Chapter 1

AN IMPROVED APPROACH FOR EYE DEFECT DETECTION USING IOT DEVICES

Mr.N.SARAVANAKUMAR

Rathinam College of Arts and Science, Coimbatore, Tamil Nadu, India – 641021

Mr. N. GANAPATHIRAM

Rathinam College of Arts and Science, Coimbatore, Tamil Nadu, India – 641021

Dr.P.MANIIARASAN

Nehru Institute of Engineering and Technology, India

Dr.D.SATISHKUMAR

Nehru Institute of Engineering and Technology, India

ABSTRACT

Abstract— *At present, most of the persons are suffering from eyesight. Their food habits and their genes will create eyesight. To test eyesight, there is a manual approach that consumes time as well as money. The noted disadvantages such as the need to take more care personally while interacting with an unknown environment and need to collaborate with other organizations for the charity of testing the eyesights. To avoid these inconveniences, the proposed approach is required which automatically tests the eyesight for right and left eyes using IoT. This smart vision approach using IoT will test eyesight for numerous users and will generate reports separately. That report sent to the user mobile. The virtual software developed uses IoT which enables checking of the sight functionality and the report is sent to the user mobile. In this, the virtual environment is created where IoT devices and networked computer vision devices are connected to test the eyesight. The proposed approach is demanded and is required in this modern and future culture too. Many benefits like consultancy pricecutting transport cost-cutting, time is reduced, speed up in generating reports are achieved. This is a future demanded revolutionary approach which directs many online spectacle shopping sites. This is considered a virtual doctor and serves lots of people since there is no tiredness because it is an automatic approach.*

Keywords—Eyesight, Internet of Technology, Virtual Doctor.

RELATED WORK

The purpose of on the “Eye Defect Detection” is to offer a process where the customer will feel simple to give an eye check up. The Facile Eye Defect Detection is a special website which makes you aware of your eye problems by making you take test in various sight tests like Visual Acuity Test, Color Variation Test, Contrast Vision Test, Amsler Grid Test, E& C Tests. At Facile Eye Defect Detection we know how important it is for you to look after your eyes. This is why we've developed this quick and fun online sight check, which tests your eye in many ways and find how well your eyes work together, with the aim of encouraging you to be more aware of your eye sight. This eye check-up application can detect your Eye problems by asking few questions like doctors. Initially users have to

register or login to this application. the user can answer the fun question. user answer the question the site will given suggestion about problem. This project automatically maintains the customer details and it provides information concerning eye, and decides whether problem of eye and suggestion. This system stores details of the customers and eye question through online.

SYSTEM STUDY

Existing System:

The existing system is customer go to the clinic and checking eye, doctor's provides suggestion directly. it's all manual process. In a web based application is more difficult to update the suggestion frequently. It takes more time to complete the process. Even though there are many web based application are available it's all maintain hospital and blood bank based information.

Lack of Draw Backs:

- Security of data.
- Time consuming.
- Consumes large volume of paper work.

Proposed System:

For an efficient eye test system, a three tier organization structure has been recommended. The main objective of this project is to bring a full-fledged web based eye test systems. visual activity test are maintained in the database so it makes the task easier. provide suggestion easily. The new system is reliable, flexible and accurate with much integrity constraints. The forms are designed clearly and each entry is recorded in a table. This system enhances theaccuracy based on the users need. Fast, clear and legible reports can be generated without any ambiguity. Integrated database design and maintenance can be done easily.

Advantages:

This system is user friendly which is running on Web environment.

- Provides visual activity.
- Large database capacity.
- Information can be retrieved very faster.
- Records are reliable and accurate.

System Development

A) Module Description:

- User Registration
- View Activity
- TestingVisual Acuity Test
- Color Variation Test
- Contrast sensitivity Test
- Amsler’s Grid Test
- Myopia Test
- Suggesting results

User Registration:

Existing user can login by using their username and password. A new user has to do the registration process to access the application in online. User can view the test menu which is posted by the admin. The registration process

includes username, password, address, phone etc. Once the registration process is completed successfully the user can login with the username and password to test.

