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ijircce@gmail.com



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Medicab: Mobile Application providing Smart Ambulance Service

Dr. Joseph Michael Jerard V, Naveen R, Nikshith K S, Kishan Gowda

UG Student, Dept. of CSE, Presidency University, Bengaluru, Karnataka, India

Professor, Dept. of CSE, Presidency University, Bengaluru, Karnataka, India

ABSTRACT: By combining medical care with transportation, the "MediCab" project transforms healthcare accessible, particularly in rural areas. The design, execution, and effects of the MediCab system—which uses cutting-edge technologies to get over geographic restrictions—are examined in this research. It evaluates how well it works to improve timely access to healthcare, lessen obstacles related to patient mobility, and improve health outcomes. The paper describes the operational framework's user-friendly interface, real-time tracking, and collaboration with healthcare professionals. The transformative impact is illustrated through pilot initiatives and case studies, which also provide information on scalability, economic feasibility, and community engagement.

On the other hand, a ground-breaking ambulance service in India addresses the country's insufficient emergency medical response. An Android smartphone app changes the way people contact ambulance services. It allows users to send in a single tap notification to the control center, along with location and details via GPRS. The application makes effective use of the Google Map API for tracking ambulances by leveraging smartphone technologies and the Internet of Things. The program, which takes its cues from the Uber business model, seeks to establish a user-friendly network of emergency services while reducing patient transportation waits. With the help of the app, people can reserve ambulances, find the nearest car that is available, get distance quotes, and make payments easily. In order to meet urgent healthcare needs, the project also intends to support hospitals with blood supply delivery

KEYWORDS: Ambulance service; Smart Application; Emergency; Health; Public safety;

I. INTRODUCTION

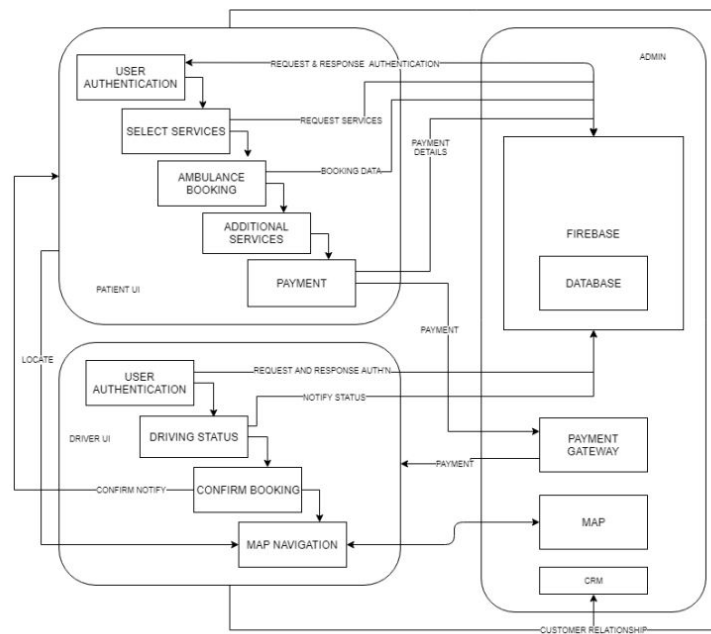
The push for smart cities makes it necessary to address issues with the effectiveness of healthcare, especially with regard to emergency medical services. Ambulances encounter difficulties due to traffic congestion, which causes delays and a rise in mortality. Our program uses the Internet of Things to improve ambulance services; it was inspired by Uber and Ola. Through wired and wireless networking, hardware devices are connected, enabling the system to deliver more accessible and rapid medical transportation. One of the main features is On-Demand Healthcare Access, which guarantees quick access to qualified medical help via an intuitive smartphone application. Easy-to-use interfaces, quick response times, round-the-clock accessibility, geolocation services, smooth booking procedures, instant confirmation, and inclusive accessibility are important components. In addition to emergency assistance, the Community Health Impact program offers regular medical transportation, raises public awareness of health issues, and participates in neighbourhood projects. Emergency healthcare is undergoing a paradigm shift as ambulances are reimagined as dynamic services that satisfy urgent medical requirements. This on-demand approach was inspired by Ola and Uber. With GPS tracking, MediCab's user-centric technology integration improves response times and holds the potential to revolutionize emergency medical transport. By combining medical care with on-demand transportation, The Novel Approach to Healthcare Delivery upends conventional wisdom and ushers in a dynamic, user-centric era of healthcare accessible. This Innovative Healthcare Paradigm marks a break from conventional wisdom and ushers in a period of revolutionary change in the provision of healthcare.

