Eye Tracking For Media Player

Deepanshu, Dev Relan, Dhananjay Sahay M , Ms. Shimpy Goyal

(Assistant Proffesor)
Dr. Akhilesh Das Gupta Institute of Technology and Management
Student, Department of Information Technology, Dr. Akhilesh Das Gupta   Institute of Technology and Management, Delhi, India.
Assistant Professor, Department of Information Technology, Dr. Akhilesh Das Gupta Institute of Technology and Management, Delhi, India

----

ABSTRACT: In this project, we are trying to developing a better or advance media player that pause and play the video by detecting the eyes and face of the user and whether the user is looking at the screen or not. The system keeps on checking whether the user is looking at the screen or not using the web camera. If the user is looking at the screen then the system does not interrupt the video and keep it on the play as it is going. But if the user isn't looking at the screen or the system could not detect users eye and face then the video will be paused after a short delay.

I. OBJECTIVE

In this project, we are trying to develop a better media player or improve that pause and play video by finding the user's eyes and face and whether the user looks at the screen or not. The program further evaluates whether

user looks at the screen or does not use a webcam. If the user is you look at the screen and the system does not interrupt the video and keep it open the game as it progresses. But if the user does not look at the screen or program could not get users face to face and the video will be paused after a while delay.

These days, the number of viewing data records for video-related topics The sequence is increasing daily. Unfortunately this tracking data is stored in separate files into customized data formats, limiting access or professionals also makes data less accessible to non-professionals.

As a result, we still need communication channels for many common use cases, such as visualization, streaming, data analysis, advanced understanding, and comprehension web integration of eye tracking data. To overcome these mistakes, we want promote the use of existing multimedia container formats to create a a common way to incorporate content videos by eye metadata. This will help speed up the visibility of standard multimedia players, Internet streaming, and easy use without modification. It uses Our model software, incorporates viewing information in eye-tracking courses and compatible video in a single multimedia container, which can be viewed for any media player. Depending on the use of this type, we are discussing the advantage of our approach as a standard retention metadata for tracking including accompanying video.

II. INTRODUCTION

Eye tracking is a process of measuring a point of view (where you arelooking) or eye movement related to the head. Eye tracker is a tool for measuring eye movements and eye movements. Eye trackers used in research in the visual system, in psychology, in psycholinguistics, marketing, e.g. an input device for human communication with the computer, as well as product design. Eye trackers are also widely used in renovation and support applications (related to the control of wheelchairs, robotic arms and body parts). There are many ways to measure eye movements. The the most popular variation uses video images where the eye appears taken out. Other methods use search coils or are based on electrooculogram. The concept of measuring and responding to the movement of the human eye, or following the eye, it's not new, but last year saw a growing interest in technology. There is has been the subject of numerous initial eye tracking firms and releases of many devices and software that supports optical tracking.

"Eye tracking sensors offer two main benefits," said Oscar Werner, deputy president of eye tracking company Tobii Tech. "First, inform the device of what the user is interested in at any given time. And secondly, it provides an alternative to content communication, without taking anything else far. That means it increases the bandwidth of communication between the user and device. "

There is a chance that soon eye tracking will become a common feature of burnout production of smartphones, laptops and desktop monitors that set the stage for a major overhaul of the way we communicate with devices - anyway contact us.

"Over the past year eye tracking technology has become promising technology that will be adopted in commercial products in a wide range of consumers parts at the same time, "says Werner. Dominic Porco, chief executive officer of Impax Media, digital advertising the company, says the most expensive and most powerful hardware; a new open source software platforms; and new easy and fast ways to get data to train algorithm models have driven advances in eye tracking technology.

"Companies like NVIDIA have launched products with GPUs that are very powerful Competitive prices, speeding up image recognition, "said Porco. Porco adds that popular markets for mass acquisition like Amazon

Mechanical Turk has enabled a larger and more comprehensive data collection to train recognition algorithms. "These developments have accelerated progress advanced eye tracking technology, which allows researchers and developers to move around quickly through their cycles of experimentation and implementation. " But any technology will not grow unless it can meet certain needs and uses charges. And in the case of eye tracking, there seems to be no shortage.

III. 2. LITERATURE RESEARCH
Face detection
Face detection is a method that helps us know the location and size of human faces. [vi] Face detection detects facial features to avoid something else and objects that cause immediate processing problems. Currently, the way man works is one of the largest areas of research in the field of computer science and information technology. It is just a program that detects a person's face with the help of certain trained features. Face detection is one of the first steps in many other applications in computer technology such as face recognition, video surveillance etc.