View Activity:

With the help of this system user can view the available test details which includes visual activity test, color variation test, contrast sensitivity, amsler's grid test, and Myopia test. These activities are updated to test the user's eye sight variation. **Test:**

The registered user can participate the tests in online. They have to enter relevant answers for the test that have been provided. These test are conducted by level based .if one test is completed another will carried automatically to the users site within a fraction of seconds

Visual Acuity Test:

A visual acuity test is an eye exam that checks how well you see the details of a letter or symbol from a specific distance. Visual acuity refers to your ability to discern the shapes and details of the things

Color Variation Test:

Test is a color perception test for red-green color deficiencies, the first in a class of successful color vision tests called pseudo-isochromatic plates.

Contrast Sensitivity Test:

A contrast sensitivity test measures your ability to distinguish between finer and finer increments of light versus dark (contrast). This differs from common visual acuity testing in a routine eye exam, which measures your ability to recognize smaller and smaller letters on a standard eye chart.

Suggesting Results:

Results are provided to the user for the users at their fingertip click in. these are all generated based on their performance in the entire tests that we mentioned earlier in the activity module. Result statement includes the eye problems of the user such as long sight, short sight etc.

IV. Testing Methods

It is the process of exercising software with the intent of finding and ultimately correcting errors. This fundamental philosophy does not change for web applications, because web based system and applications reside on network and inter-operate with many different operating systems, browsers, hardware platforms and communication protocols. Thus searching for errors is significant challenge for web applications.

Testing issues:

- Client GUI should be considered.
- Target environment and platform considerations
- Distributed database considerations
- Distributed processing consideration

Testing and Methodologies

System testing is the state of implementation, which is aimed at ensuring that the system works accurately and efficiently as expect before live operation, commences. It certifies that the whole set of programs hang together System testing requires a test plan, that consists of several key activities and steps for run program, string, system and user acceptance testing. The implementation of newly design package is important in adopting a successful new system

Testing is important stage in software development. System test is implementation should be a confirmation that all is correct and an opportunity to show the users that the system works as they expected It accounts the largest percentage of technical effort in software development process.

Testing phase is the development phase that validates the code against the functional specifications. Testing is

a vital to the achievement of the system goals. The objective of testing is to discover errors. To fulfill this objective a series of test step such as the unit test, integration test, validation and system test where planned and executed.

Unit Testing:

Here each program is tested individually so any error apply unit is debugged. The sample data are given for the unit testing. The unit test results are recorded for further references. During unit testing the functions of the program unit validation and the limitations are tested. Unit testing is testing changes made in a existing or new program this test is carried out during the programming and each module is found to be working satisfactorily. For example in the registration form after entering all the fields we click the submit button. When submit button is clicked ,all the data in form are validated. Only after validation entries will be added to the database.

Unit testing comprises the set of tests performed by an individual prior to integration of the unit into large system. The situation is illustrated in as follows

Coding-> Debugging ->Unit testing -> Integration testing

The four categories of test that a programmer will typically perform on a program unit

- Functional test
- Performance test
- Stress Test
- Structure test

Functional test involve exercising the code with nominal input values for which the expected results are known as well as boundary values and special values.

Performance testing determines the amount of execution time spent in various parts of unit program through put and response time and device utilization by the program.

A variation of stress testing called sensitivity testing in same situations a very small range of data contained in a bound of valid data may cause extreme and even erroneous processing or profound performance degradation. • Structured testing is concerned with a exercising the internal logic of a program and traversing paths.

Functional testing, stress testing performance testing are referred as “black box” testing and structure testing is referred as “white box” testing

Validation Testing:

Software validation is achieved through a serious of testes that demonstrate conformity with

requirements. Thus the proposed system under consideration has been tested by validation & found to be working satisfactory.

Output Testing:

Asking the user about the format required by them tests the output generated by the system under

consideration .It can be done in two ways, One on screen and other on printer format. The output format on the screen is found to be correct as the format designed n system test.

