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3d Video Calling

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ABSTRACT

This paper proposes a fast algorithm for rotating images while preserving their quality. The new approach rotates images based on vertical or horizontal lines in the original image and their rotated equation in the target image. The proposed method is a one-pass method that determines a based-line equation in the target image and extracts all corresponding pixels on the base-line. Floating-point multiplications are performed to calculate the base-line in the target image, and other line coordinates are calculated using integer addition or subtraction and logical justifications from the base-line pixel coordinates in the target image. To avoid a heterogeneous distance between rotated pixels in the target image, each line rotates to two adjacent lines. The proposed method yields good performance in terms of speed and quality according to the results of ananalys is of the computation speed and accuracy.

Keywords:- Double-line rotation, DLR, image representation, image rotation, image transform, line rotation.

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I. INTRODUCTION

Video telephony is increasingly being adopted by end consumers. Video calls augment voice calls with live visual interaction between users. Just as they shift from fixed landline phones to mobile phones for voice calls, users prefer to make untethered video calls using their mobile devices, e.g.,smart phones, tablets and laptops, instead of sitting in front of their desktop computers. Mobile devices are connected to the Internet through either WiFi or Cellular networks, which are known to be much more heterogeneous and volatile than wire line networks. It is already very challenging for wireless service providers to deliver universal high-quality voice calls to all their customers. All providers strive to assure their customers that they have a satisfactory answer to the basic voice call quality question– “Can you hear me now?”, through their services, as well as commercials. Due to its higher bandwidth requirement, it is much more challenging to deliver high-quality video calls than voice calls. Even though video calls are already very popular on various mobile platforms, there is very limited understanding about the answer to the basic video call quality question – “Can you SEE me now?”

Towards obtaining more understanding, we conduct a measurement study on three most popular mobile video call applications: Face Time, Google Plus Hangout, and Skype, in both WiFi and Cellular networks. Our study is focused on the following questions:

•how they encode and decode video in real time under tighter source constraints on mobile devices, such as battery,CPU, and screen size?

•how they transmit the encoded video smoothly in face of various wireless network impairments, including loss, highly variable delay and competing cross-traffic?

•what is their delivered video conferencing quality, both video perceptual quality and video delay, under different real mobile network conditions?

•how different system architectures and design choice sa dopted by each system contribute to user-perceived video conferencing quality?

To answer those challenging questions, we leverage our previous measurement study of computer-based video conferencing systems [20]. We extend the active and passive measurement methodologies developed in [20] to work with mobile devices. To account for the inherent heterogeneity and volatility of wireless networks, we measure the three systems under a wide range of network conditions, including a controlled network emulator, a campus WiFi network with strong and weak signal receptions, and a Cellular network of one top-three US carrier with and without user mobility. We collect extensive measurement traces at packet level and video level. Through analysis of measurement results, we obtain valuable insights regarding the unique challenges, advantages and disadvantages of the existing design solutions, and possible new directions to deliver high-quality video calls in wireless networks. Our findings are summarized as following.

1) With a strong WiFi/Cellular connection, modern smart phones are capable of encoding, transmitting and decoding high quality video in realtime;

2) Mobile video call quality is highly vulnerable to bursty packet losses and long packet delays, which are sporadicon wireless links with weak receptions;

3) While FEC can be used to recover random packet losses, the inability to differentiate congestion losses from random losses can trigger vicious congestion cycle ,and significantly degrade user video call experience;

4) Conservative video rate selection and FEC redundancy schemes often lead to better video conferencing quality ,compared with more aggressive schemes;

5) End-to-end video delay is highly correlated to end-to-end packet delay in Cellular networks, regardless of the signal strength.

