

Development of Android Application with Effective User Interface

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Abstract— This paper introduces development of effective user interface (UI) for android users. Various applications explored in this paper that contains the best features of android including Repackaging Detection Technique, Language Studies, Personalized Sightseeing Tours using GPS Technique, Vision Measure Application using Snellen's Chart and Sleep Analysis Application using Tracking System. Effective user interface (UI) is the basic need for mobile users. Android provides various features to create elegant UI using Cascading Style Sheet (CSS), Hyper Text Markup Language (HTML) and Extensible Markup Language (XML). The development for an android application is mainly considered by its UI. Android is a platform that consists of an operating system and a Software Development Kit (SDK) for handheld devices. Anyone can use the Android SDK to develop application to run on the Android OS because it is an open system, simple and easy to use. Android smart devices have become an essential part of our daily life because of its smart UI design.

Keywords—Mobile Application Development, SDK, User Interface, API, XML, HTML, CSS.

I. INTRODUCTION

There are three factors that should be focused for the design of a Effective UI: development factors, visibility factors and acceptance factors. These factors improves the user experience and makes it responsive for the mobile users. Sometime the use of some applications are avoided because of the complexity of UI. There are numerous applications available on the internet but few have good UI feature. The Interface is designed in such a way that they can work with phones that have small, normal and large screens. In android application development, UI is designed by XML, CSS and HTML. Such applications follow three-tier architecture including Data Logic Layer, Business Logic Layer and Application Layer. These architectures are used to develop any kind of application. Data logic layer contains the logic, manipulation and calculation. The business logic layer fetches that data and displays the output with the help of application layer. Application layer is the most important part of any application because it is visible by the end user. Thus, the UI that is visible by the user should be effective and feasible because the end user will perform activity on the application layer, no matter what kind of interface is used by the other two layers. For creation of better UI one should take various features, such as text style, text size, text colour, text alignment, and text background into consideration. It becomes difficult for the user to read large amount of data in

one screen and so with the help of effective UI the data is narrowed and displayed in an effective way so that user can read and use that easily. The accessibility of mobile devices has become better, due to its small size and computation capabilities. A good UI is one that allows the guest to carry out their intended actions smoothly and effectively, without any unnecessary interruption. Having a clear UI is knowing when to elaborate and when to be concise. As a general rule of thumb, UI should be designed so that users can easily run their task without the help of a manual. This is the reason Android devices have become the leading actor in mobile applications market. Now-a-days there are a lot of resources and reference materials available on the internet for creating an elegant UI design for Android App.

II. CASE STUDIES

(i) For Smartphone devices use of Android Application for Repackaging Detection Techniques

Everybody relies on smart phones and tablets for everything internet-related in their lives. We use mobile phones for internet surfing, communication, online shopping and banking. With this activity we face more malware problem. Market studies have found that most of the Android malwares hide inside repackaged applications to get inside user mobile devices. Many techniques are available that focuses entirely on detecting repackaged application [1]. Repackaged applications are useful to protect mobile users

from large percentage of Android malwares. The prevention and detection of repackaging is also beneficial for original developer. Repackaging applications are classified as offline and online. These techniques perform a significant job on the user device while using that device. Rapid use of Android applications are raising such issues because sometimes malware comes from unknown applications which are actually not useful for the user. Thus, while creating the android application following aspects - security, layout, input validation and presentation should be followed independently. Interaction, Visual and Informational architecture is the basic concept for development of any application. While creating Android application, developer should focus on what users might need to do and while accepting the fact that the interface should be easy to access, secure, understandable and able to facilitate actions. Make sure to consider the goal, preferences and tendencies of user when developing Android application.

(ii) To facilitate Language Studies Development of Android Application

Now-a-days mobile applications have become very popular for learning new things. In android development market, numerous applications are available for language studies [2]. It helps students develop language skills. Many tools are already available on the internet. e.g., words capes that provides crossword puzzle where people could read the clue and then fill in the blanks which would enhance individual's English vocabulary. This application interface consists of two options called Flashcards and Multiple-Choice Quiz. The choice of colour, typefaces, layout and navigation influence the student's experience. The UI is designed for these applications in such a way that they can work with phones that have small, normal and large screens. This application is quite interactive and fun way that helps students to learn new word efficiently.