System Testing:

In the system testing the whole system is tested for interface between each modules and program units are tested and recorded. This testing is done with sample data . The securities, communication between interfaces are tested System testing is actually a series of different tests whose primary purpose is to fully exercise the computer based system although each test has a different purpose all work to verify that all system elements properly integrated and perform allocate function

It involves two kinds of activities namely

- Integrated testing
- Acceptance testing
- Validation testing
- Integrated testing

Integrated testing is a systematic technique for constructing tests to uncover errors associated with interface. Objective is to take unit tested modules and build a program structure that has been dictated by design

Acceptance testing:

Acceptance testing involves planning an execution of a functional test, performance test and stress test to verify that the implemented system satisfies the requirement. The acceptance testing is the final stage of the user the various possibilities of the data are entered and the results are tested.

Validation testing:

Software validation is achieved through a series of test that demonstrates the conformity and requirements. Thus the proposed system under consideration has to be tested by validation and found to be working satisfactorily. For example in customer enters phone number field should contain number otherwise it produces an error message similarly in all the forms the fields are validated

Testing results:

All the tests should be traceable to customer requirements the focus of testing will shift progressively from programs Exhaustive testing is not possible To be more effective testing should be which has probability of finding errors

- The following are the attributes of good test
- A good test has a probability of finding a errors
- A good test should be “best of breeds”
- A good test to neither simple nor too complex

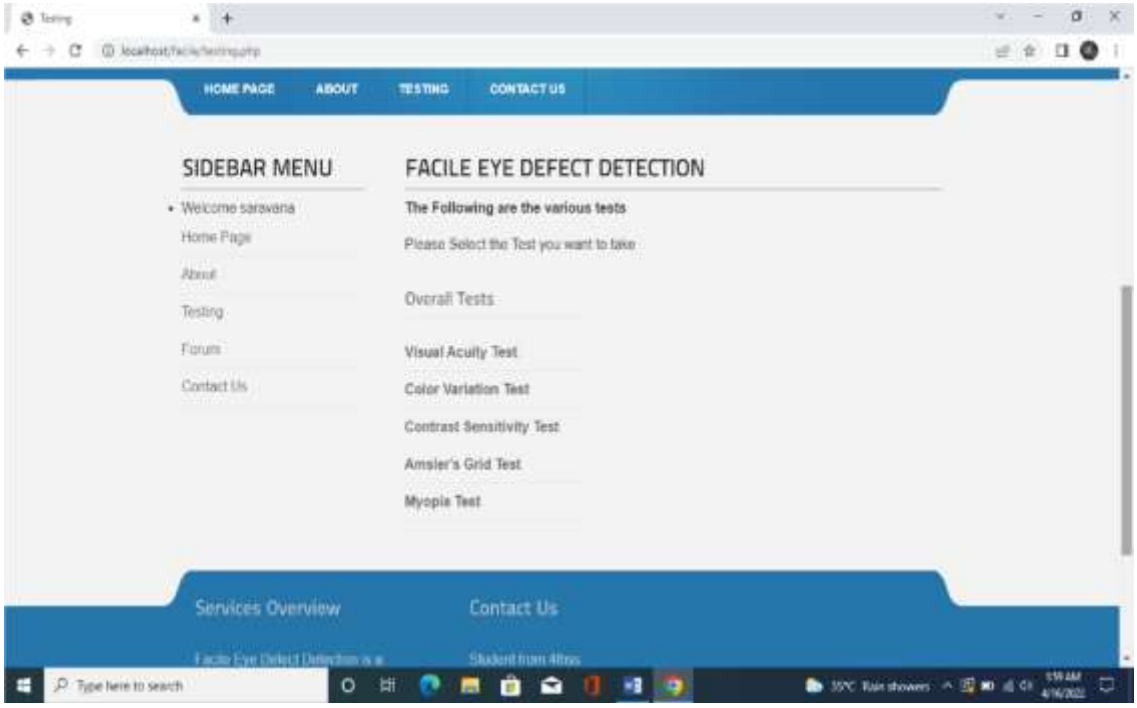
SYSTEM IMPLEMENTATION:

