International Journal for Multidisciplinary Research (IJFMR)

Campus-Nest: Collaborative and Productive Solution for Corporates

Mr. Satyam Kendre¹, Mr. Aditya Pahariya², Mr. Avdhut Bhakare³, Mr. Parth Malvi⁴, Prof. Anita Gunjal⁵

Dept of Computer Engineering and Technology, Dr. Vishwanath Karad MIT World Peace University Kothrud, Pune, Maharashtra, India

Abstract

Finding safe and affordable accommodation is one of the major concerns for the students moving to new city for education. Existing rental application often lack property verification, frauds and broker- related issues. CampusNest addresses there issues through a student centric rental application which features role based access control for Admin, Owner, Student and Verifier. A major upgrade is verifier role, which ensures every property which is listed, should be physically verified before being made visible to student. The application is developed using technologies like React.js, Node.js, Chakra UI, and SQL, providing and secure and responsive user experience. CampusNest platform not only makes property search easy but also enhance trust and safety in student.

Keywords: Student accommodation, Verified property rental, Role-based system, Web application, Property verification

I. INTRODUCTION

Every year thousand of students move from there hometown for study in college in different cities. One of the biggest and major issues for these students is finding sage and affordable accommodation near their college. Most of the existing property rental platform are designed for families or working professional and these platforms are not focused on student. These property rental platforms often consist of outdated, misleading or fake property listings. Student may also be forced to depend on the broker, which can increase costs and bring risk of fraud or scam. Therefore, we came up with the idea of CampusNest- a platform specifically for students. It aims to provide a trusted and user friendly. Environment for renting properties. Campusnest uses role based access control where each user type (Admin, Owner, Student, ansVerifier) has specific permission and responsibilities. Additionally, many students lacks local contacts in new city, which makes it even harder to assess the authenticity of a rental. Campusnest bridges this gap by offering a transparent and community driven solution for student and making there accommodation easy in new cities.

II. Literature Review

1. User-Centric Online Rental Platform: Enhancing the Traveler Experience



Introduces a innovative project called Visitly. It is designed to transform the online rental property platforms. Authored by a team from Chandigarh University, the documents outlines the primary aims of Visitly, which is to address key challenges faced by the renters and property owners.

Visitly focuses on providing more efficient and user friendly platform that allows renters to find property that matches their preferences while enabling property owners to showcase there property. This platform uses advance feature such as 360-degree virtual tours, enhance map integration, and secure authentication processes to build trust and enhance user experience. The document also seeks into the limitation of current rental platform and the need for solution that offers comprehensive and engaging property information. By focusing on the user experience transparency and innovation. Visitly aims to improve the condition between renter and landlord in digital space.

The Visitly project identifies significant research gap within the online property rental market which need to be addressed. Traditional property search methods lacks comprehensive and engaging information. They typically depends on images and limited details which fails to capture the true essence of the rental property. There is a huge gap in user experience, as existing platforms do not used advance technologies such as virtual reality (VR) and augmented reality (AR), with many platforms lacking robust authentication and verification processes, which results in a trust deficit between renters and property owners, which can ultimately lead to scams. current platforms neglect community engagement features that promote interaction among renters, property owners, and local communities, missing the opportunity to cultivate a sense of trust and satisfaction amongst users. Lastly, there remains gap in effectively integrating technologies, such as artificial intelligence (AI). By addressing these gaps, Visitly aims to create a more effective, secure and user friendly rental platform.

2. Real Estate Market in the Digital Age: A Review of Technology Trends and Advancements

Provides a overview of how advancements in technological are transforming the real estate industry, especially in India. The document highlights the importance of advancement in technology in real estate and marketing and transaction processes. It focuses on various stakeholders such as real estate market, including developers, builders, agents and government authorities.

The paper discusses on the dynamic nature of the real estate sector, it has huge contribution to the country's GDP, while also addressing current challenges such as pricing structure and the high dependency on real agent. It increases the need for the industry to embrace modern solution for such *problem, including virtual tours,* augmented reality, and digital property listings, which improves the efficiency and transparency in real estate. Overall, the review presents a analysis of key studies that explore the impact of technology on real estate, innovation and a shift towards a more tech-driven market can create a good user experience.

There are several research gaps in the technology adoption within the real estate market. While the study often focus on technologies such as augmented reality (AR) and virtual reality (VR).