II. LITERATURE SURVAY

Provides a guide to well-tested theory and algorithms including solutions of problems encountered in modern computer vision. Contains many practical hints highlighted in the book .Develops two parallel tracks in the presentation, showing how fundamental problems are solved using both intensity and range images, the most popular types of images used today.Stereo matching is one of the most active research areas in computer vision. While a large number of algorithms for stereo correspondence have been developed, relatively little work has been done on characterizing their performance. In this paper, we present a taxonomy of dense, two-frame stereo methods. Our taxonomy is designed to assess the different components and design decisions made in individual stereo algorithms. Using this taxonomy, we compare existing stereo methods and present experiments evaluating the performance of many different variants.This article describes methods developed for 2D-3D conversion of images based on motion parallax, depth cues in still pictures and gray shade and luminance setting for multiview auto stereo scopic displays.Detailed exposed a new 2D-to-3D image conversion technique with the modified time difference (MTD) and the computed image depth (CID) realizes to convert any type of visual resources into the 3D images. Proposed a method for conversion from 2D to 3D based on gray scale and luminance setting, which does not require a complex motion analysis.This display system uses a technique that is often referred to as Pepper's Ghost. It was first invented by GiambattistadellaPorta in 1584 and has been commonly used in theatre. Some of its famous uses include Alexander McQueen's performance with Kate Moss, Tupac's CG concert cameo, and numerous HatsuneMiku concert performances. Although "hologram" is often found in the title of these display systems - they have no holographic qualities. A hologram refers to a specific medium that stores image data through a laser, a holographic substrait and interference pattern. Pepper's Ghost uses a much simpler technique that merely reflects an image off of a surface to create an illusion of a 3D object floating in physical space.3D video is not an artificial CG animation but a real 3D movie recording the full 3D shape, motion, and precise surface color & texture of real world objects. It enables us to observe real object behaviors from any viewpoints as well as to see pop-up 3D object images. We believe the exploitation of 3D video technologies will open up a new world of versatile cultural and social activities: visual communication, entertainment, training & learning, archiving, and so on. We give an overview of our research attainments so far obtained: (1) a PC cluster system with distributed active cameras for real-time 3D shape reconstruction, (2) a dynamic 3D mesh deformation method for obtaining accurate 3D object shape, (3) a texture mapping algorithm for high fidelity visualization, and (4) user friendly 3D video editing system.

III.MATHEMATICAL MODEL

Set Theory Analysis:

a. Let ‘S’ be the | 3D video calling as the final set

S = {…………

b. Identify the inputs as V , O, I, P

S = {V, O, I, P, …

V = {V1, V2, V3,V4, …| ‘V’ gives video input}
O= {O1,O2, O3, … | ‘O’ gives audio input}
I = {I1, I2, … |’I’ gives user ID for login}
P= {P1, P2, … |’P’ gives the respective password for login ID}

c. Identify the outputs as

S = {V, O, I, P, R, …
O= {O1, O2, O3, … | ‘O’ gives audio input}

R= {R1, R2 …| ‘R’ is the 2D transformed image}

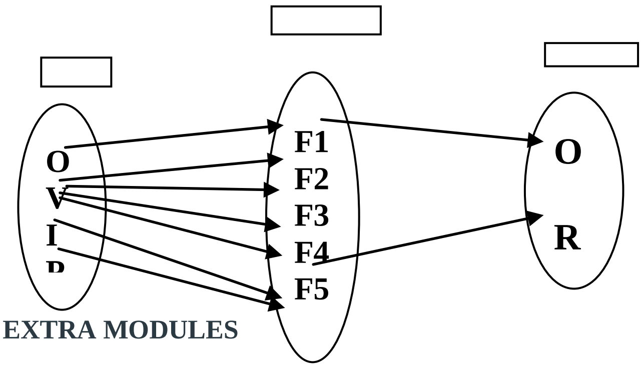
d. Identify the functions as ‘F’

S = {V, O, I, P, R, F…
F = {F1(), F2(), F3(), F4(), F5()}

F1(O) :: Audio streaming
F2(V) :: Video streaming

F3(V) :: translation (2D transformation)
F4(V) :: Scaling (2D transformation)
F5(V) :: Rotation (2D transformation)
F6(I, P) :: login

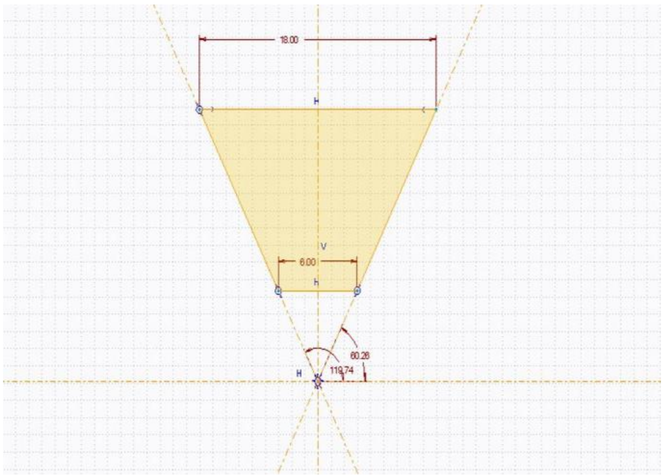
Hence the functionality can be shown as,



EXTRA MODULES

GLASS PRISM

In optics, a prism is a transparent optical element with flat, polished surfaces that refract light. At least two of the flat surfaces must have an angle between them. The exact angles between the surfaces depend on the application.



