SJCIT Transport Management System

Shreekar Bharadwaj M N, Dhanush Reddy H M, Deeraj C, Akshath Sai, Narendra Babu

Department of Computer Science and Engineering

S J C Institute of Technology, Chikkaballapura, India

Abstract: *Innovative software developed with great care to maximize transportation inside of educational institution called the SJCIT Transport Management System (TMS). Acting as a single point of contact for all student and faculty transportation-related information, including records, routes, diversions, and more, this system includes sophisticated features like effective database management, user-friendly interfaces, and aesthetically pleasing design elements. Its rapid adaptation minimizes transition times by guaranteeing quick user onboarding. A key instrument in coordinating the smooth movement of people across multiple locations and schedules is the SJCIT TMS, which is centred around the promotion of safe, efficient, dependable, and sustainable transportation practices. Its adaptability makes it possible for it to function seamlessly in both standalone and integrated configurations, which makes it an essential tool for improving transportation management in learning environments*

Keywords: Transport Management System

I. INTRODUCTION

"SJCIT Transport Management System" is the topic of this project. Teachers and students can access and view the driver, van number, and route details of the van through this user-interactive program. provide several important factors and desirable characteristics that should be taken into account when creating a Smart Transportation Management System that works well for educational institutions. The system has a user-friendly interface application that allows users to communicate with the core team and get answers to questions about the route they are taking [1]. This will assist teachers and students in scheduling their time so they can get to class on time and catch the bus. The two algorithms the system will use are the neural network algorithm, which will process real-time GPS tracking data, and the Kalman filter, Process neural network algorithms with historical travel times and real-time GPS tracking data[2].When it comes time to check the facts, the system pulls up student, staff, and bus data using the data center module, which is vital[5].This improves data upkeep, data verification, and security.The program has a student and admin login module, which both the admin and the student must authenticate before using. The student logs in using the bus ID and password that the admin has created[9]. This facilitates the student's understanding of his bus registration data and The administrative procedures used to verify them.

II. LITRERATURE REVIEW

The busses are tracked using a global positioning system, a map API for tracking information, and real-time tracking via GPS[1], In order to route and reroute buses for passenger pickup, heavy traffic, incidents, accidents, and other problems, the system uses two algorithms: neural networks and Kalman filters. These algorithms are monitored in the central coordinator room [2],The vehicle module of the system is made up of Zigbee sensors that gather data on the location of the bus and store it in the data centre for display in applications. The data centre module is the other component of the system[5],The application consists of an admin and student login panel that both users access after authenticating. Students' login via the bus tokenization feature, where they send requests for onboard buses via message to the admin, who then approves the request based on the bus's seating arrangements. If a seat is available when the request is made, the admin approves the request and the student app is used to access the payment method[9].

III. PROPOSED WORK

We implemented technologies that enable Firebase Cloud to store teacher and student data in real-time. The student app has an authentication process that requires a password and bus ID. Once the user logs in, the student can access their

389

profile, which includes their name, bus ID, USN, and bus detail information. Additionally, they can access the emergency alert button, which, in the event of an emergency or other serious issue, sends a message to the admin asking them to take immediate action. Finally, the student app has a feedback chat box that allows them to ask questions of the admin, who is then used to verify and maintain the data of the student and bus information, Bus data management, which is used to keep track of bus information and alert service maintenance personnel to bus maintenance, and the database, which allows administrators to get data and check details in detail, are two ways that they may access the data.
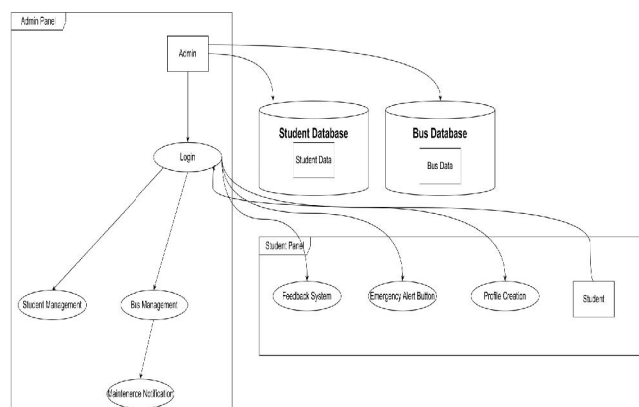

a) Admin panel

The administrator has four functions. The first is used to generate the bus ID for the students once their bus registration has been completed and verified. The registration and bus route details, including the bus ID and password, are stored in the student database. Each individual bus detail is stored in the bus database with a unique bus number or name. The administrator uses this information to verify bus maintenance notifications, which notify the driver every three months when bus needs to be checked and repaired.