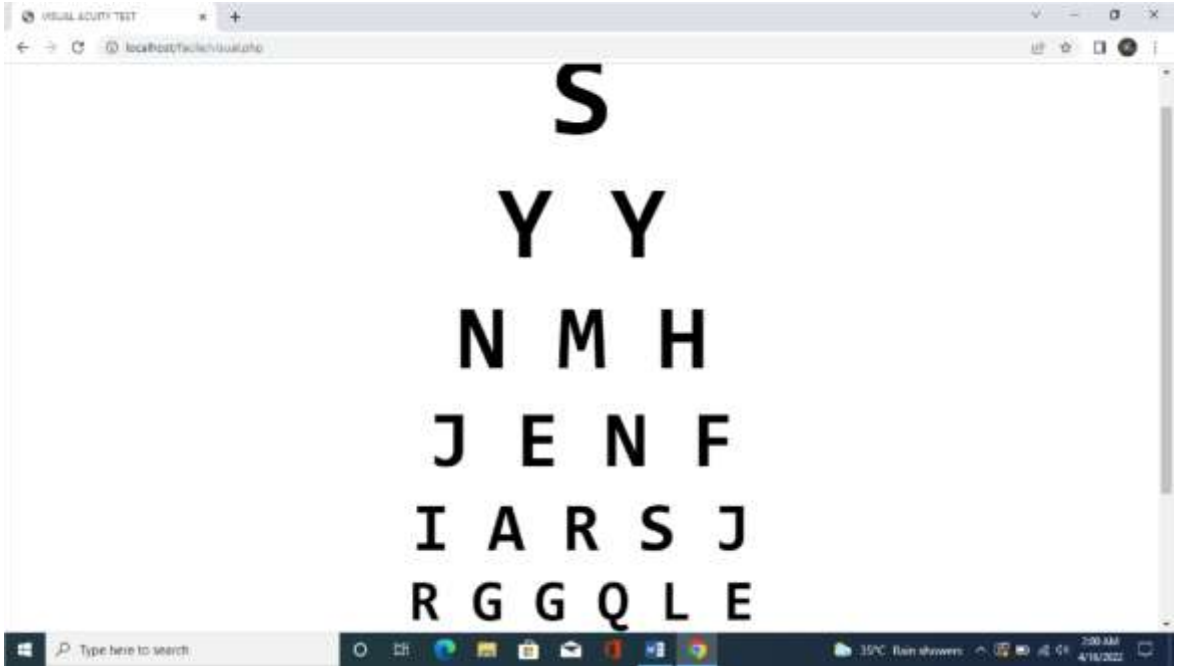
System Implementation is the stage in the project where the theoretical design is turned into a working system. The most crucial stage is achieving a successful new system and giving a user confidence in that the new system will work efficiently and effectively in the implementation stage. The stage consist of

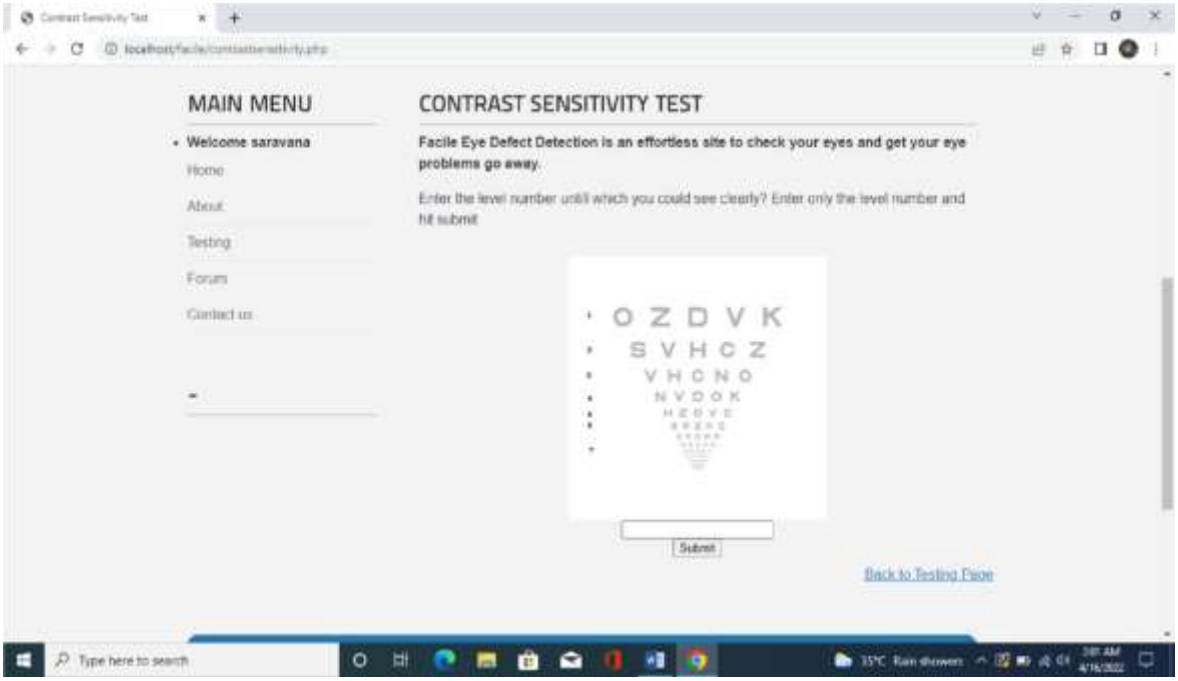
- Testing a developed program with sample data
- Detection and correction of error
- Creating whether the system meets a user requirements
- making necessary changes as desired by users.
- Training user personal

