



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 5, May 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Gaming Application for The Elderly Using Dart & Flutter

Adeep S Shetty¹, Ajay Patel K A², Amogh K G³, Lekha⁴, Prof. Roopa D E⁵

U.G. Student, Department of Information Science Engineering, Bapuji Institute of Engineering and Technology,
Karnataka, Davanagere, India¹⁻⁴

Assistant Professor, Department of Information Science Engineering, Bapuji Institute of Engineering and
Technology, Karnataka, Davanagere, India⁵

ABSTRACT: The project is all about the creation of a gaming application for the elderly which would improve the decline in the cognitive skills of the old age population. Some of the diseases related to cognitive skills known so far familiarly are the Alzheimer's and the Dementia disease. The need is fulfilled by recovering the affected and preventing the unaffected from these diseases. This project makes this gaming application available both in android and iOS platforms. The application is built by writing the code in Dart language on Flutter platform and uses Firestore database which is a NoSQL database for the storage purpose which is being brought up by writing the code in Javascript to create dynamic and interactive web content. The application comprises of certain games such as Matching the pairs, Tic-Tac-Toe, Drag and drop and educates the users with a set of health tips and notifies them regarding their medications at appropriate time.

KEYWORDS: Flutter, Dart, UI/UX, Score-tracking, Firestore

I. INTRODUCTION

In the past decade, computer-based tools have been used increasingly for managing healthcare problems in developed countries. These tools include telemedicine, computerized patient records, and other technologies for diagnosis and surgery planning. A lot of these technological developments were concentrated on improving clinical and administrative operations. However, a large amount of cost is incurred for patients who are immobile, requiring healthcare services such as regular check-ups to be done at their home. With the rise of mobile devices such as cell phones and handheld computers, these technologies are becoming more ubiquitous and their increasing computational power enables us to achieve more complicated tasks remotely from our house and office. Using these devices, different healthcare services, such as education, rehabilitation, and monitoring, can be performed away from hospitals or senior facilities, which decreases the cost that is required for patients with mobility difficulties. Studies suggest that virtual worlds and healthcare games have the potential to improve healthcare support by increasing players' engagement and education in this area. Nowadays a majority of households play some forms of digital games. By using people's interest in digital games, exercising games can make people more proactive in managing their health and enable health monitoring. Wii Fit is the epitome of a more healthcare oriented type of game available in the market, providing players with an entertaining way of doing exercises. The Wii is currently being used by many rehabilitation centers, to encourage patients to do more exercises while supporting their rehabilitation processes. By contrast, mobile devices such as Apple's iPhone and iPod Touch have the advantage that they are more mobile than any other gaming consoles, which enables us to use them in any place at any time. They are ideally suited for developing innovative health monitoring and support tools due to their mobility. Busy people who are always on the run as well as people who are limited in their mobility such as elderlies would both benefit. Another advantage of such mobile devices is their support for direct input through touch screens and accelerometers. These two components allow us to design user interfaces for people that can be operated using their fingers, or rotating and moving the device. Such natural input has been found advantageous for telehealth care, as mouse and keyboard are often conceived as obstacles. The work presented here is part of a larger research project that is investigating the use of computer-based technologies for effective and affordable home healthcare. In this project, research is done on the development of health monitoring and rehabilitation tools for the iPhone and the iPod Touch. In particular, the aim is to explore their capabilities of providing a usable interface and supporting rehabilitation exercises.

