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Student Healthcare Management System and Tracker

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ABSTRACT : In the dynamic context of a college campus, students encounter numerous challenges, encompassing academic rigor and intricate social dynamics. Amidst these diverse facets of college life, the often-neglected aspect is the holistic well-being of students, spanning both physical and mental dimensions. To address this pivotal concern, we introduce the "Student Healthcare Management System and Tracker" – a comprehensive Android application meticulously crafted to meet the distinctive needs of college students. This Android app serves as a supportive framework, empowering students to proactively manage their health and overall well-being.

At its essence, this integrated Android platform provides an extensive array of tools and features, enabling students to monitor, track, and enhance their health. It furnishes them with the requisite knowledge and resources to make informed decisions regarding their well-being. By fostering self-care practices, the Android app not only tackles prevailing health issues but also proactively prevents potential future challenges.

Therefore, by prioritizing health, the Android app contributes significantly to improved student outcomes and a more enriching educational journey. In essence, the College Student Healthcare Management System and Tracker Android app play a pivotal role in the college experience by accentuating and facilitating health and well-being.

KEYWORDS : College, students, challenges, academic rigor, social dynamics, holistic well-being, physical and mental health, Student Healthcare Management System, Android app, prioritize health, improved outcomes, educational journey, pivotal role, accentuating, facilitating.

I.INTRODUCTION

In the dynamic and ever-changing atmosphere of a college campus, students encounter a multitude of challenges and diverse experiences, including demanding academic coursework, intricate social interactions, and opportunities for personal growth. Amidst this whirlwind of college life, the often overlooked aspect is the holistic well-being of students, both physically and mentally. Recognizing the profound significance of addressing this crucial issue, we proudly present the "College Student Healthcare Management System and Tracker" – a comprehensive Android application meticulously tailored to meet the unique needs of college students.

The college journey is a dynamic and transformative period in a young person's life, where individuals not only acquire knowledge in the classroom but also form lasting friendships, explore their passions, and define their paths toward the future. However, amidst the excitement and opportunities, students may inadvertently neglect the importance of their physical and mental health. The "College Student Healthcare Management System and Tracker" serves as a responsive and supportive framework aimed at rectifying this oversight.

At its core, this integrated Android platform is equipped with a diverse array of tools and features empowering students to take control of their health and well-being. Whether monitoring physical fitness goals, managing stress effectively, or accessing essential mental health resources, this Android application serves as a versatile and dependable companion, readily available to assist students in their journey toward a healthier and more balanced lifestyle.

A defining attribute of the "College Student Healthcare Management System and Tracker" Android app is its proactive approach. Unlike conventional approaches that react to health issues once they surface, this app actively encourages students to engage in self-care and preventive measures. It not only provides knowledge but also equips students with the necessary resources to make informed decisions about their health. By fostering self-care practices, the Android app aims to address current health concerns and proactively prevent potential future issues, creating a culture of well-being within the student community.

