location and Recommendation Chatbot System.

A hostel location-based chatbot integrating a recommendation system offers personalized hostel accommodations for students. This cross-platform application employs various technologies for accessibility. Its performance is evaluated through user ratings on criteria like loading speed, user-friendliness, interface appearance, platform compatibility, and recommendation accuracy. The chatbot enhances user experience by understanding preferences, alleviating the burden of hostel selection, and saving time. It operates autonomously, eliminating the need for manual recommendations. Future enhancements may include advanced language comprehension and multilingual support. Overall, the system optimizes user engagement, streamlining hostel search processes, and improving efficiency at educational institutions. [3]

4. Title : On-campus university student housing facility services prioritisation framework

This paper tackles the challenge of prioritizing services within student housing facilities (SHFs) while contending with budget constraints. It introduces a framework designed to prioritize facility services based on student needs,

distinguishing between essential and non-essential services. This framework serves as a valuable

tool for facility managers, developers, and policymakers to allocate resources effectively. Essential services highlighted in the framework include electricity, water, security, internet, cleaning, maintenance, generator, ventilation/fan, health, electric sockets, study furniture, refuse collection, pest control, fire extinguisher, catering service, and lift (for high-rise buildings). Ensuring the provision of these fundamental services is critical for enhancing student well-being and academic performance within on-campus SHFs. By prioritizing these services, stakeholders can optimize resource utilization and meet students' expectations without compromising on value. This framework contributes to bridging the gap in understanding the unique service requirements of SHFs in universities, offering practical insights for the management and development of these facilities. Ultimately, it aims to support the provision of a conducive environment for students to thrive academically and personally within their residential settings.

[4]

5. Title: Nutritional Adequacy and Dietary Diversity of Food Served in Hostel Mess - Around of University Campus.

In this paper, a study conducted in Naini, Allahabad, examined the nutritional adequacy and dietary diversity of food served in hostel messes around the university campus. Using survey methods, residents' preferences for food items were assessed, revealing a dislike for vegetables but a preference for fast food. Nutritional analysis indicated high energy from cereals, protein from pulses, and fat from fats/oils in the mess food. Observations on sanitation and hygiene practices showed a significant use of mineral water for cooking and drinking. Additionally, findings highlighted variations in utensil washing methods, raw material sourcing, vegetable freshness, food service modes, kitchen cleaning practices, and waste management. Recommendations for improving meal nutrition included leaflet provision. The study underscores the importance of

ensuring nutritional adequacy and hygiene standards in hostel messes to promote the health and well-being of residents. [5]

6. Title: Online Student Services: Current Practices and Recommendations for Implementation

Recommendations for planning and development of online student services based on a review of the literature on research conducted in a variety of college settings. Focus topics include the institutional website, help desks and information centers, student orientation, academic support, and library services. Student services support students in both their academic pursuits (e.g., virtual access to libraries, tutoring options, and writing center availability) and engage students as part of the college community, with access to social and institutional governance activities. Online student support can and should offer distant learners opportunities to engage with the college at all levels. Research and current model practices indicate engagement is possible and practical, but it takes careful planning and active leadership to put viable support services in place and maintain them over time. Continued study of the services necessary and case study reports of successful implementation of these services is recommended.

[6]

Chapter 3

PROBLEM DEFINITION

3.1 PROBLEM DEFINITION:

- Students often struggle to locate essential services near their college campus due to fragmented information sources and lack of centralized platforms. This results in wasted time and effort, as students navigate through various channels to find suitable options for mess, accommodation, laundry, and medical facilities.
- Traditional methods of suggesting services lack personalization, often providing generic recommendations that may not align with individual preferences and requirements. Addressing this challenge requires a system capable of understanding and adapting to the diverse needs and preferences of students, ensuring relevant and tailored suggestions.
- With the abundance of information available online, students face difficulties in discerning the credibility and reliability of service providers. Assuring the accuracy of recommendations is crucial to build trust among users, necessitating mechanisms to validate service quality and incorporate user feedback effectively for continuous improvement.

