Bilkent University
Department of Computer Engineering

Senior Design Project

FAVEO

Project Specifications Report

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1. Introduction

1.1 Description

FAVEO is an online quiz application for android that utilizes text to speech [1], Voice Control [2], TalkBack[3] and image processing to help visually impaired people's studying. In more detail they can solve questions, test their knowledge and also prepare their questions and share with others.

Application's main features will be solving questions as well as preparing questions. User will choose a topic to solve questions and they can solve with the help of TalkBack or Voice Control. Questions will be read by text to speech. To upload a question user can use upload image option that extracts the text from image and convert it to question. User can make changes on result of image processing or they can upload a voice questions.If they like parents can create custom quiz which will be accessible only by their account and can be modified.

Briefly, FAVEO is android application to help visually impaired people's studying. It is everybody's right to self-improve themselves yet unfortunately some disabled people have much less resources in order to self educate or self challenge. With Faveo, we are aiming to create a friendly environment that challenges the player while still being simple to operate.

1.2. Constraints

1.2.1. Technical Constraints

- Since FAVEO is a android application, technologies which are designed for android will be used.

- In the future, web-based version can be distributed.

1.2.2. Social Constraints

- FAVEO will store minimum amount of user data for security and privacy.
- Users will be able to evaluate the system and report the question in order to improve the system.

1.2.3. Implementation Constraints

- Since FAVEO is an android application, java and android frameworks will be used [4],[5].
- Github will be used to maintain collaborative work [6].

1.2.4. Sustainability Constraints

- Users will be able to give feedback.
- Periodic updates will be distributed according to feedbacks.

1.2.5. Economic Constraints

- Database to store questions and user information will be provided by a third-party database provider. The price will be taken into account [7].

1.2.6. Security Constraints

- User's personal information will be confidential.

1.2.7. Language Constraints

- Application language will be Turkish.
- Text to speech, voice control and image to text features will only work for Turkish.

1.3. Professional and Ethical Issues

- FAVEO will ask minimum amount of information from users in order to respect for privacy[8].

- System will apply techniques to prevent inappropriate questions to be uploaded. However, sometimes system might can't prevent it, users can report questions which they found inappropriate.

2.Requirements

2.1. Functional Requirements

- Users will be able to solve questions via Voice Control [2] or with help of TalkBack [3] screen.
- Users will be able to a upload a question by just typing it or uploading an image. The question text will be extracted from image by system and uploaded to the database.
- In order to group the questions, system will ask to user to choose a category for the question such as mathematics, physics and general culture.
- Users can choose a category of questions to solve or can choose to shuffle categories.
- In order to help user to understand the usage of the system, simple user manual will be provided to the users.

2.2. Non-Functional Requirements

- Accessibility features must work smoothly since most of users are visually impaired.
- Image processing can consume high percentage of CPU. Therefore, any unnecessary computations should be avoided.
- The system should be extensible for additional features such as new topics.
- Since database might hold huge amount of users and questions, the system should be scalable.

3. References

[1]Text To Speech Reader

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[3] Android'i TalkBack ile kullanmaya başlama

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[4] 7 Popular Frameworks for Java Development

   https://www.finoit.com/blog/7-popular-java-frameworks-2019/

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[5] A List of the Best Libraries and Frameworks for Android App Development

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[6] The world's leading software development platform

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[8] "The Code affirms an obligation of computing professionals to use their

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