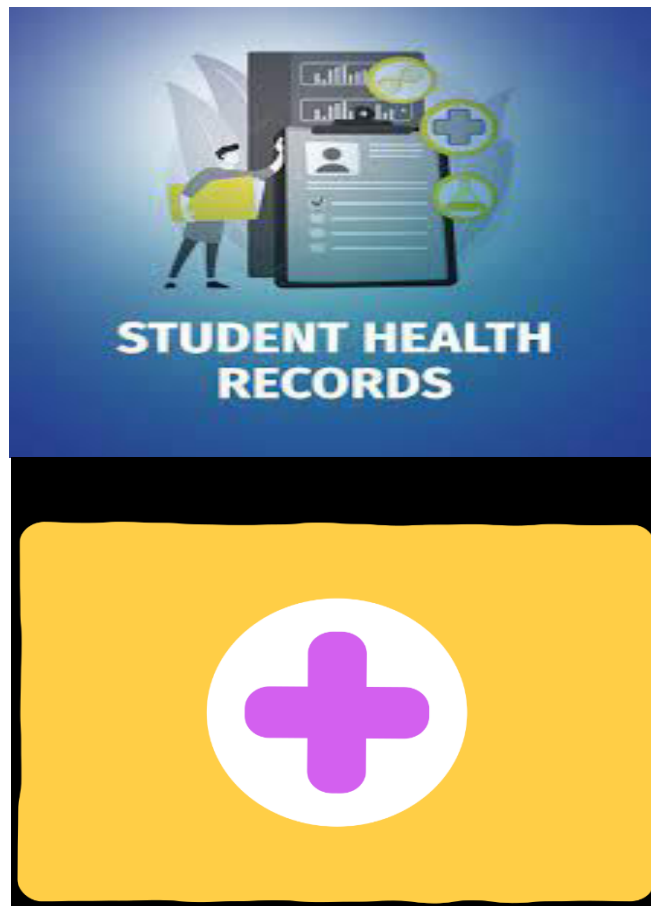


Figure. 1

Central to the core principles of this innovative Android solution is the understanding that students' health and well-being are integral to their academic success and personal development. A student in good health is better prepared to excel academically, engage in social activities, and make the most of their college experience. By prioritizing health, the "College Student Healthcare Management System and Tracker" Android app significantly contributes to improved student outcomes and a more fulfilling educational journey.

In summary, the "College Student Healthcare Management System and Tracker" Android app plays a pivotal role in the college experience by emphasizing and facilitating health and well-being. Leveraging the power of technology, this Android app equips students with the tools, guidance, and support needed to lead healthier lives during their college years. By promoting self-care practices and underscoring the paramount importance of well-being, this innovative Android app enhances the overall college experience, ensuring that students possess indispensable resources to thrive both academically and personally. It stands as a transformative and empowering tool dedicated to fostering a healthier and more balanced student life.



Figure .2

The College Student Healthcare Management System and Tracker, presented as an Android app, embody a holistic approach to overseeing and enhancing the health and well-being of college students. In the midst of the bustling campus life, students might unintentionally neglect their health while striving to balance academic demands and social commitments. It is in this context that our Android app emerges as a crucial and supportive framework, empowering students to play an active and informed role in managing their health and overall well-being.

At its core, this integrated Android platform provides a diverse array of tools and features that empower students to monitor, track, and enhance their health. Whether focusing on physical fitness goals, effective stress management, or accessing essential mental health resources, this Android app serves as a versatile companion ready to assist students on their journey toward a healthier lifestyle.

A distinguishing feature of the College Student Healthcare Management System and Tracker Android app is its proactive approach. Rather than merely reacting to health issues as they arise, the app encourages a proactive stance. This involves empowering students to engage in self-care practices and preventive measures. By providing knowledge and equipping students with necessary resources, the app not only addresses current health concerns but also proactively works to prevent potential future issues, fostering a culture of well-being within the student community.

II. LITERATURE SURVEY

In the realm of human action recognition, Javed et al. (2022) proposed a Hybrid Two-Stream Dynamic CNN for View Adaptive Human Action Recognition using ensemble learning. Their work, published in the International Journal of Machine Learning & Cybernetics, introduces a novel approach to address the challenges of recognizing human actions in varying views.[1]

In a different domain, Kumar Devender, Jeuris Steven, and Dragoni Nicola (2020) explored the applications of mobile and wearable sensing frameworks for mHealth studies. Their research, published in the ACM Transactions on Computing for Healthcare, delves into the potential of these frameworks in the context of mobile health, shedding light on their significance in healthcare studies and applications.[2]

Botilias et al. (2020) presented "Track My Health: An IoT Approach for Data Acquisition and Activity Recognition." Published in Studies in Health Technology and Informatics, their research focuses on leveraging the Internet of Things (IoT) for health-related data acquisition and activity recognition.[3]

In response to the challenges posed by the COVID-19 pandemic, Mehfooz et al. (2021) introduced a medical chatbot for novel COVID-19. Their work, featured in the ICT Analysis and Applications conference proceedings, addresses the need for innovative solutions in the context of the ongoing global health crisis.[4]

