Projection Visual Acuity

Chart-Calibration

A synopsis of the project work being carried out at

Visint HealthCare,

Manipal

submitted to

Department of Computer Applications

Manipal Institute of Technology

Manipal University, Manipal

in partial fulfillment of the requirements for the award of degree of

Master of Computer Applications

submitted by

Punith Bandodekar

Reg. No: 140970027

under the guidance of

Mrs. Archana H.
Assistant Professor-Senior scale
Department of Computer Applications
M.I.T., Manipal - 576 104

Mr. Adithya C and Mr. Nagarajan T
Research Scholar, Research Assistant
Department Of Optometry
SOAHS, Manipal - 576 104

January 2016

DEPARTMENT OF COMPUTER APPLICATIONS
MANIPAL INSTITUTE OF TECHNOLOGY
(A constitute college of Manipal University , Manipal)
MANIPAL-576104, KARNATAKA , INDIA

Abstract

In the present and future world automation is the key factor and everyone relishes to go with this flow. Along with automation comes precision and speed. The Projection visual acuity chart is one, which is time efficient. This project aims at developing an application for the implementation of the different types of charts utilized in the diagnosis of an eye related problems in the Android devices like tablets and smart phones which would avail the person with eye problems in improving their vision in a better way. The task is to computerize the process of diagnosis of eye problems.This project is developed in Android Studio. We utilize the Android Software Development Kit (SDK) that avails us develop mobile applications on Android platform.

Introduction

This application will be very helpful to doctor in taking consideration the present scenario, where usually doctors use different type of charts such as Snellens Chart, Landolt C Chart, etc. which is printed on a chart paper. This application makes sure that the entire eye check-up is fully digitized and helps the doctor in finding a better solution for different eye problems.

1. ”Visint Health Care Pvt Ltd” is a startup incubated at MUTBI (Manipal University Technology Business Incubator) driven by enthusiastic eye care providers (Optometry, School of Allied Health Sciences, Manipal University) along with a team of experienced engineers. Our award winning (Gold medal, DST (Department of Science and Technology) Lockheed Martin India Innovation Growth award 2013) innovative product ”Ocular Digital Adaptor (OcuDA)” received Biotechnology Ignition Grant (BIG) support from BIRAC division, Department of Biotechnology, Govt. of India. OcuDA is a portable smartphone based eye imaging device useful in providing quality eye care to all, especially to serve rural India.

2. We utilize Android Software Development Kit(SDK) which includes a variety of custom implements that avail us develop mobile applications on Android platform.We would develop an android application which would be subsidiary in vision testing utilizing variants of charts such Snellen's,Logmar,Landolt C and Sloan.Detecting vision defects utilizing our application in mobile contrivances such as smartphones and tablets which will avail the patient in amending their ocular perception by treating the defects diagnosed.

3. 4 months or 16 weeks is the duration of the project.

Motivation for the proposed work

The current system is a computerized version of the eye diagnosis application for windows. Drawbacks observed in the existing system are that the existing application is not on a portable device and is a standalone system. The need of the proposed work based on the drawbacks of the existing system is that the application should be portable on devices like mobiles and tablets which is easy to carry for remote locations for eyes diagnosis and treatment of needy people. Providing a vital check up that can pick early signs of eye disease before being aware of any symptoms,many of which can be be treated if found earlier would be very helpful.

Objectives

The Objectives of the proposed work are:

- To set the height and width of the character in the chart displayed.
- To project the charts using a mini projector which is portable.
- It includes various types of charts such as Snellen's,LogMar,Landolt C and Sloan in detecting vision chart.

Modules

1. Calibration Settings:In the calibration module, we adjust the height and width of the character in the chart in order to diagnose patient's vision. We additionally adjust the character on the projection screen with veneration to the distance between the patient and projection screen.

2. Visualizing Chart:This module exhibits the selected chart for patient's vision testing. The visualization displays different types of chart such as Snellen's,Logmar, Landolt C and Sloan Charts.

3. The user interface with navigation drawer for the application in android with responsive and easy to understand features is to be developed by me.

Technical Details

Hardware	
RAM	2 GB RAM and above
Hard Disk	400 MB hard disk space
Processor	Intel Pentium 3 or higher

Software
• Microsoft Windows 8/7/Vista (32 or 64-bit) • At least 1 GB for Android SDK, emulator system images, and caches • 1280 x 800 minimum screen resolution • Java Development Kit (JDK) 7 • Optional for accelerated emulator: Intel processor with support for Intel VT-x, Intel EM64T (Intel 64), and Execute Disable (XD) Bit functionality

Bibliography

[1] Bailey, Ian L. and Lovie-Kitchin, ”Jan E.Testing Vision: From Laboratory Psychophysical Tests to Clinical Evaluation” ,Vision Research,Elsevier, 20th September 2013.

[2] M. Ettore Giardini,”The Portable Eye Examination Kit: Mobile phones can screen for eye disease in low-resource settings.”, IEEE Pulse, vol. 6, no. 6, pp. 15-17, 2015.