MODULES:

- ❖ **ANDROID AND WEB APP**
- ❖ **User Interfaces**
- ❖ **Logins - users**
- ❖ **User Registration**
- ❖ **Server Configuration**
- ❖ **Video Segmentation**
- ❖ **Video Streaming (In/Out)**
- ❖ **DATABASE**

WEB SERVICE

Web service is a method of communication between two electronic devices over a network. It is a software function provided at a network address over the Web with the service always on as in the concept of utility computing. The W3C defines a Web service generally as, a software system designed to support interoperable machine-to-machine interaction over a network.

VOICE OVER IP

Voice over IP (VoIP) is a methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet. Other terms commonly associated with VoIP are IP telephony, Internet telephony, broadband telephony, and broadband phone service.

TWO DIMENSIONAL TRANSFORMATION

A two dimensional transformation is any operation on a point in space (x, y) that maps that point's coordinates into a new set of coordinates (x1, y1). Instead of applying a transformation to every point in every line that makes up an object, the transformation is applied only to the vertices of the object and then new lines are drawn between the resulting endpoints. 24 August 2015

$$\begin{bmatrix} 1 & 0 & T_x \\ 0 & 1 & T_y \\ 0 & 0 & 1 \end{bmatrix}$$

The matrix for translation

$$\begin{bmatrix} X' \\ Y' \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & T_x \\ 0 & 1 & T_y \\ 0 & 0 & 1 \end{bmatrix} \bullet \begin{bmatrix} X \\ Y \\ 1 \end{bmatrix}$$

SCALING

Changing the size of an object is accomplished by a transformation called scaling. Scaling an object is implemented by scaling the X and Y coordinates of each vertex in the object.

$$\begin{bmatrix} S_x & 0 & 0 \\ 0 & S_y & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} X' \\ Y' \\ 1 \end{bmatrix} = \begin{bmatrix} S_x & 0 & 0 \\ 0 & S_y & 0 \\ 0 & 0 & 1 \end{bmatrix} \bullet \begin{bmatrix} X \\ Y \\ 1 \end{bmatrix}$$

ROTATION

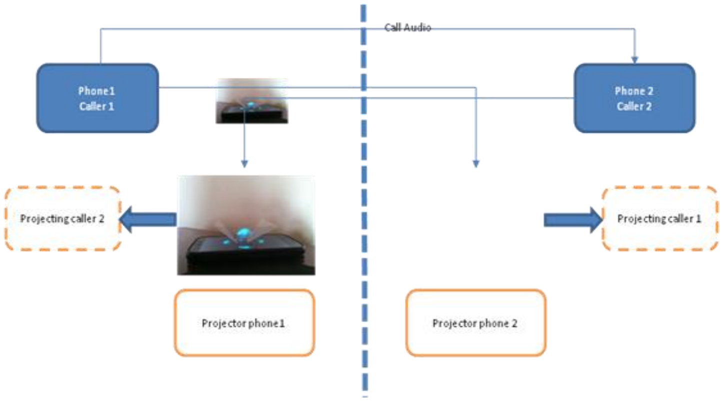
Rotation is a transformation that causes a point p to be moved relative to a central point, without changing the distance of p from that point. This transformation is accomplished by applying the rotation equation to each vertex of the object. A rotation is specified by providing an angle, B, indicating how many degrees of rotation are desired. This angle may be either positive or negative. A positive angle indicates a counter-clockwise rotation about the origin.