(iii) Development of Android Application to provide personalized sightseeing tours

Mobile Devices are very useful for quick and easy access for tourism related matters due to its effective technology such as connectivity, localization and UI [3]. This application has been developed to provide an effective and reliable functionality for the user. It also contains some advance features like weather forecasting for the user's location, current time and map for direction. Sometimes issue of internet connectivity occurs while travelling and so it is designed to be an occasionally connected application in order to reduce network traffic. It is because of this a temporary database is used on the user's mobile device. It provides fascinating and effective support for the tourist on a trip which may include his stay according to his objective, preferences, knowledge, budget and available time. It also does the itinerary. This application is like travel book since it records the tourist's moves and task to help him recall facets

of his trip. The tourist can inform the application whether or not they liked the trip. Most importantly, the UI of this application is user-friendly and elegant. Besides this, effective layout is used in the system that appeal to the user.

(iv) Android Application "Dr. Eye" to measures the vision of a Person

Smart devices have become an integral part of our everyday life. Now-a-days Android Application provides us an easy way to complete our task whether it is for any sort of calculation, or social and e-commerce-based applications. We don't need to rely on anybody these days to take care of our health-related issues because many applications are available on the internet which work for the health-related issue of a person. In the same manner this application is beneficial for those people who are suffering from eyesight [4]. It helps them to check their vision accurately and in a fraction of their time. It will reduce the time for visiting an ophthalmologist. Required features such as Snellen's Chart are available in this application to test the power of a person. Snellen's Chart is used by a doctor to check eyesight of any patient. In Android there are lots of tools to accomplish this task like such as Android API. It gives the best possible result based on the answer provided by the user and also displays the nearest hospitals in radius of 5km on map (Google Map). Interactive and Intelligent UI design is developed in such a way that patients from all age group can easily use this application.

(v) Development of Android Application for Sleep Analysis

An eye-catchy and feature-loaded Android app becomes the buzzword for the users all over the globe. It has also become an integral part of today's society including the field of medicine. People are taking interest these days in various applications to improve their health and fitness and that's the reason for the proliferation of numerous apps that focuses on these issues. The application is developed for sleep analysis which includes functions like smart alarm clocks, sleep aids, sleep-talking recorder, snoring, time awake and time in light/deep sleep [5]. The important thing of this app is that it is useful for fitness tracking. This is like sleep diary for those who are suffering from insomnia or circadian or phase shift disorder due to poor sleep hygiene. People addicted to working at night either drink coffee or exercise at night and in turn his sleep is affected. Thus, this app is effective because it gives the sleep patterns that is beneficial for that patient. Visually appealing and intuitive UI of this app is highly attractive and user-friendly for user. It is designed in such a manner that the app is fully usable on multiple devices and mobile OS.

III. CONCLUSION

This paper discusses an android application with an effective user interface and user experience which becomes easy for users to understand at first glance. A simple UI permits the user to go for multiple actions with the help of few steps. It is an approach in which the first-time user can immediately start using the app without having a need to go to the detailed set of instruction. While creating the effective UI, we should remember that it is always good to have real users for their thoughts and suggestions. This strategy will avoid the need of re-work and surely save lot of time and money. Outstanding user interface design makes mobile application amazing for the user. To increase the security of the application UI designer must communicate with back-end and other middle-ware experts to place appropriate data in a user-centric manner. This will enhance the overall experience of the mobile user. Good UI design app plays an important role in the success of any mobile application. If an app has good UI design, chances of that application gaining acceptance are also very high. Design of an interactive UI wins half the battle – pull in large number of customers.

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Authors Profile

Vandana is currently working as lecturer in Atomic Technology College, Hossana, Ethiopia. She completed her Masters in Technology in 2016 during that she has published one Research Paper on “*Test Path Generation Using Cellular Automata*” in International Journal. She is pursuing Ph.D. from Amity University Rajasthan, Jaipur. She has 7 years of professional experience and 1 year of national academic and 1 year of international academic experience.



Bornali Purkayastha obtained her Ph.D in Theoretical Physics from North Eastern Hill University, Shillong (India) in the year 2000. She has been teaching physics at the graduate and post graduate levels for more than 18 years. She has published articles in reputed international and national journals. She has also authored two books on High Energy Physics. She is member of IET and a life member of Indian Physics Association.



Anil Kumar completed his Ph.D. in computer science & engineering from Kurukshetra University, Kurukshetra, Haryana. He is having more than 12 years of academic and professional experience. He is currently working in Wachemo University, Hossana, Ethiopia as Assistant Professor. He has guided thesis for one doctoral research scholar and more than 10 post graduate level students. His research work contains 20 published research papers in reputed national/international journals and attended more than 5 conferences and workshops regarding information technology and computer science & engineering.