Altay et al. (2021) investigated the impact of information delivered by a chatbot on COVID-19 vaccine attitudes and intentions. Published in the Journal of Experimental Psychology: Applied, their research sheds light on the role of chatbots in influencing public perceptions and behaviors during the pandemic.[5]

Amiri and Karahanna (2022) examined chatbot use cases in the COVID-19 public health response. Published in the Journal of the American Medical Informatics Association, their study provides insights into the diverse applications of chatbots in managing public health crises.[6]



Battineni et al. (2020) focused on AI chatbot design during an epidemic like the novel coronavirus. Their work, published in Healthcare, explores the role of AI-powered chatbots in effectively responding to and managing health crises.[7]

Rokad (2020) contributed insights into machine learning approaches and their applications, providing a comprehensive overview of the diverse applications of machine learning in various domains.[8]

Tripathi and Jalal (2022) proposed a robust approach based on local feature extraction for age-invariant face recognition. Their research, published in Multimedia Tools and Applications, addresses challenges in face recognition across different age groups.[9]

Sharma and Jalal (2022) presented a framework for visual question answering with the integration of scene-text using PHOCs and Fisher vectors. Published in Expert Systems Applications, their work introduces a comprehensive framework for addressing visual question answering challenges by incorporating scene-text features.[10]

In the realm of medical imaging, Singh and Choubey (2021) conducted a comprehensive review on image enhancement techniques specifically applied to MRI images. Their work, presented at the 5th International Conference on Information Systems, Computing, and Networking (ISCON), contributes valuable insights to the field of medical imaging, focusing on improving the quality and interpretability of MRI scans.[11]

B. Rokad (2020) provided an insightful overview of various machine learning approaches and their applications in a Medium article dated February 10, 2020. This resource serves as a comprehensive guide to understanding different machine learning methodologies and their practical implementations across diverse domains. The Medium platform accessibility makes it a convenient reference for individuals seeking insights into the applications of machine learning.[12]

In the domain of wearable technology, Hoareau et al. (2022) explored the use of synthesized inertial measurement units (IMUs) to evaluate the placement of wearable sensors on the human body for motion recognition. Published in The Journal of Engineering, their research focuses on advancements in wearable sensor technology, particularly in optimizing sensor placement for accurate motion recognition applications. This study contributes to the evolving field of wearable technology and its applications in human motion analysis.[13]

2.1 Research Gap

While the literature explores the use of chat bots in healthcare, there is a need for deeper investigation into addressing ethical concerns, ensuring data privacy, and building user trust, especially in critical situations like epidemic responses. The field of machine learning (ML) and

its applications is expanding rapidly. However, there is a gap in research that focuses on simplifying the complexity of ML algorithms, making them more accessible to a broader audience. In the domain of image enhancement for MRI images, research should aim to streamline algorithm

selection challenges and reduce hardware requirements to enhance practicality. Research on wearable sensor placement for motion recognition is essential, but further work should be done to simplify sensor calibration and fabricate less complex inertial measurement units (IMUs). While blood pressure estimation from photoplethysmogram data is a non-invasive and promising technique, there is room for improving accuracy in specific cases and reducing the need for frequent sensor calibration. In the area of visual representations for activity recognition, future research can explore additional applications and extensions beyond the presented intelligent icons.

III. PROBLEM STATEMENT

The college environment poses unique challenges to students, including academic pressures, social engagements, and the potential neglect of their physical and mental well-being. Amidst these challenges, there exists a critical issue: the well-being of college students. Many students unintentionally overlook their health while managing academic demands and social interactions. This neglect can lead to health problems that affect their academic performance and overall quality of life. To address this problem, we introduce the "College Student Healthcare Management System and Tracker" Android app. The core problem we aim to solve is the lack of a comprehensive and proactive solution that empowers college students to actively monitor, but there is a need for an integrated platform tailored to the unique needs of college students.

Key Aspects of the Problem:

Health Neglect: College students frequently prioritize academics and social activities over their health, leading to potential health issues and a decreased quality of life.