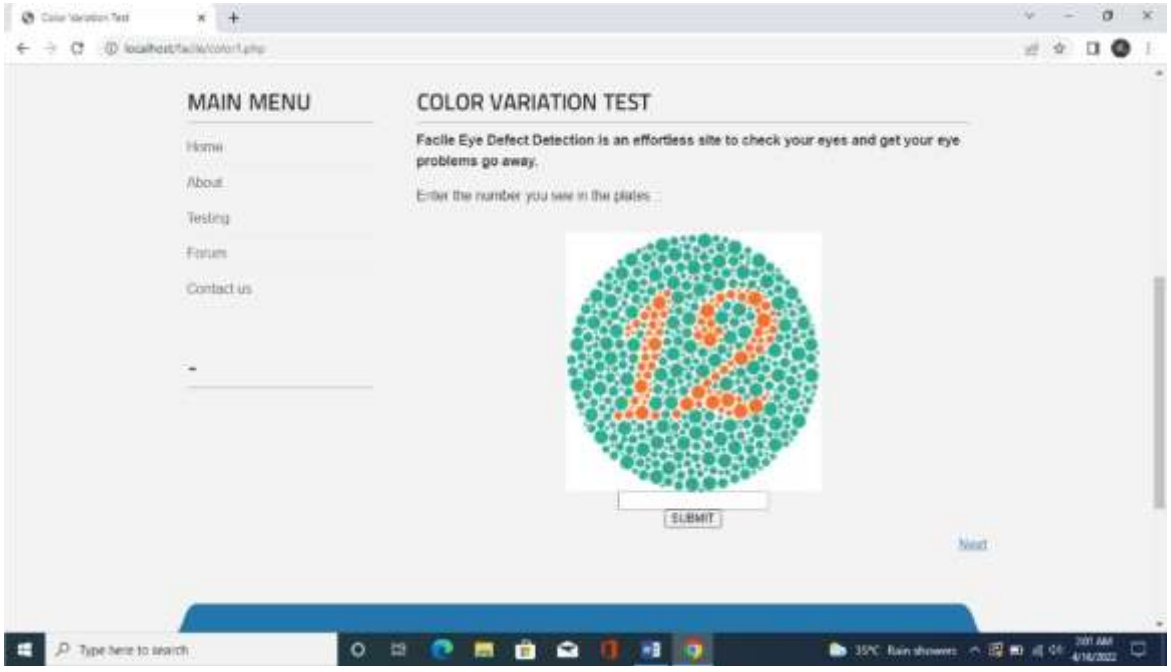
The implementation phase is less creative than system design. A system design may be dropped at any time prior to implementation, although it becomes more difficult when it goes to the design phase. The final report of the implementation phase includes procedural flowcharts, record layouts, and a workable plan for implementing the candidate system design into a operational design.PHP and MY SQL has offer very efficient yet a simple implementation technique for development of the project.