There is lack of investigations into the integration of multiple technologies, like combining VR

With bigdata analytics, to enhance property valuation and marketing. There is a need for more quantitative analyses which can measure the actual impact of these technologies on sale processes,



E-ISSN: 2582-2160 • Website: <u>www.ijfmr.com</u> • Email: editor@ijfmr.com

pricing accuracy, and overall market efficiency. While some studies address the obstacles faced by augmented reality (AR) and virtual reality (VR) technologies, there is not sufficient exploration of the socio-economic that impede adoption. The behavioral economical aspect, which consider the psychological factor which can affect buyers decision in relation to technological usage, which is not fully explored, which indicates the necessity for the research to uncover how these technologies. Finally it is important whether the current technologies used in real estate will be useful and effective in long term usage, because the technology is changing rapidly. Filling these gaps can help real estate to work more efficiently and help understand how technology impact the industry.

3. Design and Development of Smart House Rental Management System

The research paper addresses the challenges that are faced in managing rental properties manually, which often involves a lot of paperwork and risks of losing data or damage. The study gives more importance to the need for an efficient, automated system that will simplify the management process for landlords and property managers. The proposed system has a user-friendly interface that will allow easy access to functions such as house type managing, property listings, information of tenant, payments, and etc, it thereby improves operational efficiency and securing the data in rental management. The development aims to streamline rental activities, reduce workload, and enhance overall effectiveness of management through modern technological solutions.

The research gaps in this study has a primary focus on the limitations of present manual and traditional rental management processes, which are very time consuming, consisting lots of errors, and vulnerable to data loss or mismanagement. While old systems have incorporated various features such as online posting and communication tools, there remains a lack of comprehensive, integrated solutions that streamline all aspects of rental management including information of tenant, payments, reports, and user management. within a single platform which is user friendly. Additionally, many existing systems do not give enough focus to security of data, ease of use, and automation, which are important for enhancing efficiency and reducing administrative burdens on landlords and property managers. The gap also involves the limited use of modern web technology that can provide real-time updates, fast data handling, and being scalable. This research aims to cover these limitations by developing an integrated, accessible, and secure rental management system that serves to the evolving needs of managing property, using the latest technology to improve usability and operational efficiency.

4. BlockHouse: A Blockchain Based Smart Contracts Tool for Housing Rental

The research presents a solution that is new and focuses on rental housing market challenges through blockchain technology. It introduces BlockHouse, which is a platform available on both web site and mobile applications, and is designed to make transparency, security, and efficiency better in managing transactions of rent between landlords and tenants. By using blockchain's decentralized nature and smart contracts, BlockHouse automates contract execution, payment handling via integrated e-wallets, and contract management, reducing the need to rely on intermediaries and minimizing disputes. The system has been tested in real-world settings, specifically in Ho Chi Minh City, demonstrating satisfactory performance. The paper also includes BlockHouse with related work on blockchain applications in real estate and management of rental systems, it highlights the detailed addition of blockchain, smart



contracts, and cloud services to provide a rental management system that is scalable and friendly to users. the plans in future include expanding BlockHouse's functions to other rental services other than housing.

The research gaps identified in the blockchain-based rental management system have a primary focus on the need for fully integrated, friendly to user platforms that contain blockchain, smart contracts, and cloud computing while addressing the real life challenges faced by tenants and landlords. Existing studies and prototypes have shown the likely outcome and benefits of using smart contracts to making the rental agreements automatic and increase transparency. However, many solutions lack detailed features such as fast payment addition, accessing multiple platforms, and scalable cloud support. Moreover, old works mostly focus on specific aspects like preventing fraud or IoT addition but do not provide an end-to-end system that makes the entire rental process simple from property listing to contract execution and payment management. BlockHouse addresses these gaps by offering a cohesive platform with a user-friendly interface for both web and mobile users, incorporating automated rent calculations, smart contract management, and integration with popular e-wallets to facilitate transparent financial transactions. This holistic approach aims to overcome limitations related to usability, scalability, and real-world applicability, setting a new benchmark for blockchain-based rental systems.