Chapter 4

METHODOLOGY

4.1 ALGORITHM USED

Proposed Algorithm

1. Step 1: User input: User selects a service category (e.g., PG/ hostel).
2. Step 2: Filter services: Apply content-based filtering based on user input and service descriptions.
3. Step 3: Rating : Rank the filtered services based on a combination of content-based filtering scores, considering user preferences and other factors (e.g., ratings, distance).
4. Step 4: Recommendation: Present the top X services to the user with explanations (e.g., "This Mess is close to campus and popular among your peers").
5. Step 5:Personalization: Allow users to adjust recommendation parameters.
6. Step 6:Feedback loop: Integrate user feedback (ratings, reviews) to improve recommendations over time.
7. Privacy: Ensure data privacy and security for user and service information.

4.2 SOFTWARE & HARDWARE REQUIREMENTS

- Software Requirements:

Operating System: The software should be compatible with popular operating systems such as Windows, macOS, and Linux.

Web Development Tools : Such as HTML, CSS, JavaScript for front-end development.

Back-end Development Framework : Django, Flask (Python), Node.js (JavaScript).

Database Management System (DBMS) : MySQL for storing user data and preferences.

Machine Learning Libraries : NumPy , Pandas, Mat-Plotlib and Seaborn

Version Control System : Git for collaborative development and managing code versions.

Integrated Development Environment (IDE) : Visual Studio Code, PyCharm for coding and debugging.

Web Server : Apache for hosting the web application.

- **Hardware Requirements:**

Server Infrastructure: If the project involves server-side components, you'll need suitable hardware for hosting the application. This could be physical servers or virtual machines.

Internet Connectivity: Reliable internet connectivity is essential, especially if the application relies on real-time data or cloud services.

4.3 ADVANTAGES

- **Enhanced User Experience:** AssistU offers a seamless and intuitive interface, enabling students to effortlessly navigate through the platform and discover essential services near their campus. Through personalized recommendations, students receive suggestions that resonate with their specific preferences and requirements, enhancing their overall satisfaction and usability of the platform.
- **Time Efficiency:** By streamlining the process of finding campus services, AssistU significantly reduces the time spent by students on searching for mess, accommodation, laundry, and medical facilities.

- **Convenience:** AssistU serves as a one-stop solution for students' service needs, offering a convenient way to access essential campus facilities with just a few clicks. Whether it's locating a nearby laundry service or finding suitable PG accommodations, AssistU simplifies the entire process, eliminating the hassle and stress associated with navigating unfamiliar environments.
- **Accuracy and Relevance:** Leveraging advanced machine learning algorithms, AssistU ensures the accuracy and relevance of its recommendations by analyzing user data and preferences. By continuously learning from user interactions and feedback, AssistU fine-tunes its suggestions to match individual user needs effectively, thereby enhancing the overall satisfaction and utility of the platform.
- **Community Engagement:** AssistU fosters a sense of community among students by providing a platform for sharing experiences and recommendations. Through features such as user reviews and ratings, students can contribute valuable insights and feedback, creating a collaborative environment that benefits the entire student community.

4.4 LIMITATIONS

1. **Dependency on User Input:** The accuracy and relevance of recommendations in AssistU heavily rely on the quality and consistency of user input. Inaccurate or incomplete user preferences may lead to suboptimal suggestions, diminishing the overall effectiveness of the platform. Ensuring comprehensive and reliable user input poses a challenge, as it requires active participation and engagement from the student community, which may not always be consistent or uniform.
2. **Limited Coverage:** The effectiveness of AssistU is contingent upon the availability and diversity of service options near the campus. In areas with sparse service providers or limited choices, AssistU may struggle to provide comprehensive recommendations, leaving students with fewer alternatives and potentially compromising their satisfaction with the platform. Addressing this limi-

tation necessitates collaboration with local businesses and service providers to expand the coverage area and diversify service offerings.