II. RELATED WORK

Leveraging Mobile Health Vans to Improve Access to Healthcare Services - In order to improve patient accessibility to healthcare, this study investigates the usage of mobile health vans. Considerable conclusions about Medicab services could be made. Smart Ambulances: Integrating Technology for Efficient Emergency Medical Services - Examines how technology can be integrated into ambulances to provide better emergency medical care. This investigation can yield insights that will benefit Medicab's technological components. The impact of ride-sharing services on hospital transportation is examined in "Ride-Sharing in Healthcare: A Systematic Review. Medicab's strategy for utilizing a ride-sharing model for medical transportation can be informed by pertinent

findings. Telemedicine Integration in Ambulance Services - Examines how telemedicine is integrated into ambulance services. The study's conclusions can influence how Medicab incorporates telehealth services. Patient-Centric Approaches in Medical Transportation Services - Examines medical transportation strategies that are centered upon the patient. The results of this study can help in designing the Medicab services' user interface and other design elements. Impact of Non-Emergency Medical Transportation on Healthcare Utilization- Examines how non-emergency medical transportation affects patterns of healthcare usage. The evaluation of Medicab services' overall impact can benefit from pertinent findings. Innovative Solutions for Rural Healthcare Transportation - This section looks at creative approaches to the problems associated with healthcare transportation in rural locations. The study's conclusions may have bearing on Medicab's strategy for providing services in a range of geographical areas. Data Security and Privacy in Health-Related Transportation Services" - Examines privacy and data security issues in transportation services related to health. The development of secure systems within Medicab can benefit from this study. The significance of incorporating human-centered design into healthcare apps is examined in "Human-Centered Design in Healthcare Applications". The Medicab application's user interface and experience design can be informed by pertinent insights. The study examines the cost-effectiveness and efficiency of mobile health clinics. Efficiency and Cost-Effectiveness of Mobile Health Clinics. The results could provide guidance on how to best allocate resources and run Medicab services efficiently.

III. PROPOSED METHODOLOGY



1. Request handling:

Request handling in the Medicab algorithm involves efficiently receiving and prioritizing medical transportation requests. The system assesses urgency, patient conditions, and geographic locations to prioritize requests. A user-friendly interface facilitates easy request submission for healthcare providers and patients. The algorithm dynamically allocates Medicab units based on real-time demand and resource availability, ensuring swift response to medical transportation needs. Handling requests involves a responsive and adaptive system that efficiently manages and prioritizes incoming requests for optimal utilization of resources and timely delivery of medical transportation services.

2. Resource allocation:

Dynamic resource allocation in the Medicab algorithm involves real-time adjustment and optimization of resources based on changing demand and conditions. This adaptive approach ensures efficient deployment of Medicab units, considering factors like current demand, geographical locations, and emergency priorities. The algorithm dynamically allocates resources to meet the fluctuating needs, maximizing the utilization of available units and

minimizing response times. This responsive strategy enhances overall operational efficiency, allowing the system to adapt to varying demand scenarios and optimize the allocation of resources for timely medical transportation services.

3. Route Optimization:

The Medicab algorithm optimizes routes to find the most effective way to transport medical patients. The shortest and safest route is determined by taking into account real-time data such as traffic patterns, road closures, and emergency priorities. Reducing travel time and making sure you arrive at your destination on schedule are the main objectives. The algorithm optimizes routes, increasing the effectiveness of Medicab services and boosting total response times for medical transportation by continuously evaluating and adjusting to changing situations.

4. Integration with healthcare systems:

Seamless connectivity with medical databases and systems. This integration ensures that relevant patient information, such as medical history and urgency of the condition, is readily available. The algorithm utilizes this data to align medical transportation services with specific healthcare requirements, optimizing the overall care continuum. By facilitating a smooth exchange of information, integration with healthcare systems enhances the accuracy, efficiency, and responsiveness of the Medicab services, ultimately contributing to improved patient outcomes and a more coordinated healthcare delivery system.

5. Security Measures:

Robust protocols are used as part of the Medicab algorithm's security protections to protect patient information and guarantee adherence to healthcare data protection regulations. To stop unwanted access and data breaches, the algorithm uses encryption, access limits, and secure communication channels. There are safeguards in place to maintain patient privacy, confidentiality, and integrity during the medical transportation procedure. By putting security first, the Medicab system builds confidence among stakeholders and users, enhancing the legitimacy and dependability of the medical transportation service.