5. Design and Development of Smart House Rental Management System

The research paper presents a research study focused on facing the challenges involved in rental properties management, traditionally done through time consuming manual processes that can cause in losing data and are not effecient. The study focuses on the need for a digital system that makes rental property management simple for landlords and property managers by reducing paperwork and securely storing sensitive information. The proposed system features an interface that is easy to use where, after user logs in, a dashboard is seen that displays options such as House Type, Houses, Tenants, Payments, Reports, and Users. This organization aims to streamline tasks like managing tenant information, payment of rent, and property listings, ultimately improving the overall rental management process in today's modern societyWhile these studies contribute significantly to individual aspects of task coordination, bug tracking, and automation, none provide a holistic platform that unifies task management with build tracking, QA validation, and version control. Existing tools like Jira, Asana, and Trello mainly automate task tracking but lack the structured verification, build tracking, and comprehensive reporting mechanisms required for high-efficiency corporate workflows. CollabSpace addresses these identified gaps by offering an integrated, all-in-one platform for enhanced productivity. The research gap identified in the study comes from the relying continuously on manual, paper-based methods for managing rental properties, which leads to inefficiencies, data loss, and increased workload for landlords and property managers. even though various digital solutions are available, many existing systems lack detailed features that address all aspects of rental management, including tenant applications, rent collection, maintenance tracking, user account management, and reporting within a unified platform. Additionally, old systems often do not provide a user-friendly interface or automatic functions that streamline the process and reduce manual errors. This study aims to fill these gaps by developing an integrated, automated Home Rental Management System that is easy to use, secure, and capable of handling many management tasks efficiently, thereby making better operational effectiveness and simplifying the rental process for stakeholders



III. Research Methodology

To develop CampusNest, we used a systematic approach that started with understanding the real problems faced by many students. We took informal interviews and surveys to gather information from potential users. These discussions helped us identify the pain points in current property rental systems. Based on this feedback, we used Figma to design a interface that is friendly to users and that would be easy for students to navigate. The frontend of the application was built using React.js because of its component-based structure and performance advantages. we used Chakra UI for styling as it provided ready-to-use components that are responsive and visually appealing. For the backend, we used Node.js with the Express.js framework to handle server-side operations and build REST APIs. Data storage was handled by a SQL database to ensure secure, reliable, and organized management of user data, listings, and verification reports. Each role in the system has specific access rights—admins manage verifiers and listings, owners post properties, verifiers approve them, and students browse verified listings. This structured approach improves security, usability, and trust.

IV. Problem Description

The main issue being tackled by CampusNest is the lack of a secure and student-friendly rental property system. Students, especially those moving to new cities, face many challenges while looking for houses. These challenges include unverified or fake listings, high brokerage, properties that are not safe, and difficulty in contacting property owners directly. Existing rental platforms do not provide specifically to the needs of students. CampusNest solves this by providing a secure and reliable system where all properties go through a verification process. The system is structured with clear roles and responsibilities.

Key Notations:

- U = User (Student)
- O = Owner (Person who lists a property)
- A = Admin (System manager)
- V = Verifier (Checks physical existence and safety of a property)
- P = Property (Rental listing)
- S = Status (Pending, Verified, Rejected)

Relationships:

- Owners can list multiple properties.
- Admin assigns verifiers to properties.
- Verifiers approve or reject listings.
- Students can only see verified properties for safety reasons.

V. Problem Approach and Justification

To solve the issues with effective, we used a system architecture that is role-based where every user type has different functions and limitations. This causes less errors and makes the platform more secure and reliable. We selected modern web development technologies to ensure the system runs smoothly, loads



quickly, and can handle many users at once. React.js allows for building fast and modular user interfaces, which are perfect for student interactions. Node.js and Express.js provide a reliable backend that supports REST APIs for efficient communication between the frontend and database. A database of SQL was used for structured and secure storage of users, listings, and verification details. Chakra UI was selected for its ease of use, responsiveness, and clean look. The unique addition of a Verifier role ensures that every property is physically checked before students can view it. This builds a trustworthy environment and distinguishes CampusNest from general rental platforms.

Assumptions (Mathematical)

- All properties are initially marked as unverified (S = Pending).
- A property must be verified by one assigned verifier (V) before being shown to students.
- Students can only view properties with status S = Verified.
- Admin assigns exactly one verifier per listing.
- Verified properties are assumed to be more likely to be rented.

VI. Analysis and Discussion

To determine the efficiency, accuracy, and scalability of CampusNest, we conducted deep technical assessments and user-centric testing. With regards to technical analysis, we executed a dry run using Apache Jmeter to simulate the 100 user per second mark. The results showed that the back-end infrastructure is positioned to withstand a high traffic volume with low latency and minimal system errors, which guarantees better optimized controlled growth.

