SMART INDIA HACKATHON 2024

TITLE PAGE

- **Problem Statement ID - 1710**
- **Problem Statement Title- Enhancing Navigation for Railway Station Facilities and Locations**
- **Theme- Transportation and Logistics**
- **PS Category- Software**
- **Team ID-2050**
- **Team Name- NextGen1**

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IDEA TITLE

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❖ **Proposed Solution**

AR Navigation:

- It overlays digital maps and directions onto users' real-world views.

Kiosks at Key Points:

- More important will be their ability to show AR navigation of facilities and information about them.

Real-time Updates:

- The system will always update the information about changes in facilities and any other important notices in the station.

Seamless User Experience:

- The seamless experience offered by this kind of AR navigation for first-time travellers may alleviate some of the stress.

Innovative Immersive Integration:

- Integrating AR with kiosks is an innovative way to give the users an experience of immersive navigation.

Multilingual and Accessible:

- Supporting multiple languages with accessibility features will ensure this technology is inclusive for people of various abilities.

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TECHNICAL APPROACH

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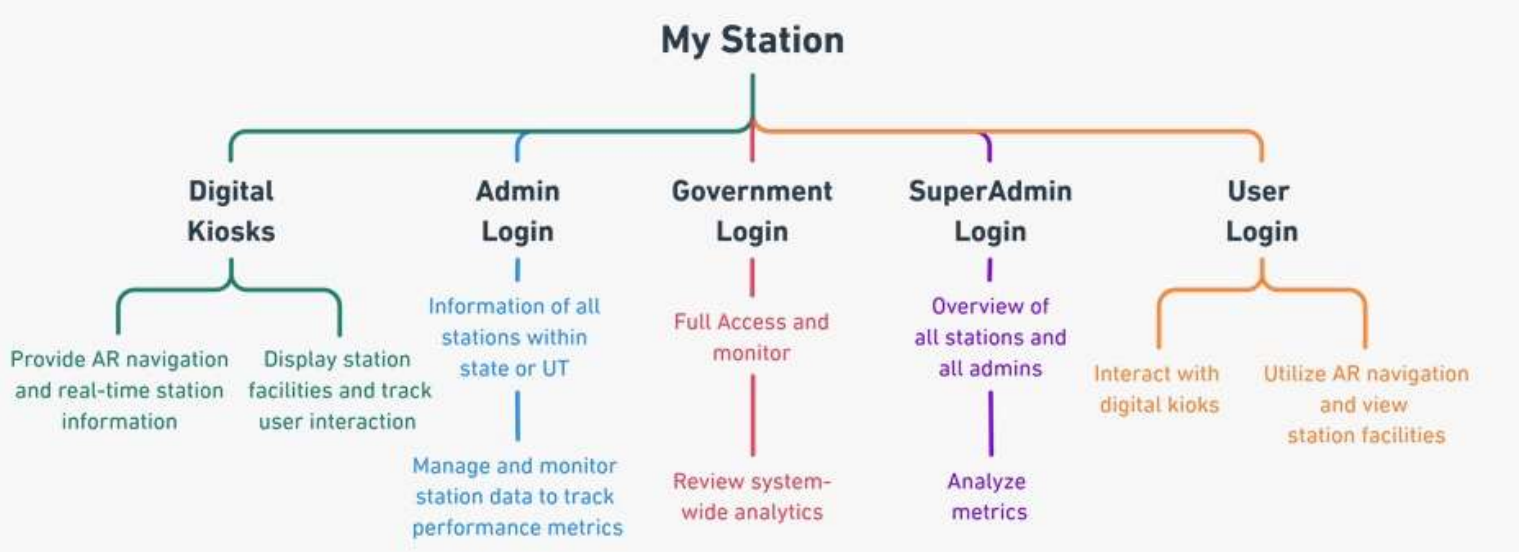
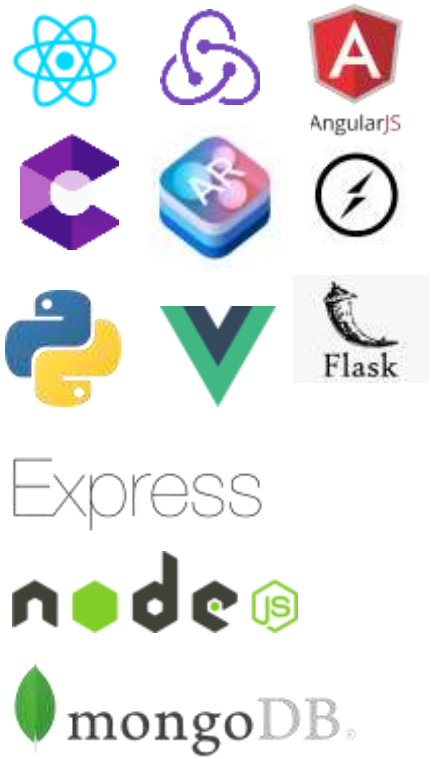
Working Prototype



Technology Stack



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FEASIBILITY AND VIABILITY

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Feasibility Analysis

- Modify Existing Kiosks: Repurpose digital kiosks for AR, leveraging existing infrastructure.
- Easy Access: Kiosks ensure that AR technology is accessible to everyone, even people without smartphones.

Possible Challenges

- Limited Smartphone Use: Not everyone will have AR-capable smartphones.
- Technical Skills: A number of users might find using digital kiosks challenging.

How to Overcome the Challenges

- Instructional Videos: Show videos with step-by-step navigation to facilities.
- Technical Support: Provide on-site staff to support users in operating kiosks and AR navigation.

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IMPACT AND BENEFITS

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IMPACT

- **Improved Navigation**: AR navigation makes directions easier to follow, especially for visitors who come to these places for the very first time, minimizing puzzlement and distress.
- **Enhanced User Experience**: Real-time updates, immersive interaction contribute to a more entertaining and enriching journey experience.

BENEFITS

- **Social**: Inclusive access by non-native speakers and the disabled through multilingual support and AR-based guidance.
- **Economic**: It improves efficiency, hence convenience, which should improve customer satisfaction and increase station use, leading to some economic benefit.
- **Environmental**: These systems decrease the amount of printed maps and signs needed, reducing waste and the carbon emissions from printing and waste management.

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RESEARCH AND REFERENCES

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Research:-

- Problem Identification: Travelers struggled with unclear signage and foreign languages at the station.
- Solution Ideation: This led us to develop an **AR navigation** system using kiosks, providing real-time, accessible directions to reduce confusion.
- User Experience Insight: We observed how the absence of interactive guidance increased stress for travelers, driving us to create a user-friendly **AR,AI** Technologies.

References:-

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- H. Xu, H. Zhang, and J. Liu, "An AR based indoor navigation system using SLAM and hybrid maps," in *2021 IEEE 3rd Global Conference on Life Sciences and Technologies (LifeTech)*, Nara, Japan, 2021, pp. 393-396. doi: 10.1109/LifeTech52111.2021.9391866.
- A. Martin, J. Cheriyan, J. Ganesh, J. Sebastian, and J. V, "Indoor Navigation using Augmented Reality," EAI Endorsed Trans. Creat. Technol., vol. 8, no. XXVI, pp. 1-6, Feb. 2021, doi: 10.4108/eai.17-2-2021.168718.