II. RELATED WORK

This section will give an insight in the backgrounds of Flutter, Swift and Java, as well as the development and building environments that were used in the experiment. The goal of this literature review, is to help the reader and author understand how each language and environment works and what differentiate them in terms of functioning, management of looks and development. (a) Native Mobile Applications: The meaning of native in the field of mobile applications refers to applications that are built to run on a specific platform or OS. (b) Native Implementation of UI: Native applications inherit the targeted platforms looks and apply it to their appearance, this is called Native UI. (c) Cross-platform Mobile Application Development: Cross-platforming refers to a product or software that can be used on another platform than what it was developed for. (d) Flutter: Flutter is a mobile SDK and UI tool that is developed by Google, based on the programming language Dart and officially released in 2018. The developers’ goal is to deliver applications that comes as close to the performance and look and feel of native applications. (e) Dart: It is a client-optimized language that can be used on multiple platforms. It can be compiled into both JavaScript and native based code. (f) Flutter/Dart UI Management: Flutter uses widgets as the main concept within in the code. Flutter has a development functionality called hot reloading which means that when changes are made, they are injected into the dart Virtual Machine and Flutter rebuilds the structure and let you view the changes that was made faster. (g) Flutter Compiling: The way Flutter works when running on Android is by compiling the developers written Dart code to native with the help of AOT compiling. These together with x86 libraries that were created when compiling the dart code, are put into a runner and built as an APK. Flutter runs similar on iOS system, but instead the Dart code compiles into ARM library and is later put as a runner and built as an. ipa. Flutter themselves suggest the whole process is similar to how game engines works and that is how the developers explain it on their website.

III. METHODOLOGY

The first step in this project is to gather requirements for the gaming application. This involves identifying the target audience, the type of games they are interested in, and the features they would like to see in the application. Once the requirements have been gathered, the next step is to design the application. This includes designing the user interface, creating wireframes and mockups, and defining the game mechanics. Feedback from the target audience should be incorporated to ensure that the design is intuitive and engaging. The development stage involves building the application using Dart and Flutter. This includes implementing the game mechanics, developing the user interface, and integrating features such as score tracking, leaderboards, and social sharing. Regular testing and debugging should be conducted to ensure that the application is working as expected. Once the development is complete, the application should be thoroughly tested to identify any bugs or issues. This includes functional testing, performance testing, and compatibility testing on different devices and platforms. After the testing is complete, the application can be deployed to the relevant app stores (Apple App Store and Google Play Store). This involves following the guidelines for submitting an application to these stores, including obtaining the necessary certifications and approvals. Finally, it is important to maintain the application and release updates as needed. This involves fixing any bugs or issues that are identified, adding new features, and ensuring that the application is compatible with new versions of the operating system. By following this methodology, you can ensure that the final product meets the needs of the target audience and provides an engaging and enjoyable gaming experience for the elderly.

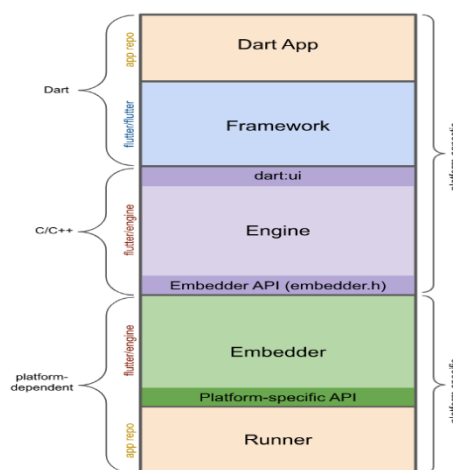


Fig 1: Dataflow diagram

IV. EXPERIMENTAL RESULTS

Figures show the results of gaming application for the elderly using dart and flutter. Fig (a) shows the user phone menu (b) Homepage of the gaming application (c) Tic-Tac-Toe Game (d) Drag & Drop Game (e) Memory Game (Flip the cards).