3. **Bias in Recommendations:** Machine learning algorithms employed by AssistU may inadvertently introduce biases into the recommendation process, potentially skewing suggestions based on factors such as demographic information or historical data patterns. These biases can lead to unfair treatment or discrimination, particularly if not identified and mitigated proactively. Ensuring fairness and impartiality in recommendations requires continuous monitoring and refinement of the underlying algorithms to minimize the impact of biases on user experiences.
4. **Adaptation to Changing Preferences:** Student preferences and service availability are dynamic and subject to change over time. AssistU must continuously adapt to these evolving preferences and market conditions to provide relevant and up-to-date recommendations. This necessitates regular updates to the platform's algorithms and data sources, as well as proactive monitoring of user feedback and trends to ensure that recommendations remain accurate and reflective of current needs and preferences within the student community. Failure to adapt promptly may result in outdated or irrelevant suggestions, diminishing the utility and value of the platform for users.

4.5 APPLICATIONS

- **College Campuses :**

Streamlining access to essential services for students, including dining, housing, medical care, and academic resources.

- **Urban Areas :**

Assisting residents and visitors in navigating services in student-centric urban zones with multiple colleges.

- **Tourism and Travel :**

Offering personalized recommendations for tourists in unfamiliar locations, covering hotels, restaurants, attractions, and transportation.

- Corporate Campuses :

Facilitating employee access to services within large corporate campuses, encompassing dining, fitness, transportation, and amenities.

Chapter 5

SYSTEM DESIGN

5.1 SYSTEM ARCHITECTURE

AssistU's architecture seamlessly blends client-side interface and server-side infrastructure. Users interact with a user-friendly web or mobile interface, inputting preferences and exploring recommendations. The server manages data processing and recommendation generation, leveraging web development technologies and machine learning algorithms. User data, service provider information, and feedback are stored centrally, enabling efficient retrieval and processing. Machine learning models analyze this data to generate tailored recommendations, continuously refining suggestions based on user interactions. This setup ensures AssistU provides accurate, relevant, and up-to-date recommendations, simplifying the discovery of essential campus services for students and enhancing their overall experience with convenience and efficiency.

1. Users input preferences for campus services via web or mobile interface.
2. Server processes user preferences, service provider info, and feedback.
3. Machine learning algorithms analyze data to generate personalized recommendations.
4. Recommendations presented to users for browsing and exploration.
5. Machine learning continuously updates recommendations based on user feedback, ensuring accuracy and relevance.

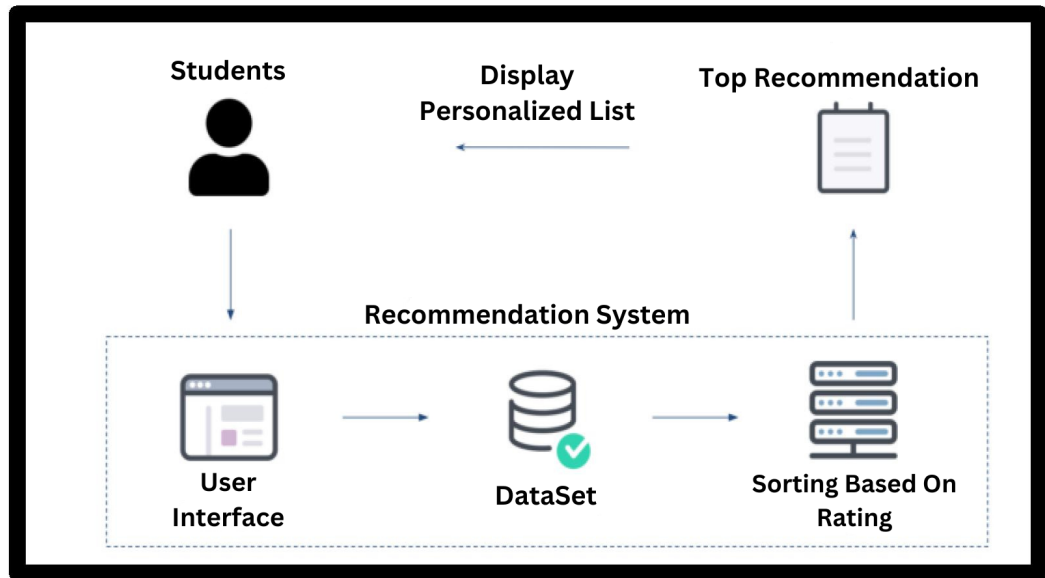


Figure 5.1: AssistU:Architecture

Overall, AssistU streamlines the discovery of essential campus services through personalized recommendations, enhancing convenience and efficiency for students.

