

System for Controlling Media

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Abstract—Twentieth century is the era of application where regular day to day activities can be notified through various applications. Today distinctive media, audio and videos are a major source of education. Important principles of video based learning are emphasized on human Interaction with computer that leads to interactive design. Despite powerful Visual Aesthetics in media there is need to handle distractions which occurs when watching media. We tend to miss some important parts in it and we need to drag back the video from where we left. People have an inclination to make notes while listening to video lectures, this requires to start and stop the video enormous times. This leads to wasting time and also learning is not that effective. The approach of face controlled system are required that can handle media. The proposed technique makes the use of Human face along the iris to play or pause the media. The combined approach of iris detection and media control is innovative way to solve the problem. The important advantage of system lies in power consumption since the video stops for the period the user is distracted while watching the video. The paper focuses on understanding media player basic architecture, and deep insight about formal assessment for investigating the way iris and face recognition can be helpful. The paper is divided into three main parts; the first part identifies the need to develop the system, Second part deals about basic understanding of media architecture and the available iris detection systems and third part consists of proposed system that can handle the need.

I. INTRODUCTION AND NEED TO DEVELOP THE SYTEM

Media Player Plays a key role as a source of entertainment where we can play Media's like Music, audio, movies, videos etc . In today's world of advance technologies, the media player is the important concept which will be used to play video and it will be controlled by functionalities like hand gesture and face detection. But when the user is disturbed while watching a video, user misses some part of video which sometimes irritates him or creates a performance issue and also leads to wastage of user's time. Face Controlling system for media, plays and pauses the media by detecting the users if his face is towards the screen or not. While watching a video when someone interrupts you have to look somewhere else or go away from the system for some time so you miss some part of the v1lideo. Subsequently you need to drag back the video from where you left. This arises the need of a system where media player gets paused when user is not looking at it and the media player resumes again as soon as the user looks at it again. This can be done using the web camera. The media player will be played continuously as long as the camera detects the users face or iris. The media player pauses as soon as users face or iris is not completely detected. This face or iris detection based media player can help in minimizing human efforts. Using this system user gets better experience of using media player as user will not miss any part of video and even save time.

II. HISTORY OF MEDIA PLAYER:

In late 1991, Media player were introduced by windows in version 3.0. They are defined as a software program that is capable of playing a media file or disc. In year 1997, the first portable MP3 player was launched by Saehan Information Systems, and the prototype of it named as "MPMan" player were manufactured by the South Korea. EigerMan F10 and F20 was innovation of media player. This epic era occurs when the South Korean company grant license to the players for North American distribution to Eiger Labs in the middle of 1998, which in turn change the corporate image of previous version. Windows Media Player 9 Series released in year 2003 are proved to be very successful and are available for Mac OS X. Windows Media Player 7 released in 2001 were available for Mac OS 8. Apple's move to allow Windows PC owners to use the iPod, from April 2003, resulted in explosive growth. But today we are enough confident to say that certain devices are officially recognized as Portable Media Players such as cellphones, Digital cameras, internet-connected tablets, internet-connected tablets, Satellite navigation receivers.

A. Architecture of multimedia Devices

Architecture of multimedia application has two parts. First part has the capability that can take digital media in the system as input and should be able to differentiate it as audio or video. And second is associated with User interface that can depicts the



user state and can control the running of system.

Figure 1: Multimedia application architecture

Application Programming Interface for the UI and player can be based on random choice, but the phenomena of the interaction between the two pieces is basically the same for all media player apps. The Android framework defines two classes, a media session and a media controller, that impose a well-defined structure for building a media player app. The media session and media controller communicate with each other using predefined callbacks that correspond to standard player actions (play, pause, stop, etc.), as well as extensible custom calls that you use to define special behaviors unique to your app.

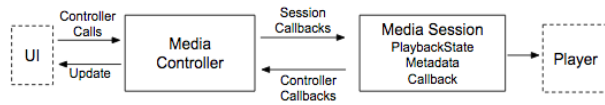


Figure 2: Communication within Media player

A media session is having control thoroughly over communication with the player. It hides the details of player's Application Programming Interface from the rest of your app. The player is only called from the media session that controls it. The session maintains a representation of the player's state (playing/paused) and information about what is playing. This is important class if we intend to control the media with real time image processing. User interface can communicate with media controller; it maintains the states of media session. So that associated User interface is automatically updated. A media controller can only connect to one media session at a time.

