SRS DOCUMENT FOR AUGMENTED REALITY SYSTEM

INTRODUCTION:

Purpose:

- The purpose of this software requirements solution is to specify the Augmented Reality (AR) models to our real life.
- The software aims to visualize the 3D models of our real life and experience them, bridging the gap between virtual and real world.

Scope:

- The software system will provide an app-based application that the user can go through the application through his android phone. It will utilize device cameras, sensors, and processing capabilities to render AR content in real time.

Definitions, Acronyms and Abbreviation:

AR model:

- An AR model is something that visualizes the 3D models and brings them to reality.

Customer:

- Customer is the person who can access the webpage and he is free to choose the 3D models that he needs to display to the real world.

Administrator:

- A user of the system who manages the payments, 3D models and to display to the real world.

References:

- IEEE Std 830-2019: IEEE Recommended Practice for Software Requirements Specifications

Overview of Document:

- This SRS document is structured into the following sections: Introduction: Provides an overview of the document and its contents.

General Description:

Product Perspective:

- The AR application will operate as a standalone mobile application. It will interact with the device's camera, sensors, and hardware components to deliver a seamless AR experience.
- Integration with external APIs and services may be required for additional features.

Product Functions:

User Interaction:

- Allow users to interact with AR elements through buttons and taps that the user can place the object wherever he needs.

Localization and Tracking:

- Precise tracking of the device and placing the augmented model in the well-defined manner.

Customization:

- Enable users to customize and rotate or enlarge the AR content with the help of settings.

User Characteristics:

Users:

- Individuals who can use the AR applications for different purposes.

Administrators:

- Administrators will be the ones who designed the webpage and are involved in creating or enhancing the AR content for the application.

Assumptions and Dependencies:

Assumptions:

- The application assumes users have devices with compatible hardware specifications (camera, sensors).
- Users are assumed to have a stable internet connection for accessing online AR content.

Dependencies:

- The project depends on timely updates and support from iOS and Android operating systems.
- The AR application relies on the stability and updates of the AR development framework used.

Apportioning of Requirements:

AR Content Rendering:

- The application shall render digital content over the real-world environment as viewed through the device's camera.

Specific Requirements:

External Interfaces:

User Interfaces:

- The user interface shall be intuitive, providing easy navigation and interaction with AR elements.
- AR content customization and social sharing features shall be accessible through the application settings.

Software Interfaces:

- Integration with external APIs for content retrieval and social media sharing shall be considered. The application shall be compatible with iOS and Android platforms.

Functions:

- The application will have user interactive buttons.
- The application shall access the device camera.
- The application should locate the AR model accurately.
- The application will store the data entered by the user in a secure manner.

Performance Requirements:

Rendering Latency:

- The application should minimize rendering latency for a responsive AR experience.

Scalability:

- The application should handle the increasing number of the concurrent users.

Error Handling Objective:

- Provide basic error handling for a stable user experience.

Logical Database Requirements:

User Data Objective:

- Store user-specific information for personalization and customization of the AR experience.

AR Object Data Objective:

- Store data related to augmented reality objects, such as their characteristics and interactions.

Authentication and Security Data Objective:

- Store authentication and security-related data to ensure secure access to the system.

Design Constraints:

Operating System Compatibility Constraint:

- The system should be compatible with common mobile operating systems (e.g., Android, iOS).

Software System Attributes:

Security Attribute:

- Implement basic security measures to protect user data and ensure secure interactions.

Usability Attribute:

- Design the user interface to be intuitive and user-friendly for users with varying levels of technical expertise.

Interactivity Attribute:

- Enable basic interactivity between users and augmented reality objects.

Other Requirements:

Privacy Considerations:

- Implement basic privacy measures to protect user data.

Offline Functionality Requirement:

- Provide basic functionality for offline use when an internet connection is unavailable.

Accessibility Requirement:

- Design the application to be accessible to users with disabilities. Considerations:
- Implement features such as screen reader compatibility, adjustable text sizes, and other accessibility measures.

Appendices:

Appendix A – Glossary Terms:

AR (Augmented Reality):

- A technology that overlays virtual content onto the real world.

SDK (Software Development Kit):

- A set of tools, libraries, and documentation for developing software applications.

GPS (Global Positioning System):

- A satellite-based navigation system for determining precise locations on Earth.

UI (User Interface):

- The visual elements and interactions through which users interact with the application.

Appendix B – Analysis Models:

Use Case Model:

- The use case model describes the interactions between the Augmented Reality system and its users. The use cases include Load AR Model, Interact with AR Model, Capture AR Scene, and Manage User Preferences.

Data Model:

- The data model describes the data elements used by the Augmented Reality system, including User, AR Model, Interaction, and Scene.

Appendix C – Supplementary Information:

Assumptions:

- The Augmented Reality system assumes that all users have compatible devices and sufficient computing resources to load and interact with AR models.

- It also assumes that users are in a safe environment where they can move around while using the AR system.

Constraints:

- The Augmented Reality system is subject to constraints related to the processing power of the user's device, the complexity of the AR models, and the lighting and space conditions for optimal AR experience.

- It also needs to handle multiple users interacting with the same AR model concurrently.