AssisTech Project Report

Contrast Changer and Eyesight Tester

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Eyesight tester

This project is build for Retinal Pigmentation patients. In this disease affected person can't see the whole at once as normal person can do. There are some patches of area that are only visible. So there are medical test to check how much the person can see. But they are not accessible for everyone. We build these so that if person want to check his/her progress on daily basis to check whether the treatment person is doing like doses of medicine or maybe the Yoga is having positive or negative impact. Here precision of boundary is most important.

Algorithm

In these project we uses a efficient algorithm so that in least points illumination we can predict the boundary of patch with precision.

We first generate one point in center so that user can concentrate on that point and will make that point as center for user for rest of the test. Then we generate 60 random points and illuminate one by one on the screen. We check user output for every illumination. If user is able to see then he has to press button. This will be considered as positive input. Now we take all positive input. Now these inputs with positive result form some patches and these patches are similar to the one we want. Now we make a abstract boundary and illuminate point on those. If its visible we push the point forward test and for negative result we will push the point inside our patch. As we will do for all the points along the perimeter of patch we will get new set of point which are at threshold or at the real patch boundary. We will do for all the patches and get the opatch and hence the result of our test.

Correctness of our Program

We here have at first level out of sixty points the set of points visible by user. Then we draw random patches around the points. These patches have property that all point out of 60 which were not visible are all outside. And all the visible point are inside any of the patch (as we can have multiple patches). Now we check at boundary of patch , if visible there then we move outside else inside. And after we keep going outside till user get positive response and at the precise boundary we will have change of nature and we will mark that point. So by these we get all the point near the exact boundary. Now when we join all the points we will get the patch.

Contrast Changer

In these test our purpose is to find the threshold contrast at which user can just see the input. Here we have a black screen on which number are written in black. Screen is white. Now we know on scale 0-255 we have black at 0 and white at 255. Now any user can see whole black on white. Now we start decreasing intensity of white. So our background will start become greyish. We implemented only for black and white but it can be easily follow for any colour. Now as the user continues to answer correctly screen background will become more black and finally when the difference between two consecutive steps is less than 1 the program terminates.

Contrast Measurement Test

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Enter
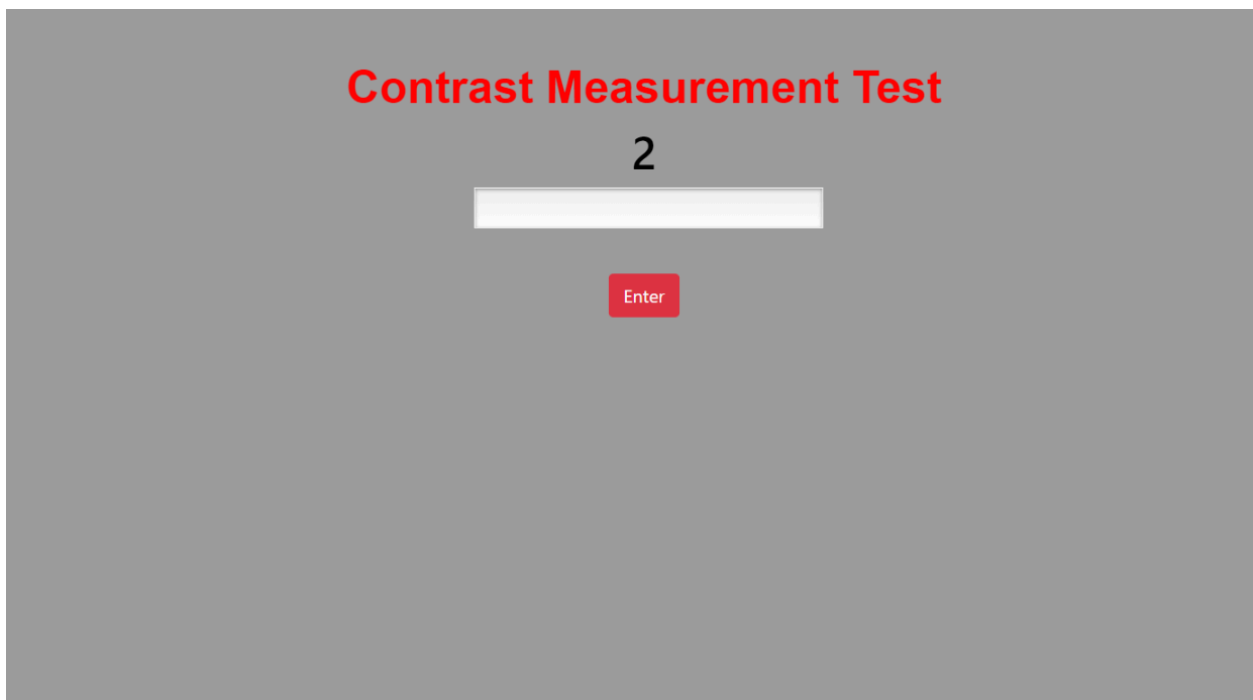
Finally the result is displayed as alert in javascript. This program uses a kind of binary search algorithm.

Thank You!