Real time processing requires media controller that can deploy interfaces of stopping and playing media at runtime. When playing a video, your eyes and ears are both engaged. When playing audio, you are listening, but you can also work with a different app at the same time. There's a different design for each use case.

III. EXISTING SYSTEM

The biometric system identifies the unique features of an individual thus helps in detecting a person. This system consist of fingerprint recognition iris recognition, eye recognition etc. Iris recognition is most accepted recognition technique. Iris recognition is the process of perceiving a person by examining the random pattern in the iris . In it an individual is recognized by the iris which is the part of eye applying image processing techniques, pattern matching or applying hypothesis of neural networks. Iris detection is considered as most efficient and accurate technique since it analyzes the random patterns of the iris of the eye from some distance.

Iris is a muscle within the circular part of the eye which controls the size of the pupil that helps in managing the amount of light which enters the eye. One of the most sensitive organ of human body is the iris and it is the coloured portion of the eye with colouring based on the amount of melatonin pigment within the muscle[Iris Recognition System]

The average diameter of the iris is 12 mm, and the pupil size can vary from 10% to 80% of the iris diameter [raja.sekar, s.arivazhagan, R. anandmarugan, "Methodology for iris segmentation and recognition using multi-resolution transform", IE

Iris recognition technology uses various deep learning technologies such as computer vision, pattern recognition, statistical inference, and optics. The Hough transform is a computer vision algorithm that can be applied to decide the parameters of simple geometric objects, such as lines and circles, present in an image. The circular Hough transform can be applied to calculate the centre coordinates and the radius of the iris and pupil regions[1].

In paper 1[3] proposes a system consisting of a number of sub-systems, which corresponds to each stage of iris recognition. The first stage is Image acquisition in which capturing of the eye image is done through 3CCD camera which is located at an approximate distance of 9 cm from the user's eye. The estimated distance between the source of light and user is 12 cm. In this step basically the iris region is located in an eye. The victory of segmentation is determined by the quality of images of the eye. The outer radius of the iris patterns is detected by the center of the pupil. Canny Edge Detector is used to find the inner and outer boundaries of the iris by finding the edge image. Removal of the noise is done at this step by filtering and blurring of the image by removing the

pixels consisting indifferent spots are removed. Points where the pixels patterns are similar are grouped together. The area where gradients of the image having a larger magnitude are marked as edges. Finally all the edges which are not associated to a strong edge are suppressed. This phase segments the iris region and next we need to normalize it, to generate the iris code. The number of discrepancies present in the eye range from position of the pupil, optical size of the iris in the eye, orientation of the iris varies amongst individuals, thus there emerges a need to normalize the iris image representation it is required to normalize the iris image, to present it in a common format with similar dimensions.

As a summary iris region is detected by Canny edge detector and Hough transform algorithms

Then Daugman's algorithm is used to convert the circular region into rectangular block.

Later the normalized images obtained by the normalization process was given as input to the Backpropagation algorithm. Then the images from the database were used for iris recognition and comparison between the actual image and the iris was done. If the match was perfect then the recognition system was success otherwise backpropagation algorithm was used to train the network. The behaviour of the network is analysed when an input is provided and for that error rate is calculated. The network has been trained and tested for a number of eye images. System can differentiate between pupillary body and iris part of the human eye. For this mathematical functions and calculations are used to recognize different eye boundaries and it circles outer boundary of pupil which is inner boundary for the iris using modified Canny edge detector algorithm. After this the detection of outer boundary of the iris is done.

image

Paper 2 Human Face, Eye and Iris Detection in Real-Time Using Image Processing

In paper 2, 12 MP camera is used to capture the image of the face. Then since the webcam is working on the Ycbcr format the image is converted in to RGB format. Next bilateral filter will be used to remove the noise. Hough transform is comparatively robust against noise. Circular Hough Transform is used to detect the circle of human eye image. this algorithm is very easily implemented.

In this paper Blob analysis and Hough transform are used for eye and iris detection correspondingly.. Blob analysis is fastest way of face recognition and it processes faster. Circular Huff Transform very easy to implement and is considered as simple method for iris detection.