Eye Acquisition
In this model, the eyes are found behind the face where the size of the area and its links are known. Eye contact also plays an important role because it is related to the face and will also help to play / relax the video.

Viola-Jones Algorithm

This algorithm helps to find facial features in a specific video frame. Michael Jones and Paul Viola are the people who introduced this algorithm. [vii] They did this algorithn mainly due to face detection problems. There are four steps that need to be taken to find a face. [vii] First, weatrain is a system with haar features. "It is a simple rectangular feature that is the difference in the total number of pixels in the inner rectangle. These rectangles can be in any position in the frame and can scale the image. This set of modified elements is called a rectangular element 2. Each element may indicate the presence or absence of certain elements in the frame, such as edges or changes in shape. [viii] Haar features are used to find facial features. Black parts are used to determine the nasal aspect of a person's face as the black part indicates the presence of a nose in the center of the face. And the other is called the 4 rectangular element. "When the black part is indicated by +1 and the white part is -1. After that the result is calculated by subtracting the total number of pixels under the white square and the pixel sum under the black square. Initially a certain limit is set for a specific set of features. This is calculated by calculating the total number of parts black and white. After that the difference was assessed to the limit. If the value of the variance exceeds the limit value or corresponds to the limit then the feature can be specified and can be considered as significant or effective.

Passing
Cascading came into effect because we need to speed up the process and we also need to get a direct result. Dragging has many stages "where each section contains a strong division. All features are categorized into categories. [viii] Cascade separator finds face in the frame by sliding the window over the frame. The acquisition of the input is considered a separate division in the first phase, "the second and so on. However, it is transferred to the next phase only if the division of the previous section satisfies.

Media Player
The techniques used to detect a person's face or emotions have programs such as HCI) human-computer communication, etc. "Emotional imaging techniques such as facial expressions, eye recognition, lip recognition. [x] HCI will help play / relax video playback in a media player. In this system, face-to-face detection is performed to act as a link between human HMI interaction. "
The media player will start playing this video when a person's face appears which means

that if the face is found in the media player then it will stop the video if the user does not watch the video in the media player. We wanted face detection and algorithm attention, which would allow us to see independent faces, captured by a webcam.

How does eye tracking work?

Eye tracking, or eye contact, is a technology used to see where a person is looking at a computer screen. It can also be used to control the computer with your eyes instead of using a traditional keyboard and mouse, enabling people with physical and mental disabilities to live a richer and more independent life.

Basics for eye tracking:

1. The eye tracker sends near the phone light
2. Light is visible to your eyes
3. That assumption is captured by eye tracker cameras
4. By filtering and counting, the eye tracker knows where to look

While the concept may be simple, a large amount of research and development has gone into Tobii Dynavox eye trackers to make them work in a simple and unobtrusive way.
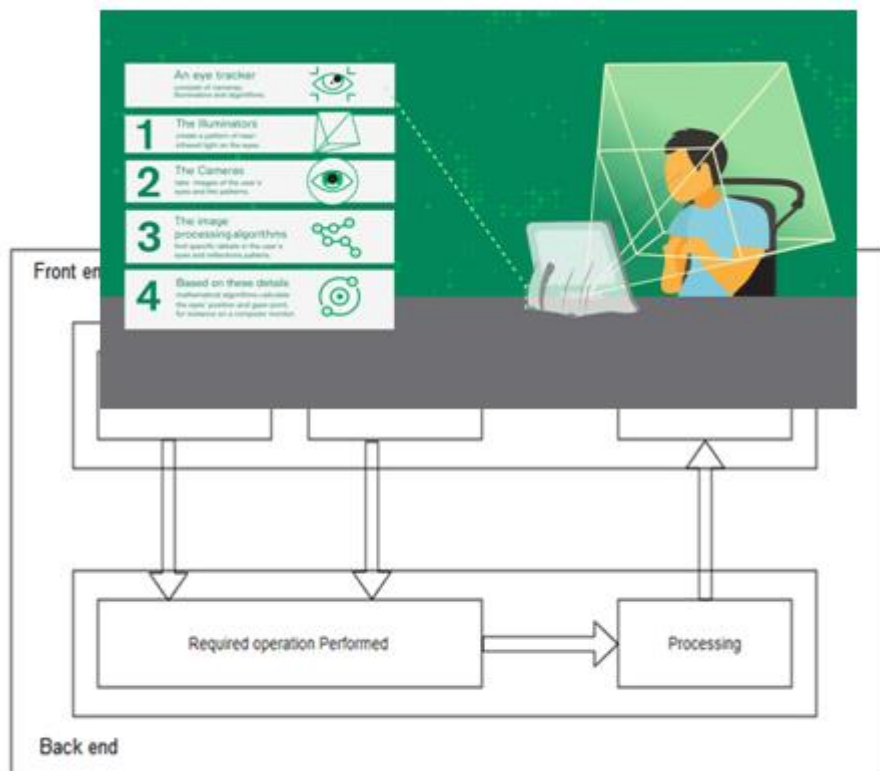

Fig-1 : System Architecture

Do You Know How Eye Tracking Benefits Society?