b) Student Panel

the feedback system, emergency alert button, and student profile are all part of the student application. Each student has an emergency alert button to use in case the bus undergoes to serious damage or incidents, and feedback mechanisms are used to address any questions students may have about the registration, bus route, or student data verification. The student profile contains information about the student, including name, USN, bus ID, bus route, and verified details of the bus registration.

c) GPS and Tracking

The student utilizes the global positioning system in the student mobile application to monitor buses and arrange their arrival times at their residence or other designated nearby location. The student does this by using the map feature of the program. The ZigBee gadget is made To gather data from the GPS through Intelli-Integrated Circuit (i2c), ZigBee is made up of the radio communication chipXbee, as well as an 8-bit microcontroller, an IR transmitter, an IR receiver, and Bluetooth HC-05,GPS sensors mounted on college buses are used to track the location of bus,ZigBeeuses the Internet of Things (i2c) toretrieve data from GPS devices. It is made up of Xbee devices, which transmit data through antennas and receive signals through infrared receivers; these actions are controlled by microcontrollers. The data is then transferred to an admin data centre, where the administrator verifies and checks the information for safety and to keep records. The data centre serves as a temporary storage box for information retrieval, and it is again stored in the Firebase cloud
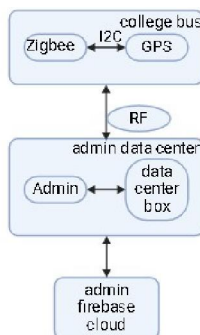
d) Screenshots:
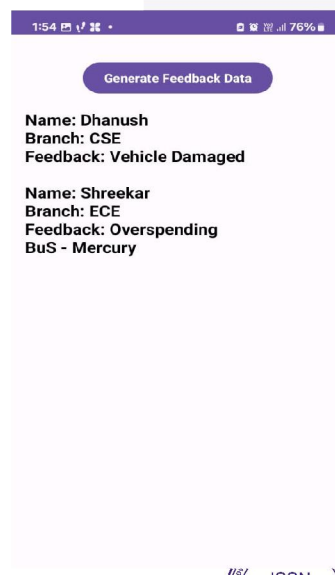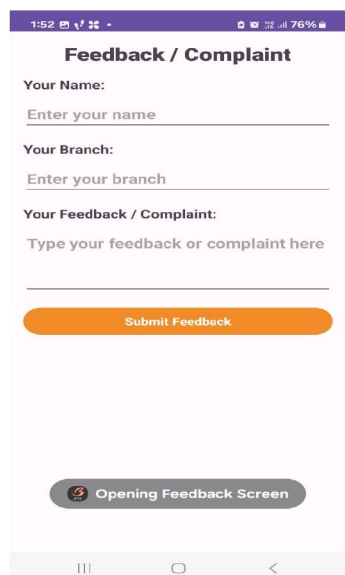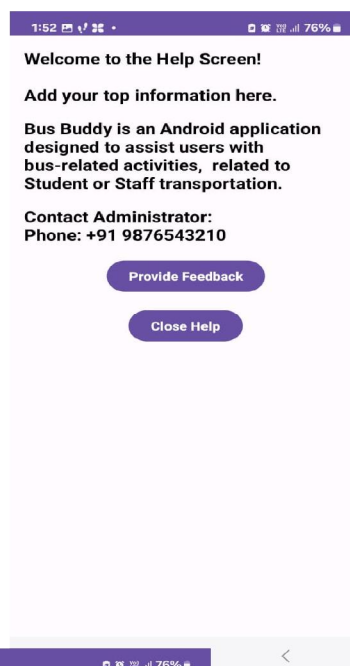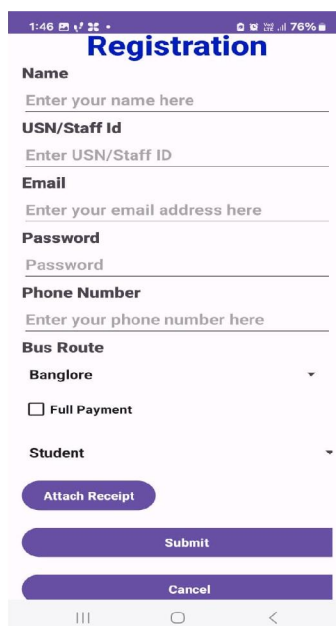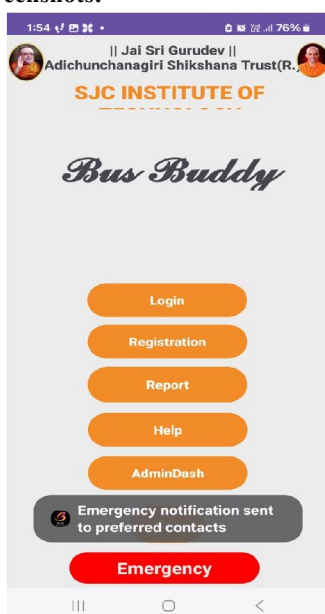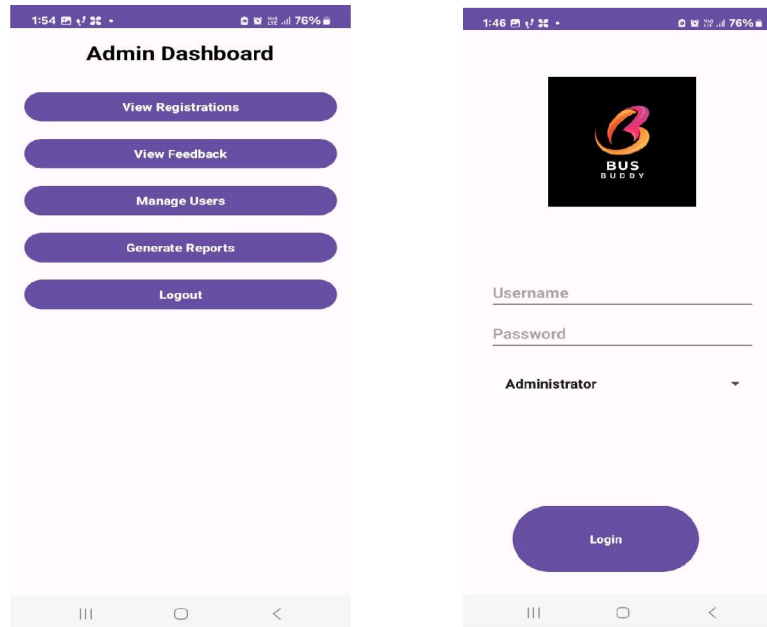
VI. CONCLUSION