Chapter 6

IMPLEMENTATION

1. **User Interface Development:** Develop intuitive web and mobile interfaces for users to input preferences and access recommendations easily.
2. **Backend Infrastructure Setup:** Establish a robust backend infrastructure to handle data storage, processing, and recommendation generation.
3. **Database Management:** Implement efficient database management systems to store user preferences, service provider information, and feedback securely.
4. **Machine Learning Integration:** Integrate machine learning algorithms to analyze user data and generate personalized recommendations for campus services.
5. **User Feedback Mechanism:** Incorporate feedback mechanisms such as ratings and reviews to gather user input and improve recommendation accuracy.
6. **Continuous Improvement:** Implement processes for continuous refinement of recommendations based on user interactions and feedback.
7. **Quality Assurance:** Conduct rigorous testing to ensure the reliability, accuracy, and usability of the platform across different devices and scenarios.
8. **Community Engagement:** Promote community engagement by encouraging users to contribute feedback, share experiences, and participate in improving the platform's effectiveness.

Chapter 7

Conclusion

7.1 CONCLUSION

In conclusion, the AssistU project has been a transformative journey, enriching our understanding and refining our skills in areas such as web development, machine learning integration, and user experience design. Through collaborative efforts, we have successfully created a platform that simplifies service discovery for college students, saving them valuable time and effort. As we reflect on our achievements, it is clear that AssistU has empowered us to think innovatively about improving student life and addressing real-world challenges. Our project may have started as a concept, but it has the potential to make a meaningful impact on the college community by offering a valuable resource for accessing essential services. Despite encountering challenges along the way, we approached them with resilience and creativity, turning obstacles into opportunities for growth and improvement. As we look to the future, we are excited about the possibilities of further refining AssistU and making it an indispensable tool for students everywhere.

7.2 FUTURE SCOPE

1. Integration of Emerging Technologies: Exploring AR or VR to enhance user engagement through immersive experiences.
2. Expansion to New Markets: Targeting demographics beyond college cam-

puses, such as high school students, young professionals, and tourists.

3. Enhanced Personalization: Utilizing advanced machine learning and data analytics for personalized recommendations based on contextual factors.
4. Partnerships and Collaborations: Forming alliances with local businesses and stakeholders to support expansion and foster community engagement.

References

- [1] Raluca Laura Portase, Ramona Tolas, and Rodica Potolea. Smartlaundry: A real-time system for public laundry allocation in smart cities. *Sensors*, 24(7):2159, 2024.
- [2] Pooja Gaidhani, GS Varsha, Netal Agrawal, Amarja Pote, and Jayshree Pande. Development of a web application to track the food quality and service in the hostel mess. In *2023 4th IEEE Global Conference for Advancement in Technology (GCAT)*, pages 1–6. IEEE, 2023.
- [3] Folasade Olubusola Isinkaye, Imran Gbolahan AbiodunBabs, and Michael Tobi Paul. Development of a mobile-based hostel location and recommendation chat-bot system. *Int. J. Inf. Technol. Comput. Sci*, 14:23–33, 2022.
- [4] Fredrick Simpeh and Winston Shakantu. On-campus university student housing facility services prioritisation framework. *Facilities*, 38(1/2):20–38, 2020.
- [5] Singh Shipra, Paul Virginia, and Srivastava Pratistha. Nutritional adequacy and dietary diversity of food serve in hostel mess-around of university campus. 2020.
- [6] Tabitha L Bailey and Abbie Brown. Online student services: Current practices and recommendations for implementation. *Journal of Educational Technology Systems*, 44(4):450–462, 2016.