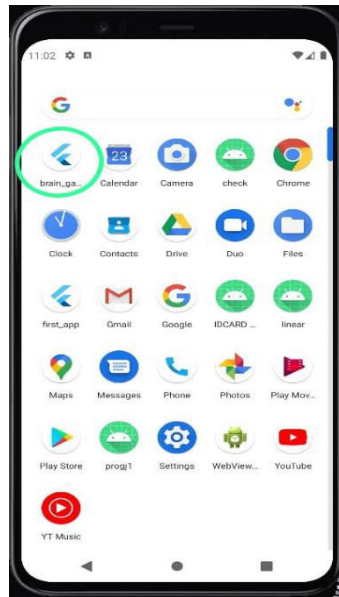


Fig (a) user phone menu



Fig (b) Homepage of the gaming application

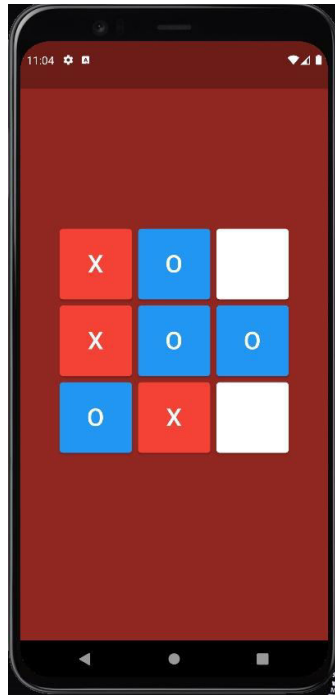


Fig (c) Tic-Tac-Toe Game



Fig (d) Drag & Drop Game

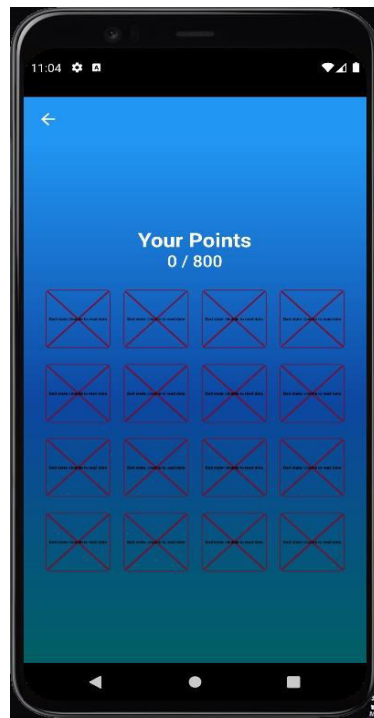


Fig (e) Memory Game (Flip the cards)

V. CONCLUSION

Gaming applications for the elderly have the potential to provide numerous benefits, including mental stimulation, physical activity, and social interaction. However, there are also potential challenges to building these applications, such as accessibility, addiction, and cost. To create a successful gaming application for the elderly, developers must carefully consider the unique needs and abilities of this population. They must design games that are user-friendly, accessible, and safe, while also providing opportunities for mental and physical stimulation and social interaction. Despite the potential challenges, the benefits of building gaming applications for the elderly are significant. These games can help to improve cognitive function, reduce social isolation, and provide a source of entertainment and enjoyment. They can also help to promote physical activity, which is essential for maintaining overall health and mobility. In conclusion, gaming applications designed for the elderly represent a promising opportunity for improving the quality of life for this growing demographic. By carefully considering the needs and abilities of elderly users and designing games that are engaging, accessible, and safe, developers can create a valuable tool for promoting health, wellbeing, and social connection among elderly individuals. As such, the development of gaming applications for the elderly is a field that should be pursued with care and attention, as it has the potential to make a significant positive impact on the lives of this important demographic.

REFERENCES

- [1] <https://www.webmd.com/alzheimers/guide/preventing-dementia-brain-exercises>
Answered by WebMD
- [2] <https://www.lifeline.ca/en/blog-article/seniors-enjoy-better-emotional-health-from-playing-video-games/>
- [3] <https://my.clevelandclinic.org/health/articles/11826-memory-problems-what-is-normal-aging-and-what-is-not>
Answered by Cleveland Clinic
- [4] <https://www.webmd.com/alzheimers/guide/preventing-dementia-brain-exercises>
Answered by WebMD – Harvard University



INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.423



ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

9940 572 462 6381 907 438 ijirset@gmail.com



www.ijirset.com

Scan to save the contact details