SELF ASSESMENT ON USING COMPUTERIZED SYSTEM

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Abstract: **The combination of eye and vision issues brought on by using computers (such as desktop, laptop, and tablet computers) and other electronic displays (such as smartphones and electronic reading devices) is referred to as computer vision syndrome, also known as digital eye strain. Virtually everyone in today's world uses digital screens for their professional and personal lives. In terms of the symptoms experienced within a task, digital electronic displays differ significantly from printed materials. These displays are viewed by many people for ten or more hours per day, frequently without adequate breaks. Additionally, due to the small size of some portable screens, font sizes may need to be reduced, requiring closer viewing distances, which will put more strain on accommodation and vergence. Additionally, it has been observed that electronic and hard-copy displays have distinct blink patterns. Since around 40% of adults and up to 80% of teenagers may experience significant visual symptoms (primarily eye strain, tiredness, and dry eyes) while and immediately after viewing electronic displays, digital eye strain has been shown to have a significant impact on both visual comfort and occupational productivity. The primary ocular causes of this condition are reviewed in this paper, which also discusses how the standard eye exam should be modified to meet today's visual demands. All eye care professionals are obligated to have a thorough understanding of the physiology and symptoms of issues when viewing digital displays. Patients who are unable to meet these visual requirements will face significant challenges in their daily lives as modern society continues to use electronic devices more and more for work and leisure.**

Key words: **Eye and vision issues, Computer Vision Syndrome, Digital Electronic Displays, Vergence system.**

I.INTRODUCTION:

Electronic displays have become an integral part of modern life, whether at home, at work, in leisure time, or while traveling. Smartphones, electronic reading devices, and desktop, laptop, and tablet computers are now commonplace (Rosenfield et al.). 2012a). For instance, the US Department of Commerce reported in 2011 (http://2010-2014.commerce) that 96% of employed Americans rely heavily on the internet for work. gov/news/fact-sheets/2011/05/13/fact-sheet-digital-literacy), and it's possible that this percentage has gone up even more since it was first published. In point of fact, despite the fact that the concept of a "paperless office" has been predicted for a number of years but has never materialized, it may be that a digital alternative will eventually replace printed materials in hard copy.

A significant amount of time is spent looking at electronic screens. For instance, adults in the United States spend an average of 9.7 hours per day looking at digital media (including television, computers, and mobile devices: http://adage.com/article/digital/americans-spendtime-digital-devices-tv/243414/). Also, an examination of north of 2000 American youngsters somewhere in the range of 8 and 18 years of That's what age found, in a normal day, they spend roughly 7.5 hours seeing amusement media (involving 4.5 hours sitting in front of the TV, 90 minutes on a PC and over an hour playing PC games; Riderout and co. 2010). Users typically check their smartphones an average of 221 times per day, or 1500 times per week, demonstrating the omnipresence of technology.

II.RELATED WORK

Gopinath et al. found that when children spend more time in front of screens and do less physical activity, the size of their retinal arterioles decreases significantly. 2011). It should also be noted that adults, teenagers, and older children all watch digital electronic screens. According to Vanderloo's (2014) literature review, preschoolers watch electronic screens for up to 2.4 hours per day. As a result, the American Academy of Pediatrics (2013) advised against children under the age of two watching electronic screens at any time. Optometrists are particularly concerned by the fact that, when compared to hard-copy printed materials, the magnitude of ocular and visual symptoms is significantly higher when viewing these digital displays (Chu et al.). Given the substantial amount of time spent looking at screens, 2011). An investigation of computer users in New York City found that 40% of subjects reported tired eyes "at least half the time," while 32% and 31% reported dry eye and eye discomfort, respectively, with this same frequency (Portello et al.). Although it is difficult to accurately estimate the prevalence of symptoms associated with electronic screens due to the wide range of working conditions and methods used to quantify symptoms, 2012). Gender (more prevalent in females), ethnicity (more prevalent in Hispanics), and the use of rewetting drops all had a significant impact on symptoms. A huge positive relationship was seen between PC related visual side effects and the Visual Surface Sickness List, a proportion of dry eye. In addition, the American Optometric Association conducted a recent survey of 200 children between the ages of 10 and 17 and found that eighty percent of participants reported feeling tired or blurry after using a digital electronic device.

Collectively, these visual and ocular symptoms have been referred to as digital eye strain (DES) or computer vision syndrome (CVS). The public may not consider portable devices like smartphones and tablets to be computers, so the latter term is preferred. However, it is essential for the optometrist to inquire about each patient's use of technology. At the beginning of the examination, a comprehensive history should be taken to determine the nature of the task and the number and type of devices used. Table 1 provides a list of the areas that should be included in the case history. It is insufficient to simply inquire about patients' computer use and record this information in the patient record as a yes or no response.