For database evaluation, we tested SQL-Backend with an excess of 500 synthetic property datasets to evaluate the data consistency and accuracy of updates without changes that are cross check to the query operation records. The system stability stamp is redundant with its proven reliability during high read and write activities asserting structural advancement and dependable backend framework.

To capture the user experience, we initiated beta testing with a pool of 30 students form different colleges. During the testing phase, the students were able to create accounts and perform listing, reviewing, and lodging actions, giving them access to all features of role administrators, owners, checks and students. The overwhelming feedback for the system was focused on positive responses.

Compared to competing services like OLX or MagicBricks, 83% of users said that CampusNest is is considerably more user friendly.

The verification feature:

The user interface, built using Chakra UI, was recognized for its simplicity, transparency, and user-friendly navigation.

Chakra: This UI-crafted user interface is renowned for its clarity, simplicity, and ease of use. All of the main modules functioned as planned throughout the testing process. Small concerns like incorrect role



access and notification problems were quickly noted and fixed. This shows how maintainable the system is.

Furthermore, we monitored essential usability metrics such as:

- Session length, indicating high user involvement.
- The rate of task completion, which validated intuitive design.
- The occurrence of errors, which stayed low after debugging.
- In general, the examination verifies that CampusNest:
- Fulfills its commitment to a secure, role-based, student-centered platform.
- Delivers technical scalability and durability via a contemporary web stack.
- Establishes user confidence via validated listings, distinguishing it from typical rental platforms.

This evidence demonstrates that CampusNest is a well-rounded, technically solid, and user-approved platform that successfully addresses the housing challenges faced by students.

VII. Comparative Analysis

AnalyzingCampusNest reveals that, in addition to existing rental platforms such as OLX, MagicBricks and NoBroker, Campus Nest appeals to some important gaps not considered in the demographics of students, particularly those of their mainstream services.

Many conventional platforms cater to a wide range of users, such as working individuals, families, and property owners, yet they do not offer features tailored specifically for students. For example, OLX and MagicBricks provide a wide range of property listings but frequently do not have organized verification processes. This leads to a significant likelihood of deceptive or false listings—an issue that particularly impacts students who are not familiar with new cities. NoBroker seeks to provide a degree of verification; however, it is constrained and not consistently clear to users CampusNest tackles these issues through three unique features:

- **Human Verification Layer**: A committed Verifier role conducts physical inspections of properties prior to approval. This phase establishes an essential level of confidence and significantly minimizes the likelihood of fraud or misleading advertisements.
- **Role-Based Access Control:** In contrast to general-purpose platforms, CampusNest specifies unique user roles—Student, Owner, Verifier, and Admin—where each role has well-defined responsibilities. This organized access enhances platform management and minimizes abuse
- **Student-Centric Design:** The user interface, created using Chakra UI, is designed for ease of use, clarity, and mobile adaptability—qualities especially appreciated by student users

Furthermore, CampusNest removes the necessity for brokers, allowing direct communication between students and landlords. This not only reduces excessive fees but also enhances transparency and oversight of the rental process



In summary, although general platforms provide a broader market access, CampusNest offers a specialized, secure, and reliable experience for students. Its unique functionalities and verification-focused method establish a new benchmark for student housing platforms, providing a creative and efficient alternative to the current rental landscape

VIII. Validations

The validation of CampusNest was achieved with a blend of checking technologies, simulations, and real care feedback to ensure that the system accomplishes its goals and functions in practice. From a technical point of view, facility testing for performance with Apache JMeter was used where user interactions were simulated to determine if they could perform system load controlling tasks, which the system performed adequately with over 100 queries concurrently served with low response times indicative of system scalability and improved resource utilization. Furthermore, simulations were performed using a system such as setting up more than 500 characteristic lists to test the responsiveness and dependability of backend database metadata elements. Invocation of configured processes and updates was immediate and exactly as promised, which guarantees the reliability of the backend system. A beta test was done by the User Resort with 30 students where the students had full function access such as administrators, owners, verifiers, and students which granted them the authority to perform, among other, registration, real estate listing, approval listing, and accommodation search. Her comments were mostly positive about, as an example, overall system usability and the trust assuring verification provided. Approximately 90% of users consider themselves more secure than the popular platform. These diverse validations ensure that campus nests are both technically robust and easy to use, setting high benchmarks for the future development of student residences.