PSEUDO CODE

Drivers App:

```
1. Receiving ambulance request
function driverReceiveAmbulanceRequest() {
showPendingRequestsOnMap();
acceptAmbulanceRequest();
}

2. Navigation to user location
function driverNavigateToUserLocation(userLocation) {
calculateRoute(userLocation);
displayNavigationInstructions();
}

3. Completing ambulance request
function driverNavigateToUserLocation(userLocation) {
calculateRoute(userLocation);
displayNavigationInstructions();
```

}

4. Updating availability status

```
function driverUpdateAvailabilityStatus(status) {  
  updateAmbulanceStatus(status);  
  notifyControlCenterAboutStatusChange(status);  
}
```

5. Receiving updates

```
function driverReceiveNavigationUpdates() {  
  checkForRouteUpdates();  
  displayUpdatedNavigationInstructions();  
}
```

Users App:

1. Requesting ambulance

```
function userRequestAmbulance(location, urgency) {  
  showAvailableAmbulancesOnMap(location);  
  confirmAmbulanceRequest(location, urgency);  
}
```

2. Tracking ambulance

```
function userTrackAmbulance(ambulanceID) {  
  trackAmbulance(ambulanceID);  
  displayAmbulanceETA(ambulanceID);  
}
```

3. Checking ambulance status

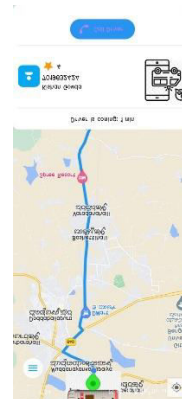
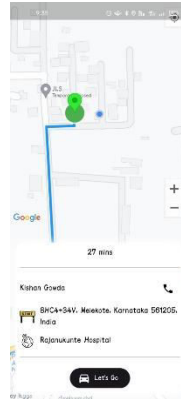
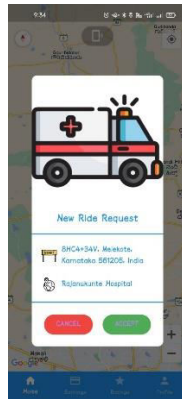
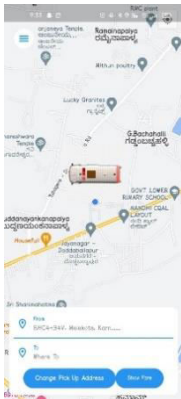
```
function userCheckAmbulanceStatus(ambulanceID) {  
  ambulanceStatus = getAmbulanceStatus(ambulanceID);  
  displayAmbulanceStatus(ambulanceStatus);  
}
```

4. Making payment

```
function userMakePayment(patientID, amount) {  
  processPayment(patientID, amount);  
  displayPaymentConfirmation();  
}
```

IV. SIMULATION RESULTS

In conclusion, MediCab is not just a project; it is a vision realized. It symbolizes a commitment to efficiency, transparency, and user-centricity in the critical domain of emergency medical services. As the sirens of MediCab echo through the streets, they carry not just the promise of prompt medical care but also the embodiment of a new standard—an emblem of responsiveness, accessibility, and innovation in healthcare. This project, inspired by the success stories of Ola and Uber, sets a precedent for the seamless convergence of technology and compassion, reshaping the narrative of emergency medical services and forging a path towards a safer, more accessible future for communities around the globe.



V. CONCLUSION AND FUTURE WORK

The Ambulance MediCab initiative has produced revolutionary results in the provision of emergency medical treatment. The on-demand healthcare access strategy, modeled after Uber and Ola, guarantees prompt access to medical professionals via an easy-to-use smartphone. Notable accomplishments encompass markedly lowered reaction times, round-the-clock functionality, and flawless geolocation capabilities. Beyond just emergency situations, the project also promotes health awareness, participates in community activities, and offers regular medical transportation, all of which have an impact on community health. Ambulances have been reinvented as dynamic, on-demand services, ensuring faster access to medical aid, as part of the paradigm shift in emergency healthcare brought about by ride-hailing services. The integration of user-centric technology, shown by MediCab, enhances response times and heralds a revolutionary age in emergency medical transport. All things considered, the Ambulance MediCab project has effectively implemented a novel healthcare paradigm.

REFERENCES

- 1.Rajesh, Rupali & Chincholkar, Snehal. (2018). A Study on Consumer Perception of Ola and Uber Taxi Services. 3. 25-31. 10.17010/ijcs/2018/v3/i5/138779.
- 2.Mrs. Chavan PragatiP., Ms.Thosar Mrunal R.,Ms. Panchal Sudha, Ms. Bandel Pooja D, “Ambulance Service”, International Journal of Advanced Research in Computer and Communication Engineering, Vol-5, Issue-2,2019, pages 2395-4396
- 3.Sareen Fathima, Suzaifa, Abdo H Guroob, Mustafa Basthikodi, “An Efficient Application Model of Smart Ambulance Support (108) Services”, International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8, Issue- 6S4, April 2019
- 4.Shekar, Smitha, Narendra Kumar, Usha Rani, Divyashree, Gayatri George and Aparajitha Murali. “GPS Based Shortest Path for Ambulances using VANETs.”



5. Monika Sharma and Sudha Morwal, "Location Tracking using Google Geolocation API"
6. <https://click2clinic.com/blog/45/Challenges-in-Ambulance-Travel>
7. <https://medium.com/@narengowda/uber-system-design-8b2bc95e2cfe>
8. <https://bootcamp.uxdesign.cc/case-study-designing-uber-for-ambulance-6fecef139efe>



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