Project Proposal

for

Interactive Book Reader with Augmented Reality Content

PID 20

Mentor - Dr. Sandareka Wickramanayake

Prepared by - Group 14

MADUSHA E.P.C. 200368L
MENDIS D.V.N 200392E
MENUKA L.D.S. 200394L

Department of Computer Science and Engineering
University of Moratuwa

31/07/2023

Project Proposal

Contributions

Madusha E.P.C - Overview of the Project, References
Menuka L.D.S - Objectives of the Project, The Need of the Project, Scope of the Project
Mendis D.V.N - Deliverables and Overview of Existing Systems and Technology

Title of the project: **Interactive Book Reader with Augmented Reality Content**

Overview of the Project

Our proposed project is an interactive Book Reader with Augmented Reality Content that mainly focuses on children's books with ages between 3-10 years. This mobile app will incorporate AR visualisations into children's books, making reading a more engaging and enjoyable experience for children.

Once the app is installed, users can select the relevant book from the dashboard, hold the phone over the book, and visualise the content. The app will support a wide range of book formats, including storybooks, alphabet books. Users can choose from a variety of AR visualisations, including characters and scenarios, making reading more interactive and fun for children. Our app will also support text-to-speech and dictionary features to enhance the reading experience. Users can highlight and comment on text, bookmark pages, and navigate easily. Anyone can upload an AR book to our platform, and people can use our app to view those stories. The website only acts as a platform for authors to publish books and manage them, and for users to read books to some extent. Overall, our proposed system aims to revolutionise children's reading experience by providing an interactive and enjoyable reading experience with the help of augmented reality.

Objectives of the Project

Design and implement a user-friendly mobile app for reading physical books with AR content and other digital formats and also design and implement a web application that can be used to publish AR content for books and provide a marketplace for users. Implement additional features such as a text-to-speech converter, a dictionary link for complex words, comment and highlight capabilities, and bookmarking functionalities.

The Need for the Project

Reading is often not enjoyable for small children. Nowadays, children are more interested in audio-visual content like youtube videos. The project addresses the need for making reading fun for kids with AR content and text-to-speech features. This will make them more interested in reading. It also addresses the need for a platform to add AR content for publishers and users to purchase books. The aim is to build a user-friendly interactive platform that integrates the above features.

Scope of the Project

The project is mainly aimed at children. The mobile app consists of E-book reading capabilities with AR content visualisation and text-to-speech feature to enhance the AR experience. The app can additionally read other digital formats. It also consists of a dictionary for complex words to improve vocabulary, comment and highlight functions for user annotations and bookmarking pages for easy navigation and revisiting.

The web app consists of features to add AR content for publishers and allows users to purchase them in a marketplace.

Guest User: Read books with AR content, digital books. Purchase books from the marketplace in the web app.
Administrator: Add new books. Give publisher rights to the publishers.
Publisher: Publish books to the marketplace.

Deliverables

An innovative mobile application for young readers to read digital books with the integration of AR visualisation of characters and scenarios along with a sophisticated web platform that facilitates authors to publish and manage their literary works while gaining insights into reader preferences.

Overview of Existing Systems and Technology

Bookful is a similar type of mobile application that provides an interactive reading experience for kids between the ages of 3 to 8. It offers a diverse selection of 3D/AR books where characters and scenes can be viewed with AR animations, a variety of reading levels, educational games and activities, etc. to entertain the young readers while making them engaged in an active learning experience.

The proposed system uses Unity Vuforia Engine as SDK for developing Augmented Reality related features. The main reason for this is that Vuforia's marker-based AR technology has the capability of triggering virtual content for predefined images or objects when recognized by the app. The business logic of the system would be implemented using NodeJS while the backend would be connected to a MongoDB database. Further, React and ReactNative will be mainly used for the front-end development of the system, in order to provide users with an interactive web application and mobile application.

References

[1] Augmented Reality in Books. [Online] Retrieved from https://blog.kotobee.com/augmented-reality-in-books/ [Accessed on 16/7/2023]
[2] ARBIBOOK. [Online] Retrieved from https://www.arbibook.com/?lang=en [Accessed on 16/7/2023]
[3] How Publishers Are Using Augmented Reality to Bring Stories to Life. [Online] Retrieved from https://econsultancy.com/how-publishers-are-using-augmented-reality-to-bring-stories-to-life/ [Accessed on 16/7/2023]
[5] Unity.[Online] Retrieved from https://unity.com [Accessed on 16/7/2023]
[6] Vuforia Developer Portal. [Online] Retrieved from https://developer.vuforia.com [Accessed on 16/7/2023]
[7] How to Build AR App. [Online] Retrieved from https://program-ace.com/blog/how-to-build-ar-app/ [Accessed on 16/7/2023]
[8] Kids Bookful: Kids' Books & Games Book Library for Kids. [Online] Retrieved from https://apps.apple.com/us/app/bookful-kids-books-games/id1428323777 [Accessed on 31/7/2023]