Navigating through a crowded and complex railway station can be overwhelming. Finding platforms, ticket counters, food courts, and other facilities is often challenging, especially in unfamiliar stations. But what if there was a way to make this experience easier, more accessible, and less stressful?

In this video, we'll explore our solution—a mobile app and digital kiosk system designed to simplify station navigation using 3D maps, augmented reality, and voice-guided assistance.

Solution Overview

Our solution introduces a mobile app with 3D interactive maps, providing real-time, step-by-step navigation to key locations within the railway station. Users can easily locate platforms, ticket counters, food courts, restrooms, and other facilities.

To enhance accessibility, we’ve added voice-guided navigation for visually impaired users, ensuring the app caters to everyone's needs. With real-time AR navigation, visual arrows are overlaid on the real-world environment to guide users seamlessly through the station.

For those who prefer on-the-spot assistance, digital kiosks with touchscreen interfaces are strategically placed throughout the station. These kiosks display station layouts and offer real-time directions, making navigation more user-friendly.

Technology Breakdown

Let's dive into the technology behind this solution. First, we scan the railway station using video and images. These scans serve as a reference for creating a 3D model in Blender, where we refine the station's design.

After creating the models in Blender, we import them into Unity to add more functionality like 3D views, navigation, and integrating C# scripts for a fully interactive experience. This setup is then deployed to digital kiosks and integrated into the mobile app.

We have developed a prototype model in Unity for station navigation. In this model, a red figure represents a person searching for a destination, such as a restroom. We use NavMesh to provide the shortest path between the person and their destination, even if it is on a different platform. By clicking on a platform, the system calculates the optimal navigation route to guide the user efficiently.

We will integrate this functionality into our digital kiosks and mobile application. Another model includes a zoom in/out feature for easy navigation on the digital kiosks. The kiosks will display a 3D map of the entire railway station, allowing users to view all facilities, such as food courts, restrooms, and waiting areas.

Integration with the IRCTC system will be done via an external link or API. When users click the navigation link in the IRCTC app, they will be redirected to our application, where they can easily navigate the station.

Addressing the Problem

1. User-Friendly Navigation: The combination of 3D maps and AR-based navigation significantly reduces confusion in busy or unfamiliar stations. Passengers can easily find their way to any location within the station.

2. Accessibility: Our voice-guided navigation ensures that visually impaired passengers receive the same level of service as everyone else, enhancing inclusivity and convenience.

3. Time Efficiency: Passengers can plan their routes efficiently, minimizing time spent searching and reducing the risk of missing trains.

4. Real-Time Accuracy: The system updates automatically, reflecting any changes in the station layout, such as construction zones or new facilities. This ensures users always have the most accurate information at their fingertips.

Addressing Potential Challenges

Ensuring real-time updates in large, busy stations can be tricky. We address this by employing IoT sensors and manual station staff inputs to keep maps updated.

Integration with the IRCTC system will be handled through an external API or link. While this requires coordination with railway authorities, it’s essential for providing a seamless user experience. To encourage adoption, especially among older or less tech-savvy passengers, we’ll provide workshops, informational kiosks, and video guides at stations.

Potential Impact

This solution has significant potential impacts on various aspects:

- Social Impact: It greatly enhances travel experiences, especially for people with disabilities, by offering clear, accessible navigation.

-Economic Impact: By reducing confusion and delays, stations can operate more efficiently, leading to cost savings and improved customer satisfaction.

- Environmental Impact`: The reduction in printed maps and signs minimizes paper waste and eases congestion, helping save energy.

Conclusion

In summary, our app and kiosk system revolutionize railway station navigation by combining 3D interactive maps, AR guidance, and voice navigation into one comprehensive platform. With technical feasibility ensured by industry-standard tools like Unity, C#, and Blender, the solution is not just possible but practical and scalable.

This innovative approach will transform the way passengers experience railway stations, making travel simpler, more efficient, and accessible to all.

Thank you for watching. If you found this solution intriguing, don't forget to like, share, and subscribe for more innovative tech insights!