Lack of Comprehensive Solutions: Existing healthcare apps may not address the holistic needs of college students, leaving gaps in health monitoring, stress management, and mental health support.

Reactive Approach: Many healthcare apps are designed to react to existing health issues rather than actively encouraging preventive measures and self-care practices.



Impact on Academic Success: Student health is intrinsically linked to academic success. Poor health can lead to decreased performance and hinder the overall college experience.

Resource Accessibility: College students may not have easy access to comprehensive health resources and guidance tailored to their unique circumstances.

In summary, the problem we aim to address is the inadequate attention to the health and well being of college students in the dynamic college environment. Our Android app seeks to provide a proactive, comprehensive, and student-centric solution that empowers students to take charge of their health and well-being, ultimately enhancing their academic success and overall college experience.

IV. PROPOSED SYSTEM

Provide an overview of the project, including the objectives and significance of the Student Healthcare Management System and Tracker in enhancing student well-being and academic success.

System Registration and Account Creation:- Implement a user registration system where students can create accounts. Collect and store user information securely. Verify and authenticate user identities.

User/admin Login:- Develop a login mechanism for registered users. Ensure security through password hashing and encryption.

Home Page:- Create a user-friendly dashboard for students. Display relevant information such as appointments, health records, and academic data.

Database:- Stores the information of the user credentials and also of admin. From the database the data for modules if needed is retrieved.

View Emergency Information:- Shows the emergency information which includes doctor data.

BMI Calculator:- Calculated the BMI of user and based on that the exercise is recommended.

ML Chatbot:-To detect the disease using user input dataset this functionality is used.

Sleep Monitoring:-Using user input the sleep is monitored.

Adding response for new dataset:-For providing result of newly identified data admin can add the response.

Data Privacy and Security:- Implement strict security measures to protect user data. Comply with data protection regulations and ensure user privacy.

User Feedback and Improvement:- Collect feedback from users to make continuous improvements. Use feedback to enhance the chatbot's responses and system functionality.

Testing and Quality Assurance:- Conduct rigorous testing to identify and rectify bugs and issues. Ensure the system functions smoothly and efficiently.

Deployment and Scaling:- Deploy the system on appropriate servers. Plan for scalability to accommodate a growing user base.

User Training:- Provide training to users on how to use the system effectively. Develop user manuals and guides.

Conclusion:- Summarize the key findings and the impact of the Student Healthcare Management System and Tracker on student well-being and academic success

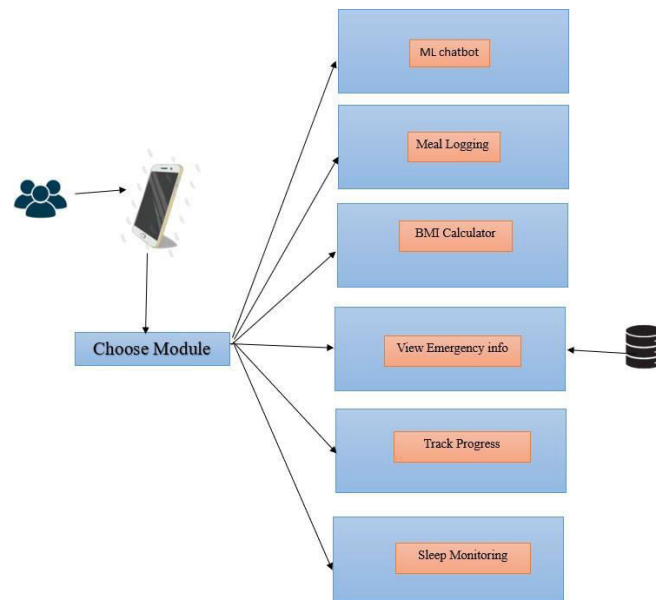


Figure.3: Architecture of proposed system

V. EXISTING SYSTEM

In the current student healthcare management system, students primarily rely on on-campus clinics and counseling services for their healthcare needs. Health records are managed through a centralized system, with access restricted to authorized personnel. Appointment scheduling is typically done through phone calls or walk-in visits, with limited online booking options available. Communication between students and healthcare providers mainly occurs through in-person consultations or email correspondence. While some health education resources exist, such as workshops and online materials, feedback mechanisms for students to provide input on healthcare services are limited.