Whether or not to follow an eye technology that benefits people living with a disability, is acting as their "voice" in their professional and private lives? Or the eye tracking technology is a powerful marketing tool, allowing professionals to build better, clearer websites?

Eye tracking technology for both of these things, and much more. Below, we close the four eye tracking methods used in many industries as well ordered:

1. Eye contact helps researchers see the effectiveness of anti-smoking the law. Did you know that Australians once struggled with the idea that removes all marking on cigarette packaging, and eye tracking research to play a key role in the outcome of the debate? Investigators at University of Bristol uses eye tracking and fMRI to study the actual consequences of such packaging. According to research, non-productive inclusion makes cigarettes less attractive to teens, perhaps because they make a living alerts on labels are too prominent.

2. Eye tracking technology makes new cars safer. Your next car may be too many avoid driving, and eye tracking will be partially burdensome. According to ABI Research, international shipping of Driver Monitoring Systems installed in the factory (DMS) based on indoor cameras will reach 6.7 million this year. Eye tracking technology offers to look at this process in person because it allows researchers see what our brains choose to look for.

3. NYU investigators work hard, developing eye tracking technology such as biomarker for brain damage. Investigators at New York University's (NYU) Langone Medical Center is working on new technologies that can location and assessment of the impact of brain damage by following the patient's eye movement. Patients are instructed to watch less than four music videos minutes, and researchers use a tool to track their eye movements, I am looking for patterns that will show the characteristics of their injuries.

4. Eye tracking continues to be a useful and important technology for those living and the disabled. Eye tracking devices, such as our Eyegaze Edge, help individuals without control, or only limited control, in the movement of their hands. Eye trackers follow eye movement to allow a person to navigate web and typing on custom screens. People living with multiple disabilities debilitating diseases benefit from eye-tracking technology, including patients with ALS (Lou Gehrig's disease), multiple sclerosis, brain injuries, muscle stiffness, brain paralysis, spinal cord injury and more. Eye tracking devices allow users to use the power of their eyes to communicate with them Earth.

The iMotions Screen-Based Eye Tracking Module Eye tracking has been a practice for over a century of history. Good changes made from the first speck-on-the-eye tracking process, too Many settings now include simply sitting comfortably in front of a candy bar the size of the tracker. While it is clear that the hardware is easy to use, quickly, and better yet, the software has also undergone many changes.

Integration

It is possible to connect over various screen-based eye trackers to iMotions software. This includes trackers from leading companies such as Tobii, Smart Eye, EyeTech, and Gazepoint, but also eye trackers from companies that are now acquired and no longer produce hardware (e.g. SMI, but others). This provides a great range of flexibility depending on your needs - whether it's sample size, accuracy, coverage, or cost.

GAZE MAPPING

Visual mapping is a process in which visual dynamics such as- website - can be converted into a single image with multiple views participants can be included. It offers a single perspective from which heatmaps are derived can be done, and other metrics can be calculated. This method of analysis is helpful in trying to understand visual habits or attention procedures many viewers, even if they view the stimulus in different ways differently
times.

Complete experimental platform

Almost every step of the testing process is covered in iMotions - fromtest structure (stimulus order, participant details, group formation), updates presentation (much of the following), data collection, use and transmission. Depending on your needs, Motions can also offer all the analytical skills what you need - heatmaps and gaze / fixation replays (both single and stakeholder groups) are automatically generated.

Types of incentive

Screen-based eye tracking module allows tracking when viewing anywhere screen-based stimulus. This includes photos, videos, websites, games, software - be it on desktop, tablet, or mobile phone. This means that participants can tested their visual responses to anything - however to calculate the amount of adjustment made by the doctor to examine the X ray scan on screen, a hot

map from consumers looking at new product designs, or blind players show up when they finish the game.

Ongoing integration

Motions also offer the opportunity to connect various biosensors together to build an in-depth analysis of human behavior. Biosensors such as facial analysis, EDA, EEG, ECG, and EMG (among others) can be seamlessly tested.

These sensors can aid data by providing a deeper understanding that otherwise is lost. Details can provide information about emotions an expression, arousal, or brain function, not found there considering only eye tracking data.

