QWERTY SOLUTIONS

BUSINESS PROPOSAL

PipAR: A QR Code-Based Augmented Reality Pipe Mapping Mobile Application

Community

Water leakage and pipe-related issues are prevalent challenges for homeowners and construction professionals. Identifying the location of water pipes within a house is often cumbersome, requiring invasive methods that can lead to unnecessary property damage and increased costs. Many households and properties lack accessible, up-to-date plumbing layouts, leaving residents and professionals to rely on guesswork or outdated blueprints. This gap has created a pressing need for a modern, user-friendly solution that simplifies the process of locating water pipes and ensures minimal disruption during inspections or maintenance.

Target Users:

- Homeowners
- Construction professionals
- Real estate developers
- Maintenance personnel

Gaps

Currently, there are several limitations in the way pipe layouts are accessed and visualized. Many homeowners do not have easy access to their property's plumbing blueprints, leading to guesswork and potential errors during maintenance. Troubleshooting pipe-related issues is time-consuming, as it often involves invasive measures such as

drilling into walls or floors. Existing solutions, like paper blueprints or standalone diagrams, fail to offer real-time guidance, making them impractical for many users. Additionally, there is a lack of integration with modern technology, which limits accessibility and usability for the average homeowner or professional.

Solution

PipAR is a mobile application designed to revolutionize pipe mapping through augmented reality (AR). The app uses a unique QR code placed at the entrance of a house to access and visualize the water pipe layout dynamically. By scanning the QR code, users can walk through their property and view the pipes overlaid on walls, floors, and ceilings in real-time. The AR technology allows users to navigate through the layout effortlessly, providing an intuitive and interactive experience. Additional features such as offline access and the ability to update and store layouts ensure long-term usability for homeowners and professionals alike. This solution addresses the existing gaps by offering an efficient, cost-effective, and user-friendly way to manage and visualize pipe layouts.

Rationale of the Solution

The introduction of PipAR addresses several critical issues:

1. **Efficiency in Maintenance**: By eliminating the need for invasive inspections, PipAR saves time and reduces property damage, which translates to cost savings.
2. **Accessibility and Empowerment**: The app empowers homeowners with direct access to their property's pipe layouts without the need for specialized knowledge. This democratization of information makes it easier for property owners to manage maintenance tasks.
3. **Cost-Effectiveness**: PipAR reduces the costs associated with troubleshooting pipe issues, as users can quickly identify and address problems without professional intervention. This feature also makes it more affordable for both homeowners and property managers.
4. **Future-Proof Design**: The integration of QR code and AR technologies ensures that PipAR is adaptable to future advancements in mobile technology. This makes it a sustainable investment for the long term.
5. **Environmental Responsibility**: By reducing unnecessary repairs and waste from destructive inspections, PipAR supports environmentally friendly practices, aligning with the growing trend towards sustainable property management.