IX. Limitations

While Campus Nest offers numerous benefits and new age features, already existing implementations have optimized issues that need to be addressed. To begin with, the platform does not yet support mobile devices. Given that a majority of students use smartphones for internet access, the lack of mobile applications limits convenience and accessibility. Furthermore, the validation step is done by an administrator. This may lead to bottlenecks when there is a surge in real estate listings. The use of location and availability algorithms for automation can improve the task's efficiency greatly. Additionally, CampusNest is currently focusing on a region around the institution. This strategic focus, however, limits him to students who are already interested in internships and employment opportunities elsewhere. Furthermore, the system does not include a customized recommendation feature that would suggest properties based on preferences such as rent value, distance, amenities, and previous searches. This greatly reduces the dynamism of the platform and its ability to adapt to the needs of its users. Besides, the lack of an online payment system or rental contracts significantly limits the scope of digital rental management, which is a critical feature boosts convenience. Instead of viewing these constraints as roadblocks, they can be approached as opportunities for it's further development. existing implementations lack online rental contracts or payment integration, which are crucial for comprehensive digital rental management. These constraints are not hindrances, but instead chances for development. Future iterations will enhance platform functionality while also boosting reach and



effectiveness. CampusNest serves as a strong base for addressing student rental challenges, yet automation, personalization, and accessibility are crucial for sustained success.

X. Contributions and Implications of Research

This project have made several important contributions. It has delivered a complete rental system which focus only on students, which is not common in existing platforms. It presents the unique role of a verifier, adding trust and safety to every property listing. It abolish the need for broker, which makes the process more simple, direct and cost-effective for students. From a research and development point of view, this project shows how role-based access, verification processes, and modular design can work together to build a reliable digital solution. In the future, this model could be extended to support working professionals, interns, or staff who also face housing issues.

XI. Conclusion

CampusNest focuses on a significant problem that a lot of students face that is finding safe, affordable, and verified properties that are available on rent near their colleges. Through the implementation of a unique property verification system, role-based access control, and the use of modern web technologies, the platform offers a secure and reliable solution. User testing and feedback confirmed that the platform is usable and trustworthy, and students are expressing high levels of satisfaction. The backend also demonstrated that it is very scalable, ensuring that the platform can handle a growing user base. CampusNest has the potential to become a go-to platform for students seeking accommodation, thanks to its innovative features and strong focus on security.

This research shows that by focusing on the specific need of students, we can create more effective, user-friendly solution in the housing sector. The platform's successful implementation shows the importance of better options in addressing real-world problems. Moreover, CampusNest stands as a testament to how technical solutions can be guided by social .needs—bridging the gap between technology and user-centric design. It also helps in further innovation in the student services domain, opening various opportunities for future developers to build platforms that serves to the educational ecosystem. With the proper institutional support, promotion, and continious development, CampusNest could grow into a sercive that is used across universities and educational institutes. It reflects how a secure architecture and design that is empathy driven can work hand in hand to solve meaningful problems for a specific community.

XII. Future Scope

CampusNest has made good progress in providing a reliable rental platform for students but there are still some important points that can be improved in the future One of the important point is development of a mobile application to enhance accessibility and ease of use, particularly for users who mainly depend on smartphones to view online services. Another main goal is to expands the platform's reach by including more geographic regions, with the future outlook of making CampusNest available nationwide and potentially internationally. Improving the verification system is also a focus on automating the assignment of verifiers based on their location and current availability could help make the process faster and more efficient. Additionally, implementing an AI-based recommendation system will allow the



platform to give more suggestions that are personalized and will also help students find properties that closely match their specific needs, such as price, location, and features of property. Further we are considering to add a secure system in the campsunest application. It will help users to complete the full process of renting a property within campunest, from searching to complete payment, which will make it a complete solution. These future improvements will increase the overall usability, user experience and the value of the platform for the students.

XIII. References

[1] Wu D, Zeng G, He D, "Task Coordination Organization Model and the Task Allocation Algorithm for Resource Contention of the Syncretic System."

[2] Li J., Qin R., Wang F.-Y., "The Future of Management: DAO to Smart Organizations and Intelligent Operations."

[3] Tuna E., Kovalenko V., "Bug Tracking Process Smells in Practice."[

4] Moharil A., Orlov D., "Between JIRA and GitHub: ASFBot and its Influence on Human Comments in Issue Trackers."

[5] Dong Y., Xu G., "A High-Efficient Joint Cloud-Edge Aware Strategy for Task Deployment and Load Balancing."