A vision based hand gesture interface for controlling VLC media player proposed by Sidharth Rauta ray, Anupam Agrawal have done hand segment where the input to the camera is converted to an image. Then the image is converted to gray scale and then tracking of moving hand is done. Later K means algorithm is used to cluster the moving points. Then the resultant clusters are cropped and stored into different images. 15 positive images for each gesture are used. All the images are generated from their respective address where PCA is used to extract features. These features are saved for recognition in an xml data format: Comparison of the input images with the loaded xml data is done to decide which gesture it matches by using KNN. The application allows the users for

generating their own gestures for controlling VLC functions. Thus the system can be used easily to control VLC Media Player using Hand gesture. The disadvantage of the system is that the recognition system is less robust thus a more robust algorithm is required to reduce noise and blur the motion. For managing VLC, currently the application has global keyboard shortcut in VLC which makes the keyboard event of that global shortcut with `keybd_event ()` function. It's not the smart way of controlling any application. Inter-process communication technique can be applied for this. By applying inter-process communication then VLC can be replaced with other application very easily.

Controlling of windows media player using hand recognition system in this paper different image processing techniques, feature extraction and classification tools are used to detect the gestures in real time and appropriate command to the windows media player. Hand region is detected using skin detection model and background is removed using approximate median techniques. Decision tree method is used as a classification tool to create various categories. Windows player is given command according to the identified gesture by windows interaction.

This system allows the user to handle the application from a distance without using keyboard and mouse. Human computer interface is used by which a user can use hand gestures to control media player. But the system fails to identify enormous numbers of gestures with various individuals and also mobile hand gestures. Also the system need to focus on different media players not only windows.

A Neuro-Cognitive Approach for Iris Recognition Using Back Propagation first step involves using Canny or Sobel edge detection for segmentation of only the interesting features within the image of the eye. Later the disk shaped iris is transformed into rectangular form. Third step is bottleneck neural network is used to compact the large data of the high resolution transformed image. Then later neural network technique is combined with the compressed data for the accurate recognition of the input image. Neural network is trained using the database of the image by segmenting and detecting of the unique features is carried out, transformation into rectangular shape and compressing of the image takes place. The compact data of all the images is given enormous times to the neural network to serve the training purpose till the resultant error has attained zero value. The network usually gives better results for the inputs of irises whose training has been done consistently. Shows the confusion

matrix obtained by observing the behavior of the neural

network using all untrained samples for some of the

closely

IV. PROPOSED ARCHITECTURE

The proposed system focuses on idea that consists of following flow for being an operational system.

1. User is watching media on a device which can be phone or laptop.

2. Face, Iris detection is active thoroughly through front camera of device. There are two main detection aimed here are face and iris.

3. Captured face is break up into parts; it is divided into distinct region such as forehead, below forehead, lip, and chin. Each image are sampled using horizontal and vertical stripe. Out of which part below forehead is divided to four concentric circles. Two circle will detect two eyes and two inner circle will detect iris. Detection is based on Hidden Markov model.

4. If both Iris is not available for detection for more than 30 milliseconds ie the user is not around or is distracted; this is considered as a state in media controller and it saves the session.

5. Media controller sends the signal of stop/pause to media session layer. And sliding window concept will holds the window until it gets the input.

6. The update signal is activated.

7. Pause action is initiated by controller busing user interface

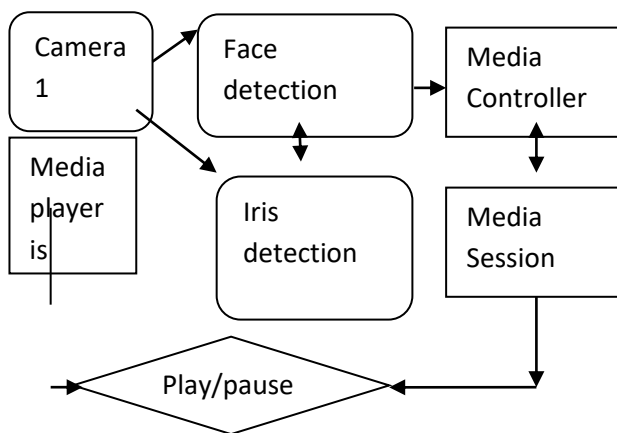


Figure 2: Communication within Media player

Note that the equation is centered using a center tab stop. Be sure that the symbols in your equation have been defined before or immediately following the equation. Use “(1)”, not “Eq. (1)” or “equation (1)”, except at the beginning of a sentence: “Equation (1) is . . .”