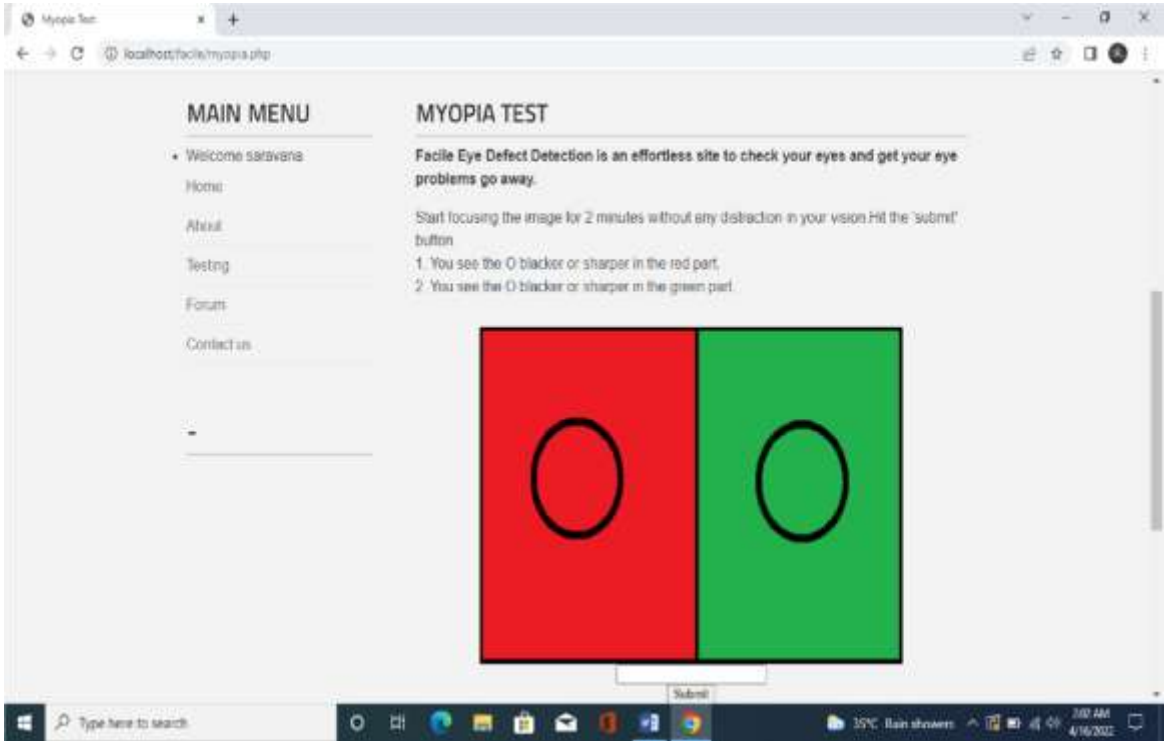
Experimental Results











Conclusion

The "Eye Defect Detection" has been developed to satisfy all proposed requirements. The process is maintained more simple and easy. The system is highly scalable and user friendly. Almost all the system objectives have been met. The system has been tested under all criteria. The system minimizes the problem arising in the existing manual system and it eliminates the human errors to zero level. The design of the database is flexible ensuring that the system can be implemented. It is implemented and gone through all validation. All phases of development were conceived using methodologies. User with little training can get the required report. The software executes successfully by fulfilling the objectives of the project. Further extensions to this system can be made required with minor modifications.

References

Professional PHP6, By Ed Lecky-Thompson, Steven D. Nowicki, and Thomas Myer

Learning PHP, MySQL, and JavaScript: A Step-by-Step Guide to Creating Dynamic Websites, By Robin Nixon

PHP Solutions: Dynamic Web Design Made Easy, By David Powers

Beginning PHP and MySQL: From Novice To Professional, By W. Jason Gilmore

Head First PHP & MySQL, By Lynn Beighley and Michael Morrison

Core PHP programming By Leon Atkinson, Zeev Suraski.

PHP Object-Oriented Solutions By David Powers.