

Eye Guard

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Abstract - Eyesight is one of your most important senses: 80% of what we perceive comes through our sense of sight. By protecting our eyes, we will reduce the odds of blindness and vision loss while also staying on top of any developing eye diseases such as cataracts and glaucoma. Healthy brain function needs healthy eyesight. Today, millions of children use computers on a daily basis. Extensive viewing of the computer screen can lead to eye discomfort, fatigue, blurred vision and headaches, dry eyes and other symptoms of eyestrain. This project proposes a system where it uses ultrasonic sensor to measure the distance and based on the distance the brightness is reduced which helps in avoiding/reducing eye strain.

Index Terms - Eyesight, ultrasonic sensor, brightness reduction, distance measurement.

I. INTRODUCTION

The human eye is the organ which gives us the sense of sight, allowing us to learn more about the surrounding world than we do with any of the other four senses. The eye allows us to see and interpret the shapes, colors, and dimensions of objects in the world by processing the light they reflect or emit.

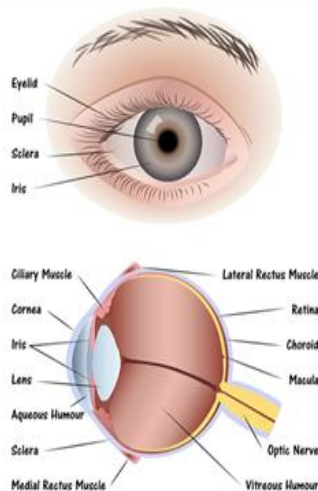


Figure 1: Structure of eye

Our eyes do wondrous things. Through a complicated machine, they take in records and feature a right away connection with your brain, allowing you to visually system the arena round you. In latest years, many people might in all likelihood say the time they spend searching at shows has expanded. In addition to televisions and PCs, smart phones and capsules have fast emerge as famous, and presentations have penetrated everything of our lives.

Information era has made our lives more handy, however on the equal time, eye fatigue caused by non-stop viewing of shows has more and more come to be a social trouble. If you feel fatigue to your eyes, neck or shoulders, it is essential to correctly deal with it rather than letting it cross. If you let it pass and your symptoms worsen, you may damage your mental and bodily health, so be careful.

Some of the names for the numerous problems related to displays and eyes are "pc vision syndrome," "VDT (visual display terminal) syndrome" and "technostress ophthalmopathy." They're unavoidable troubles when it comes to PC paintings particularly. There are diverse approaches to cope with the problems, and the outcomes range from character to character, but in case you strive separately, you'll absolutely be capable of experience a greater great digital lifestyle. It can even make contributions to improved productivity in the workplace.

II. LITERATURE REVIEW

There are several works conducted based on automatic brightness control, controlling can be with respect to brightness, light or background.

Sanal Malthora in 2014 developed a module for automatic brightness control in closed space (room, companies, extra space, etc..) using LDR Sensors. Here the intensity of light is controlled accordingly to the amount of light needed during night Four

different color LED's are used to modify the brightness of room, LDR sensor senses the intensity of light, if the intensity of light is between 675 – 900 a single LED will glow to slightly increase the brightness, if the intensity value is 0 – 225 all the 4 LED's will glow to increase the maximum brightness of room. This technique is helpful when the requirement of light suddenly falls below and could affect the working of the system being used [1]. Similarly, in 2012 Cuing-Hung Cheng developed a module for automatic backlight brightness control using light sensor and Fuzzy Logic Controller. Here light sensor with Fuzzy logic controller technique senses the brightness of different environment and automatically adjust backlight brightness to the level that allows comfort to user eye [2]. Brightness can be adjusted automatically by implementing LDR or light sensor, that is by sensing the intensity of light and by measuring the distance between the user and the PC screen, basically it depends on the position of subject with respect to PC screen. To measure this distance accurately Ultrasonic sensor is implemented [3].

III. METHODOLOGY

The basic working principle is that we measure the distance between PC screen and subject depending on the calculated distance the screen brightness is adjusted.



Figure 2: Proposed System

To measure the distance between the PC screen and the subject we make use of ultrasonic sensor. The

ultrasonic sensor measures the distance and give information to the microcontroller. Here we make use of Arduino Uno (Atmega328P) microcontroller this microcontroller acts as the intermediate between the sensor and the PC screen.

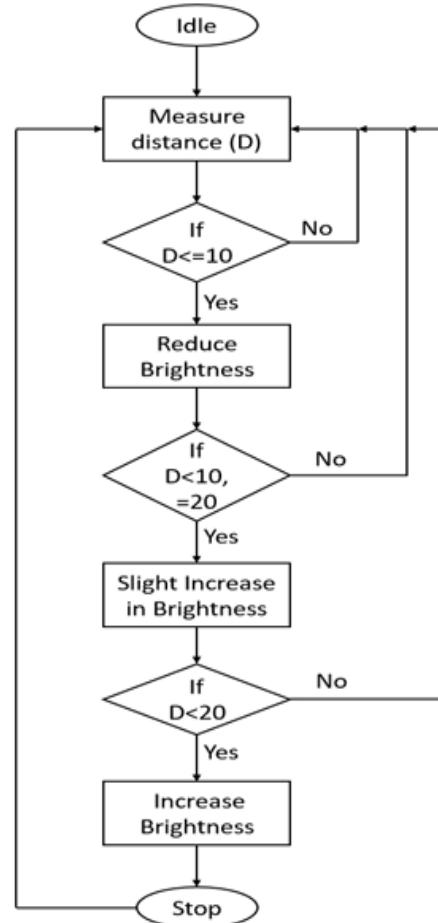


Figure 3: System Flow Process

If the measured distance is less than or equal to 10cm microcontroller signals the PC to reduce the brightness, if the distance is greater than 10 and equal to 20 the microcontroller signals the PC to slightly increase the brightness, and if the distance is greater than 20 the microcontroller signals the PC to increase the brightness of the screen fully.

IV. RESULT

With the help of Python IDLE we execute the program where according to the distance measured brightness is displayed Figure 4. shows the IDLE Shell which displays increase or decrease of brightness.

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