Environments like poor lighting, monitor position, and visibility are the main contributors to CVS. The user's visual abilities, including oculomotor disorders, uncorrected refraction errors, and eye abnormalities, are another factor (Gowrinsankaran and Sheedy, 2014). According to Mowry & Ison (2015), physiological and environmental factors make up CVS risk factors. Environmental factors include display display, length of exposure, lighting, contrast, glare, temperature, humidity, noise, ergonomics, furniture, radiation, and the workload given. Physiological factors also include age, sex, systemic disease, treatment, use of contact lenses, and cosmetics

III.EXISTING SYSTEM

Glare from digital screens may cause significant discomfort for some patients. As a result, it's critical that optometrists discuss screen and operator positioning as well as appropriate lighting and the use of window shades. Windows and luminaire reflections on the computer display, desktop equipment, and/or input devices are likely to cause symptoms and a loss of work efficiency. The patient may greatly benefit from relatively straightforward guidance regarding the placement of desktop screens perpendicular to fluorescent tubes and not directly in front of or behind an unshaded window. The effects of glare may be more incapacitating for older patients who have ocular media that are less transparent. Measurement of visual resolution in the presence of a glare source, such as with the Marco brightness acuity tester (Marco Ophthalmic, Jacksonville, FL, USA), is an important clinical test for these people. To give helpful counsel on the arrangement of confined lighting (for example, a work area light for a person who should be capable to see both a work area or PC screen and printed copy printed materials at the same time), cautious addressing by the optometrist with regards to the exact errand prerequisites is basic.

IV.PROPOSED SYSTEM

Across all age groups, digital device use has increased significantly in recent years, to the point where extensive daily use for social and professional purposes is now commonplace. A number of ocular and visual symptoms are included in digital eye strain (DES), which is also known as computer vision syndrome. It is thought to affect 50% or more of computer users. There are two main categories of symptoms: those connected to accommodative or binocular vision stress, as well as dry eye-related external symptoms. When vocational computer users are affected, symptoms may be frequent and persistent, despite the fact that they are typically brief. One of the many available questionnaires can be used to identify and measure DES, and objective evaluations of parameters like critical flicker–fusion frequency, blink rate and completeness, accommodative function, and pupil characteristics can be used to provide indicators of visual fatigue. It is not always easy to see how subjective and objective measurements are related to one another. DES can be managed in a variety of ways, such as by correcting refractive error and/or presbyopia, treating dry eyes, taking frequent breaks from the screen, and considering vergence and accommodative issues. Blue light-filtering eyeglasses have recently been the subject of research by a number of authors, with varying degrees of success in treating DES. It is essential for eye care professionals to be able to offer guidance and treatment options based on high-quality research evidence due to the high prevalence of digital eye syndrome (DES) and the near universal use of digital devices.