Cell phones / tablets Screen-based doesn't have to mean just monitoring the desktop. More than 50% of Internet usage is made on mobile phones, and tablets used continuously, there is a clear need to test participants on a device other than desktop screen. It is possible to connect, and rate eye tracking on, almost any mobile phone or tablet. This allows user responses to be tested no matter which device you like. Similar types of promotions can also be recorded, or introduced on mobile.

User interface

User Interface (UI) design made very simple and clean. This helps maintainfocus on what is important and not on unnecessary construction. UI The design was made using the provided Finger Module and integrated into Python. This is a module that offers very simple and basic designs. The TKinter module is used to display buttons and display queries. Ku exit the video or while training the module, the user just has to press the file escape key to their computer keyboard.

Fig-5 : User Interface
This gives us a platform to select wether we want to play only media or with attention detection in a user friendly way

Fig-6 : Face and eyes are detected so media player is playing the video
While the face and eyes are detected so the first counter value is 1 so the media player is playing the video

Fig-7 : Video paused when eyes not detected

Fig-8 : Video Paused when face not detected

IV. CONCLUSION

In this report we present an effective number of eye-sightings in facial images. It consists of two stages: first the local rider with one eye is known for the whole picture connecting the brake bearings with the arrangement of the edge of the iris. At the same time, the pursuit of the next eye is connected to the conflicting areas where the distinctions and their directions are appropriate for the wide range of possible eye positions. Our framework does not impose any limit on the foundation and does not require any process to advance facial segregation. "Acquisition of eye tracking and head development is considered to be a robust use of human interactions and book selection methods. Therefore, they have become the subject of many research projects. Many ways to make this improvement have been calculated in writing. This paper explores existing strategies and demonstrates the state of the art in eye tracking and head development identification. Many applications can benefit from the use of compulsive eye tracking or head recognition enhancement techniques. In any case, testing will still have difficulty in identifying the best techniques that can be used in systems to detect and track eye or head development accurately. "

In any case, the ongoing application requires testing and advancing exhibition requirements. "Furthermore, many studies do not test the eye following the use of a well-known image database that contains different images of different topics in different contexts, for example, lighting conditions, sound, separation", etc.

Head development recognition requires advanced calculator equipment. The microcontroller, which is considered to be a low-cost computer device, cannot be used to perform the declared head-to-head acquisition.

A lot of work and research is expected to provide eye tracking and head development techniques that are solid and essential for realistic applications.

REFERENCES

[1]. Mukesh Vishwakarma , Akshay Navratne , Sneha Ghorpade , Saket Thombre, Trupti Kumbhare, "media player with face detection and hand gesture", international research journal of engineering and technology (irjet), volume: 04 issue: 03 ,mar -2017

[2]. S.V. Viraktamath, Mukund Katti, Aditya Khatawkar Pavan Kulkarni ,"Face Detection and Tracking using Open CV ", The SIJ Transactions on Computer Networks & Communication Engineering (CNCE), Vol. 1, No. 3, July-August 2013

[3]. Paul Viola and Michael J. Jones, "Robust Real-Time Face Detection", Published in 2004 International Journal of Computer Vision 57(2), 137154, and 2004.

[4]. Suraj Mane, Aaditya Shah, Nirmit Shrivastava, Ankit Srivastava, Bhushan Thakare," Look Based Media Player", International Journal of Computer Science and Network (IJCSN), Volume 6, Issue 3, June 2017

[5]. J. Kovac, P. Peer, and F. Solina, "Human skin colour clustering for face detection" In EUROCON 2003, volume 2, pages 144–148, 2003

[6]. S.V. Viraktamath, Mukund Katti, Aditya Khatawkar Pavan Kulkarni ,"Face Detection and Tracking using Open CV ", The SIJ Transactions on Computer Networks & Communication Engineering (CNCE), Vol. 1, No. 3, JulyAugust 2013

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 12, pp: 425-431   www.ijaem.net   ISSN: 2395-5252

[7].   Kari Pulli (NVIDIA), Anatoly Baksheev, Kirill Kornyakov, Victor Eruhimov," Real-time computer vision with OpenCV ", Communications of the ACM, June 2012

[8].   Theo Ephraim, Tristan Himmelman, and Kaleem Siddiqi, "Real-time viola-jones face detection in a web browser", In Proceedings of the 2009 Canadian Conference on Computer and Robot Vision, CRV '09, pages 321–328, Washington, DC, USA, 2009. IEEE Computer Society.

Websites:
1.   https://techcrunch.com/
2.   https://imotions.com/
3.   https://eyegaze.com/
4.   https://github.com/

DOI: 10.35629/5252-0212425431 | Impact Factor value 7.429 | ISO 9001: 2008 Certified Journal   Page 431