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IDSN 530 Tech Essentials
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November 21st, 2023

Lab 8: AR/VR Proposal

Proposal for YourPath+ a Virtual and Augmented Reality Enhancement Feature

YourPath+ is a virtual and augmented reality enhancement feature to add to existing apps like Google Maps and Apple Maps, it will be available for both iOS and Android platforms. YourPath+ will provide real-time accessibility information and 3D navigational tours within public spaces and destinations especially designed for anyone with mobility challenges. The future domain and additional documentation will be found on the **YourPath+** website at URL https://www.yourpathplus.com.

Description of Original VR/AR Component
YourPath+ is a VR/AR feature that folds into existing Map apps, designed for people with mobility challenges, it will provide real-time accessibility information. This feature will overlay virtual elements onto the physical world, offering users with mobility challenges enhanced 3D navigation options and accessibility tips as they virtually tour a space they plan to visit. Through users' existing phones or mobile devices, the AR component will leverage geolocation data to provide personalized accessibility information, such as obstacle alerts, accessible routes (showing ramps and elevators), and nearby accessible facilities.

Advantages and Added Value
Enhanced Accessibility: By integrating YourPath+ VR/AR into existing Map apps, mobility challenged users will be empowered to navigate their surroundings with greater independence, confidence, and success.
Personalized Guidance: By overlaying virtual elements onto the physical world, the app will offer personalized accessibility tips and navigation assistance tailored to the user's specific needs.
Improved User Experience: The integration of AR will offer a more intuitive and interactive navigation experience, making the app more engaging and user-friendly for individuals with mobility impairments.

Development Requirements, Challenges, Technical Requirements
Development Platform: The AR component will be developed using ARKit for iOS and ARCore for Android to ensure compatibility with both platforms. The VR component is made possible using RICOH360 THETA Cameras and similar technology to create the 3D walk thru experiences.
Operating System Restrictions: The app will require iOS 12 or later for Apple devices and Android 7.0 (Nougat) or later for Android devices to support the AR features.
APIs: Integration with geolocation APIs and accessibility databases will be essential in providing real-time accessibility information.

Major Technical Challenges/Implementations
1. Real-time data integration will be required to ensure seamless integration with geolocation and accessibility databases to provide accurate and real-time accessibility information within the VR/AR environment.
2. The YourPath+ user interface design will be intuitive and accessible; the VR/AR component must be easy to interact with, especially for individuals with mobility impairments.
3. Optimizing the features performance to continually deliver a smooth and responsive VR/AR experience will be important, and something to consider with regard to the user's device and it's available resources.

By addressing these technical requirements and challenges, YourPath+ aims to deliver a transformative and inclusive 3D navigation experience for individuals with mobility challenges within the Map apps they already use. The proposed enhancements YourPath+ offers align with recent research and industry developments, which emphasize the potential of AR to improve accessibility for these individuals.

Research Links:

https://dl.acm.org/doi/fullHtml/10.1145/3373625.3417006
https://www.washington.edu/news/2023/10/17/accessibility-augmented-virtual-reality/
https://www.w3.org/WAI/APA/task-forces/research-questions/wiki/Augmented_Reality_and_Accessibility
https://utilitiesone.com/improving-accessibility-augmented-reality-advancements-in-geolocation
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