A. Some Common Mistakes

- The word “data” is plural, not singular.
- The subscript for the permeability of vacuum μ_0 , and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
- In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
- A graph within a graph is an “inset”, not an “insert”. The word alternatively is preferred to the word “alternately” (unless you really mean something that alternates).
- Do not use the word “essentially” to mean “approximately” or “effectively”.
- In your paper title, if the words “that uses” can accurately replace the word “using”, capitalize the “u”; if not, keep using lower-cased.
- Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
- Do not confuse “imply” and “infer”.

- The prefix “non” is not a word; it should be joined to the word it modifies, usually without a hyphen.
- There is no period after the “et” in the Latin abbreviation “et al.”.
- The abbreviation “i.e.” means “that is”, and the abbreviation “e.g.” means “for example”.

An excellent style manual for science writers is [7].

V. USING THE TEMPLATE

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar.

A. Authors and Affiliations

The template is designed for, but not limited to, six authors. A minimum of one author is required for all conference articles. Author names should be listed starting from left to right and then moving down to the next line. This is the author sequence that will be used in future citations and by indexing services. Names should not be listed in columns nor group by affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization).

1) *For papers with more than six authors:* Add author names horizontally, moving to a third row if needed for more than 8 authors.

2) *For papers with less than six authors:* To change the default, adjust the template as follows.

a) *Selection:* Highlight all author and affiliation lines.

b) *Change number of columns:* Select the Columns icon from the MS Word Standard toolbar and then select the correct number of columns from the selection palette.

c) *Deletion:* Delete the author and affiliation lines for the extra authors.

B. Identify the Headings

Headings, or heads, are organizational devices that guide the reader through your paper. There are two types: component heads and text heads.

Component heads identify the different components of your paper and are not topically subordinate to each other. Examples include Acknowledgments and References and, for these, the correct style to use is “Heading 5”. Use “figure caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract”, will require you to apply a style (in this case, italic) in addition to the style provided by the drop down menu to differentiate the head from the text.

Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topics, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named “Heading 1”, “Heading 2”, “Heading 3”, and “Heading 4” are prescribed.

C. Figures and Tables

a) *Positioning Figures and Tables:* Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the abbreviation “Fig. 1”, even at the beginning of a sentence.

TABLE I. TABLE TYPE STYLES

Table Head	Table Column Head		
	Table column subhead	Subhead	Subhead
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^a Sample of a Table footnote. (*Table footnote*)

Fig. 1. Example of a figure caption. (*figure caption*)

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

Acknowledgment (*HEADING 5*)

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

References

The template will number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first ...”

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

Unless there are six authors or more give all authors’ names; do not use “et al.”. Papers that have not been published, even if they have been submitted for publication, should be cited as “unpublished” [4]. Papers that have been accepted for publication should be cited as “in press” [5]. Capitalize only the first word in a paper title, except for proper nouns and element symbols.

For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

[1] <http://www.csse.uwa.edu.au/~pk/studentprojects/libor/index.html>

[2] T. Chuan Chen, K. Liang Chung: An Efficient Randomized
Algorithm for Detecting Circles. *Computer Vision and Image Understanding* Vol. 83 (2001)
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[3] Neha Kak, Rishi Gupta , Sanchit Mahajan “**Iris Detection System**” *International Journal of Advanced Computer Science and Applications*, Vol. 1,
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[1] Human Face, Eye and Iris Detection in Real-Time Using Image Processing I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in *Magnetism*, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.

[2] K. Elissa, “Title of paper if known,” unpublished.

[3] R. Nicole, “Title of paper with only first word capitalized,” *J. Name Stand. Abbrev.*, in press.

[4] Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” *IEEE Transl. J. Magn. Japan*, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].

[5] M. Young, *The Technical Writer’s Handbook*. Mill Valley, CA: University Science, 1989.