This study delves into the use of diverse technologies and algorithms to uphold, validate, and ensure the security and well-being of students. The system provides students a bus ID, which they can use to board the bus. It also has an emergency button on the application, which allows users to notify the administrator in case of an emergency. The application is user-friendly and includes instructions on how to contact the administrator with feedback. The administrator keeps track of the student details for database maintenance.

REFERENCES

[1] Mulla MR, Mujawar MT, Sutar MS, Shelke MR, Hippargi MS. SMART COLLEGE BUS TRANSPORT SYSTEM: A REVIEW.

[2] Ashour I, Zorkany M, Shiple M. Design and implementation of transportation management system. InInternational Conference on Vehicle Technology and Intelligent Transport Systems 2015 May 20 (Vol. 2, pp. 11-18). SciTePress.

[3] Chavhan S, Gupta D, Nagaraju C, Rammohan A, Khanna A, Rodrigues JJ. An efficient context-aware vehicle incidents route service management for intelligent transport system. IEEE Systems Journal. 2021 Apr 13;16(1):487-98.

[4] Bandhan R, Garg S, Rai BK, Agarwal G. Bus management system. Int. J. Adv. Res. Comput. Sci. 2018 May 1;9(3).

[5] Niture DV, Dhakane V, Jawalkar P, Bamnote A. Smart transportation system using IOT. International Journal of Engineering and Advanced Technology. 2021 Jun 30;10(5):434-8.

[6] Garg T, Kaur G. A systematic review on intelligent transport systems. Journal of Computational and Cognitive Engineering. 2023;2(3):175-88.

[7] Sonkalyari N, Patil A, Zade T, Sharma K, Manekar A. Python and MySQL-based Transport Management System. Nedeliaková E, Stasiak–Betlejewska R. Transport management in Polish cities in the context of the European sustainable transport concept. Transportation Research Procedia. 2019 Jan 1;40:1150-7.

[9] Priya A, Sameera D, Harika B, Chandra KS, Saivyshnav A. REVIEW OF TRANSPORT MANAGEMENT SYSTEM BVRIT.

[10] Naeem AB, Senapati B, Islam Sudman MS, Bashir K, Ahmed AE. Intelligent road management system for autonomous, non-autonomous, and VIP vehicles. World Electric Vehicle Journal. 2023 Sep 1;14(9):238