The proposed student healthcare management system aims to address these limitations by offering a comprehensive set of features tailored to students' needs. This system will include modules for meal logging, emergency information management, BMI calculation, sleep monitoring, and a medical chatbot. The meal logging feature will allow students to track their dietary intake and nutritional habits by providing them the calorie intake as output, promoting healthier eating choices. Emergency information management will enable students to get emergency contact numbers of doctors, ensuring timely and accurate assistance during emergencies. The BMI calculator will provide students with a quick assessment of their body mass index, aiding in monitoring their weight and overall health.

Moreover, the sleep monitoring module will allow students to track their sleep patterns and quality, facilitating better sleep hygiene and overall well-being. The cornerstone of the proposed system is the medical chatbot, which will use advanced natural language processing algorithms to analyze user input and predict potential health issues. Additionally, the chatbot will be equipped with image recognition technology, allowing users to upload images for disease prediction and diagnosis. Finally, the system will feature a feedback mechanism where students can provide input on their experiences with the system, ensuring continuous improvement and user satisfaction. Overall, the proposed system aims to revolutionize student healthcare management by providing convenient access to personalized health information, promoting proactive health management, and enhancing user engagement.

VI. MATERIALS AND METHODS

Hardware Requirement

- Processor - Intel i3 core
- Speed - 1.1 GHz
- RAM - 4GB
- Hard Disk - 50 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA



Software Requirement

- Operating system: Windows 7.
- Coding Language: Python
- IDE: Python IDLE
- Database: MySQL

VII. EXPERIMENTAL RESULTS

The experimental evaluation of the proposed student healthcare management system aimed to comprehensively assess its performance, usability, and effectiveness in addressing the multifaceted challenges inherent in managing student health within educational institutions. Through a rigorous series of tests and analyses, the system demonstrated commendable performance across various metrics.

Performance evaluation: Performance evaluation revealed consistently fast response times, indicative of the system's robustness and efficiency in handling user requests, ranging from accessing health results to getting emergency information and utilizing the medical chatbot functionalities.

Scalability testing: Scalability testing further underscored the system's reliability, as it exhibited stable performance even under simulated high user loads, showcasing its suitability for deployment in diverse educational environments.

Usability testing: Usability testing provided valuable insights into the system's user interface and interaction design. Additionally, the accuracy of the medical chatbot in predicting health issues was confirmed through comparative analyses with expert diagnoses. These results highlight the system's potential to serve as a valuable tool for early disease detection and health intervention, facilitating proactive healthcare management among students.

Real-world case studies: Real-world case studies provided concrete examples of the system's impact, showcasing instances where timely interventions facilitated by the system led to improved health outcomes and enhanced communication between students and healthcare providers.

Collectively, these findings underscore the effectiveness and potential of the student healthcare management system in revolutionizing healthcare delivery within educational institutions, ultimately contributing to the promotion of student health and well-being on a broader scale.

VIII. MATHEMATICAL MODEL

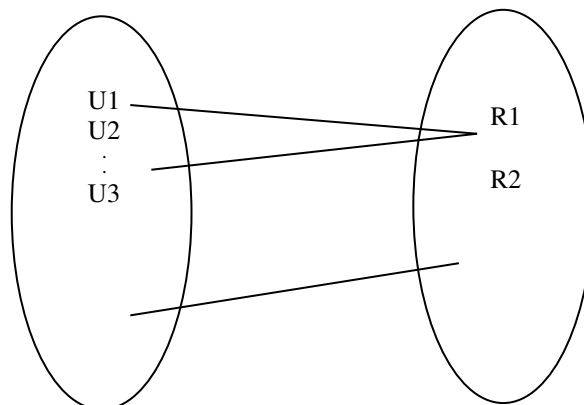


Figure 3: Mapping



Many users can obtain one result or multiple results.