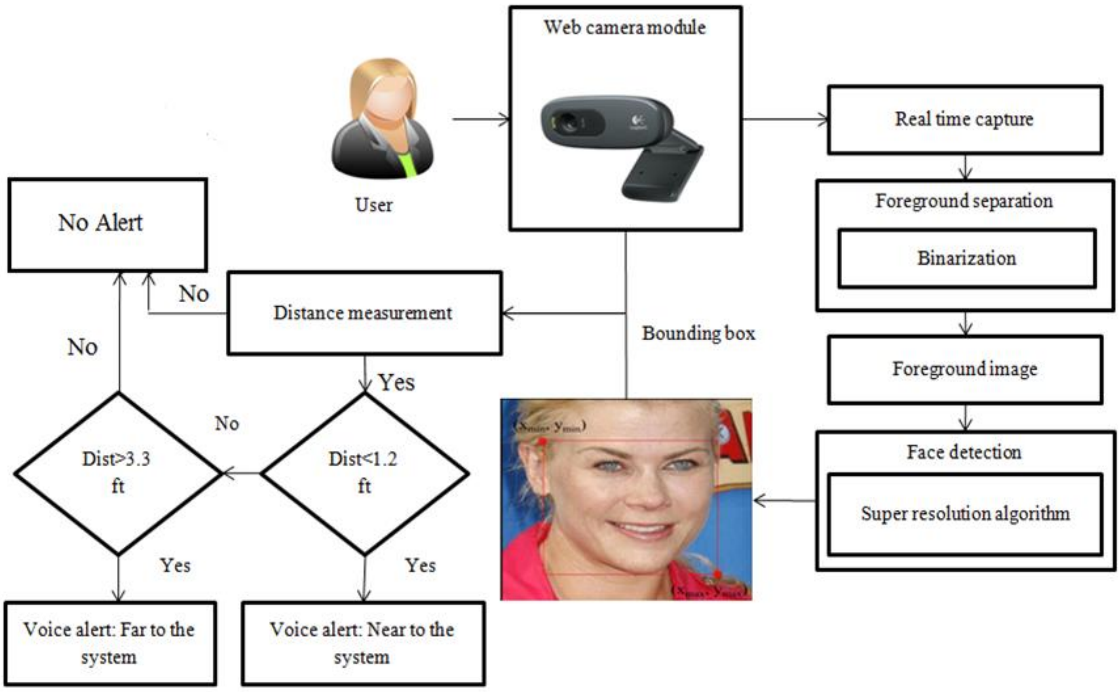

Fig 1 System architecture of the proposed system

In the years starting from the presentation of the PC and the acknowledgment that it was the reason for work environment medical issues, numerous rules have been distributed concerning the best survey points and distances. These guidelines, with a few exceptions, suggest angles and distances that go against the known characteristics of the visual system. The allowed distances and angles are too close together. Most people ignore the established connection between viewing angle and distance. Work on computers is done from a close distance. The system for evaluating vision systems based on their built-in web cameras can be implemented in this project. We can catch face pictures and separate closer view from foundation. Face detection is a computer technology that can identify human faces in digital images. It is used in many different applications. The psychological process by which people locate and pay attention to faces in a visual scene is also referred to as face detection. Face detection is an example of object-class detection in its own right. The goal of object-class detection is to locate the locations and dimensions of all objects in an image that fall into a particular class. Algorithms for face detection concentrate on identifying frontal human faces. It is comparable to image detection, which involves matching a person's image bit by bit. Image matches the database-stored images. The matching process will be invalidated by any database modifications to facial features. First, all of the valleys in the gray-level image are tested to identify the potential human eye regions. Then, at that point, calculation is utilized to produce all the conceivable face locales which incorporate the eyebrows, the iris, the nostril and the mouth corners. The lightning effect caused by uneven illumination and the shirring effect caused by head movement are both reduced when each possible face candidate is normalized. The projection of each candidate onto the eigen-faces is used to calculate its fitness value. All face candidates with a high fitness value are chosen after several iterations for further verification. At this point, each face candidate's symmetry is measured, and the presence of each facial feature is confirmed. Additionally, calculate the distance measured by web cameras and draw the bounding box.

V.DESIGN

Each face's 35 manually extracted points are depicted in Figure 1, and the 30-dimensional feature vector derived from these facial features is listed in Table 1. Since the Japanese portion of our database only contained measured feature values, the original intensity images were unavailable, so we used the point measurement system from [19]. All distances are standardized by the between iris distance to give likeness invariance.

The 685 images in our model database are a mix of images selected from various sources, as described below. The only reason selection was required was the lack of frontal views in many of the available images.

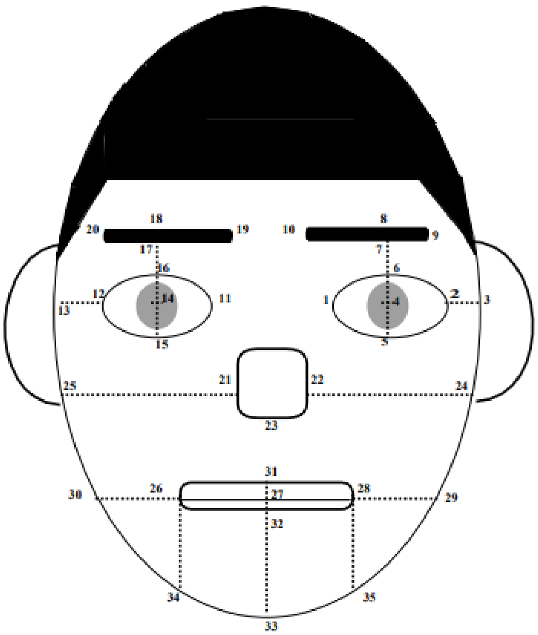

Fig 2 Feature Point Extraction

First of all, keep in mind that the term Pr(Mkjy) does not depend on the query and may, as a result, have already been calculated and stored in the database. Next, recall from the fundamental theory of quadratic forms and multivariate normal densities that we can find a diagonal basis for the density's covariance matrix for each mixture element Mk. Naturally, this is accomplished by means of the unitary matrix Ek, whose rows contain the eigenvectors of k. In the dimension of feature space, the computation time for mixture distance becomes linear rather than quadratic if the vectors Ekyi and Ekq are all recorded in the database as well.

However, keep in mind that for each database element yi, k vectors must be saved. The "hard VQ" approximation can reduce this storage requirement. n Concentrating once more on Pr(Mkjy), we may make another simplifying assumption to further reduce computation and storage space. Pr(Mkjy) = 1, so Pn k=1. The assumption, which is typically referred to as "Hard VQ" (where VQ stands for "vector quantization"), entails substituting a simpler function for the discrete probability function on fMkg that assumes a value of 1 at a single point where the original function is maximized and zero elsewhere.