The matrix for rotation

$$\begin{bmatrix} \cos\phi & -\sin\phi & 0 \\ \sin\phi & \cos\phi & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} X' \\ Y' \\ 1 \end{bmatrix} = \begin{bmatrix} \cos\phi & -\sin\phi & 0 \\ \sin\phi & \cos\phi & 0 \\ 0 & 0 & 1 \end{bmatrix} \bullet \begin{bmatrix} X \\ Y \\ 1 \end{bmatrix}$$

IV. SYSTEM ARCHITECTURE



OUTPUT

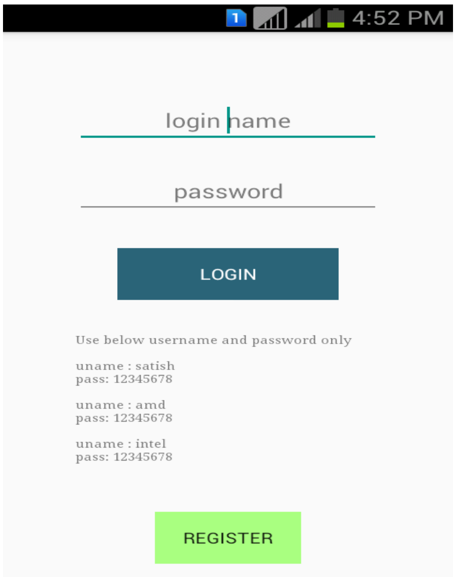


Fig : Login Form

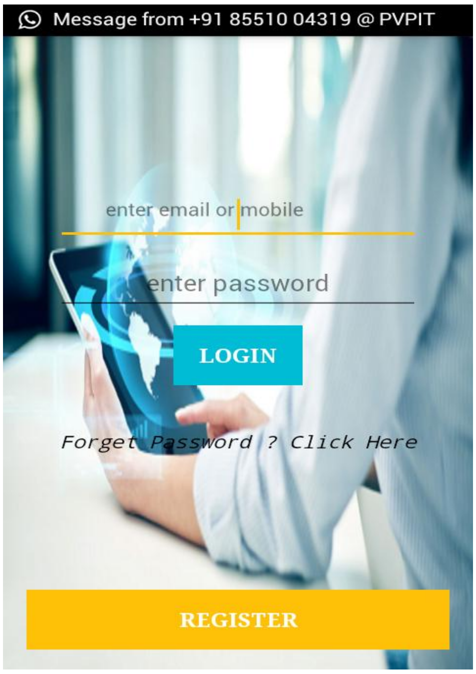


Fig : Registration

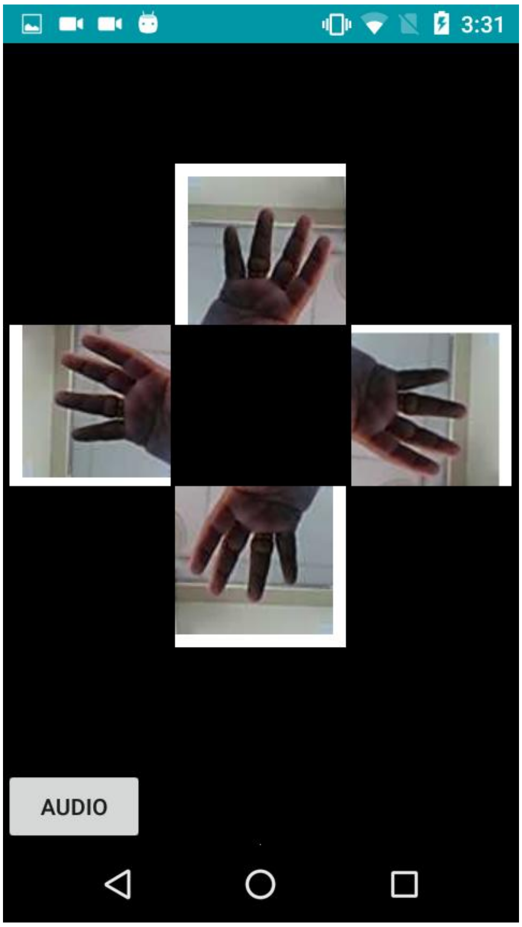


Fig : main calling form

V. CONCLUSION

The Wi-Fi calling solution enables operators to extend the use of IMS-based VoLTE services to include carrier supported Wi-Fi calling using a residential Wi-Fi network. Wi-Fi calling can be used to address indoor coverage issues effectively removing the need for residential femto or app-based solutions. Furthermore, Wi-Fi calling provides service for roaming users, as well as offering a means to provide small enterprises with telephony services.

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