Set Theory:

$S = \{s, e, X, Y, \Phi\}$

Where,

s = Start of the program.

1. Log in user.
2. Get the data from User

e = End of the program.

1. Display the captured data on the screen.
2. Log out the user.

X = Input of the program.

Input should be from User.

Y = Output of the program.

Finally we display the captured data on the screen.

$X, Y \in U$

Let U be the Set of System.

$U = \{Client, I, S, H, A, D, R\}$

Where Client, I, S, H, A, D, R are the elements of the set.

Client=User

I=Input data from Database

S=Classification.

H=Hardware.

A=Application

D= Display captured data.

R=Result or output.

SPACE COMPLEXITY:

The space complexity depends on Presentation and visualization of discovered patterns. More the storage of data more is the space complexity.

TIME COMPLEXITY:

Check No. of patterns available in the database= n

If $(n > 1)$ then retrieving of information can be time consuming.

So the time complexity of this algorithm is $O(n^n)$.

Above mathematical model is NP-Complete

Φ = Failures and Success conditions.

Failures:

- Huge database can lead to more time consumption to get the information.



- Hardware failure.
- Software failure.

Success:

Search the required information from available in Database.

User gets result very fast according to their needs.

IX.CONCLUSION

The "College Student Healthcare Management System and Tracker" Android app is a visionary solution designed to address a pivotal yet often overlooked aspect of college life – the health and well-being of students. In the dynamic and demanding environment of a college campus, students navigate a complex web of academics, social interactions, and personal growth. This app recognizes the multifaceted challenges they face and provides a comprehensive and proactive approach to managing their health. At the core of this innovative Android platform area range of features that empower students to take control of their well-being. The app offers tools for tracking physical fitness goals, managing stress, and accessing critical mental health resources. It goes beyond being a passive health monitor; it actively encourages students to engage in self-care and preventive measures. By fostering a sense of responsibility for their health, the app equips students with the knowledge and resources to make informed decisions.

This app operates on the fundamental principle that a student's health is inseparable from their academic success and personal development. When students are in good health, they are better positioned to excel in their studies, participate in social activities, and make the most of their college experience. The app's emphasis on health ultimately contributes to better academic outcomes and more fulfilling educational journeys. In essence, the "College Student Healthcare Management System and Tracker" Android app plays a vital role in the college experience. By prioritizing health and well-being and harnessing the power of technology, it equips students with the tools, guidance, and support they need to lead healthier lives during their college years. This app is not just about addressing existing health concerns; it's about preventing future issues and ensuring that students have the resources necessary to thrive both academically and personally. It stands as a beacon of support, guiding students towards a healthier and more successful college life.

X. FUTURE WORK

The "College Student Healthcare Management System and Tracker" Android app represents a significant step towards addressing the health and well-being of college students. However, its for growth and enhancement is substantial. Here are some avenues for future development and expansion:

Enhanced Data Analytics: The app can evolve to provide more in-depth data analysis. By leveraging machine learning and data analytics, it can offer personalized health insights and recommendations based on individual user data. This would make the app even more tailored to the unique needs of each student.

Integration with Wearable Devices: The future of health management is increasingly intertwined with wearable devices. The app can explore integration with wearable like fitness trackers, smart watches, and health monitoring devices to provide real-time health data and further enhance the user experience.

Mental Health Focus: Given the rising awareness of mental health issues among college students, the app can expand its mental health resources and features. It can include guided meditation sessions, stress-reduction techniques, and connections to mental health professionals.

Expansion to Other Platforms: While the app currently focuses on Android, considering expansion to other platforms, such as iOS, ensures a wider reach and impact.

In conclusion, the "College Student Healthcare Management System and Tracker" Android app has the potential to grow into a comprehensive and indispensable tool for college students to manage and enhance their health. By embracing technology, user feedback, and a holistic approach to well-being, the app can continue to make a positive impact on the lives of students and contribute to their overall success and happiness

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