Title: Online Eye Testing Interface

Group 1

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Abstract:

This project is a humble attempt to bring eyes and eye-care closer. Traditionally an eye checkup which generally includes testing the acuity of the patients is done in a hospital or clinic and not in front of a computer at home or at workstation. Since the technology is advancing at a critically high pace and the computers have almost became an important part of daily life of humans, a large number of important things can be done just by pressing few clicks and so there lies a demand of constant development and innovation in aspects of other fields too which can be made available for the remote users.

The interface do not demands any money to use, takes only 5-15 minutes as compare to several minutes for appointment & checkup and aims to be very easy to use. The
interface comes with very few but important set of instructions to perform the eye testing and also suggests advices to avoid any extra damage to the eyes. This interface will be very useful and handy for students, busy scheduled professional workers and others may get the benefits as well.

Introduction:

In today's modern world, things changes rapidly. This rapid change demands a constant time, attitude and devotion towards the work. The more the work a person does in his/her daily life, the more it will put physical strain on the body. Eyes are no different from the body. Doing work for long time while sitting in an ideal position makes the eyes weak. And people usually do not find time to visit hospital for health checkup.

Approximately 800 million people worldwide are blind, severely visually impaired or have near vision sight loss according to estimates by the International Agency for the Prevention of Blindness. Of these, 45 million people are blind and 269 million are significantly visually impaired; an additional 517 million people require spectacles for reading and other close up activities. Approximately 80 percent of blindness is avoidable, i.e., treatable and/or preventable. 145 million people have low vision due to uncorrected refractive errors. In most cases, normal vision could be restored with eye glasses or contact lenses.
The aim of this project is to create a Graphical User Interface to test the visual acuity of subjects at home or work without any assistance of a doctor. Normally, a doctor tests a patient’s eye by showing him/her Snellen chart (series of letters of varying fonts in a group of rows) from a distance and ask him/her to read the letters having varying font in the series written on it. Every font series corresponds to a power of the eye. The doctor asks the patient to read those letters one by one. A stage comes when the patient fails to clearly read the letters on the chart and the doctor then see the corresponding reading to that series of letters. That reading actually is the power of the eyes of the patient.

The same way the interface will show a series of phases comprising of group of letters at every phase in front of the user provided the user will be sitting at a particular distance from the screen. The user is supposed to write those letters in a provided box on the screen. If the user succeeds, then he/she will proceed to next phase automatically and the process will continue till the user fails to read the letters on the screen. At the stage where the user find too much trouble to read the letters on the screen, he/she may can end the phase and then can check the corresponding power of eye.

Method:
Design:

1. Home page

Welcome To Eye Testing Portal
Click To ENTER
Info

Enter The Following Fields

Name: 
Age: 
Sex: 
Lens Power (for spectacles users only): 

Proceed to Test

2. View of Test-Windows
Result-demos:

Your Vision: 20/20
Remarks: You have a good vision
Participants – The project primarily targets but not limited to students from age group of 8-19 who generally lose their eye power during these years.

Materials - Xampp - For localhost server,

Web Browser - To show GUI

Desktop/Laptop - To run the above softwares.

Procedure – The interface requires the user to sit at a distance of approximately 1.2 metres from the screen and to make sure that there is plenty of light in the room in order to avoid any extra strain on the eye due to environmental factors. The interface will show on screen a set of instructions about the sitting position, what to do in the next stage, what does the button stands for and will also show links to few sites of Hospitals and eye clinics. The interface will show group of letters primarily consisting of 4-6 letters in front of the user. The user then has to write those letters in the provided box. The interface will not have any fancy background as it may distract the view of the user from the letters. The interface will contain three buttons for previous, go and end task.
respectively. The interface may also have a virtual keyboard as an extra functionality so that the user who don’t have external keyboard (e.g. laptop) may not have to move from their preferred position in order to write the letters in the box. Once the string provided by the user and the one on the screen matches, the user will proceed to next phase automatically. If the string doesn’t match, then the letters will refresh on the screen and will ask the user to enter them again. For more than three incorrect entries, the system will end the phase automatically and will show the corresponding power of the eye. When the user enters into next stage the font size of the letters will decrease and the user will again have to read and write those letters in the box. Every stage will continue with decreasing font size of the letters. If the user finds it very difficult or too much strain over the eyes to read the letters on the screen at any stage, he/she can end that stage by using the end button and the interface will then show the corresponding power of the user’s eye. As an extra functionality, the interface at the end will show the links to some hospital websites and suggestions to the users in order to avoid any further damage to the eyes.

Future Plans:

- Develop a reliable framework that can be used for testing vision of illiterate people.

- Increasing the reliability of test by incorporating other eye vision charts.

- Enabling speech recognition features.
• Add features for testing other eye complications.

• Eye scan – video analysis to detect symptoms for infections, ailments like conjunctivitis etc.

**Results** – The users who either are not sure whether their eyes are actually getting weak or they are just tired too much and feels weakness in the eyes, those who don’t find time from their busy schedule and wants to know whether they really need a medical care for the eyes, students who reads too much books will be better able to check the power of their eye-sight at an ease of just using their computer with no extra efforts like getting an appointment from the doctor, paying fee for the checkups and some others too.

**Discussions:** There is an immediate need to bring eye-care closer to eyes. Owing to the fact that a large number of people are suffering from complications of eyes, an easy and quick eye testing is need of the hour.

**Inference:** The Online Eye Testing interface worked well in finding the visual acuities of the people and if developed further this could be of great service to the world.