VI. IMPLEMENTATION

Our objective is to locate the yi corresponding to q given a query q consisting of a facial feature vector for some unidentified person assumed to be represented in Y and a database of facial feature vectors Y = fyig, each corresponding to a distinct person. In the absence of error and assuming that no two people are exactly alike, we would only need to search Y for an exact match to q; however, in practice, q will not match anything in Variation in the subject's pose, unknown camera optical characteristics, and physical variation in the subject itself (e.g., expression, aging, sickness, grooming, etc.) are examples of feature extraction errors that can occur when constructing a feature vector from a photograph. Clearly, the way we compare queries and database elements should be influenced by the nature of these error processes. The difficulty lies in the fact that there is only one example of each person in Y, so we cannot directly observe them. In order to establish a clear conceptual framework, we begin this section with a formal, general discussion. After that, a few simplifying assumptions are made, which leads to a practical solution to the problem of deducing something about the error processes in our data. The nal result is then a straightforward equation for contrasting inquiries and information base components within the sight of blunder. We imagine a two-stage generative process producing the observed feature vectors, whether they are queries or database elements. The rst stage P creates non-romantic vectors p which are considered admired portrayals of each example class {for our situation the facial elements of unmistakable people.

The observation procedure, which generates the vectors we ultimately observe, is the second stage. The first stage includes variation between people from different classes, while the second stage includes variation within a single class. Op is the name we give to the second process because its nature is determined by p. In addition, we will assume that each Op is a zero-mean process, which, conceptually speaking, makes the platonic vector at its center more susceptible to observation noise. After forming the vector density q p and evaluating Op, the probability Pr(qjp) that a query q was generated by a specific platonic p is calculated. The notation appears from this: Pr(qjp),Op(q p). In a similar vein, the probability that a specific database element yi was generated by p is Op(yi p) is Pr(yijp). Lastly, the probability of p itself, Pr(p), is only P(p). The method used in [21] focuses on the probability of the three-way joint event consisting of the generation of p, its observation as q, and a second independent observation as yi to determine how similar q and yi are.

The probability that q and yi are independent observations of a single platonic form can then be determined by integrating over p. The assumption that the yi are considered to be platonic is our initial simplifying assumption. The integral above is eliminated by this, which is actually the implicit assumption of most nearest neighbor pattern recognition techniques. It's like imagining that the query is an observation of a database element rather than a third (mutual) platonic element. Since we are now focusing on attributing an observation process Oi to yi, we hope that yi is not too far from its p and that the distribution of observations about yi therefore approximates the distribution about p. After completing this step, we can now calculate Pr(qjyi) for each yi. We will use the largest such probability to classify q. Clearly, this is equivalent to maximizing Pr(yijq) with a prior on Y.

Although we present a mixture-distance method, it is by no means the only method for obtaining an Oi for each yi. This kind of assignment gives each yi an identical Oi, which is a unit covariance, zero mean Gaussian process. As shown by computing probabilities as logarithms, this is identical to using the standard Euclidean distance and conducting a nearest neighbor search. The unit distance (or equi-probability) surface that results from the process can be visualized as these Oi as hyperspheres of the same dimension.A sphere of this kind is located around each database element in this straightforward example, so the distance function used is the same everywhere in space and in every dimension.

VII.CONCLUSION

It's possible that the modern technological revolution will one day be compared to the industrial revolution of the early nineteenth century. This expansion comes from almost instantaneous global communication and access to numerous informational sources, whereas the former saw the development of manufacturing capabilities as a result of improved iron production processes, the exploitation of steam power, and the development of the railways. It is evident that technology will not fade away. However, today's visual requirements are vastly different from those of the past. Computerized electronic gadgets contrast essentially from printed materials as far as their seeing distance, required look point, level of side effects furthermore, flicker designs. As a result, the eye exam needs to be changed to meet these new requirements.

VIII.FUTURE SCOPE

DES side effects might be parted into those connected to dry eye (outside side effects), and inner side effects connected with ametropia, convenience or vergence issues. Problems with comfort and/or vergence when using a computer appear to be caused by being close to work and not by screen use itself. Nevertheless, in order to encourage comfortable viewing, such symptoms still require treatment. Treatment of dry eye, even gentle cases, may impact solace with screen use. designing an ergonomic workplace and working position. When using a computer, the monitor should be 40-60 centimeters away from the eye, or it can be adjusted to fit each person's needs.

The monitor was in a good position, sitting in an upright position with the top of the screen parallel to or slightly lower than the horizontal height of the eye and slightly tilted backwards for 10o20o. It was suggested to sit with a soft seat, arm rests for typing, a foot rest to keep the feet flat on the floor, moving document holders, computers with keyboards that can be removed, and screens to keep the posture.

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