3D Perspective View for Cinema Seat

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ABSTRACT: The past few years have shown the growth in three-dimensional (3D) content and stereoscopic 3Ddisplays. These displays aim to provide realism through an illusion of depth to the viewers. The system developed is composed of a head tracking system that detects the position and movement of the user and a 3D graphics feedback mechanism that changes the perspective as seen by the viewer. In the system, the origin and directional vector of the camera coordinate system is dependent on the head position of the viewer. The x, y and z coordinates of the head position in the real-world coordinates will be computed by the tracking system with the center of the video capture as the origin. From this coordinate, the camera in the camera coordinate system will be adjusted accordingly with its distance from the near plane as the same distance from the user to the display. This couples the head of the user in the real-world to the camera viewing the virtual-world, thus changing the perspective and provide the illusion of depth through motion parallax. The implementation of the system contains two major parts: locating the position of the user's head and changing the 3D view perspective on the display. A mobile application was created and tested that uses the following design and implementation.

KEYWORDS: Cinema Seat Preview; Perspective; 3D; theatre; seat; movie;

I. INTRODUCTION

Maybe you are familiar with those ticket booking systems where, at some point during the purchase flow, you have to choose a seat. This is usually done when selling tickets for games, movies, flights or concerts. Wouldn't it be cool to have some kind of "realistic" preview of the seat, i.e. see the stage or screen from the perspective of the space you chose? Of course it would. This is the kind of question that resulted into a new experiment which we'd like to share with you today. So the idea is to show some kind of cinema room where we can choose seats from a seating plan. When choosing a seat, we'll move to the respective position in the room and allow the user to see the real view from the chosen place. There is also a button in the center of the page that allows to unlock the rotation of the viewer, something that is quite important for a realistic view considering that we can rotate and tilt our heads.

II. RELATED WORK

Over the past few years 3D technology has a great impact on the online shopping system. Companies like Lenskart, Carwale, etc. has 3D technology to help their customers have a better shopping experience. But according to the 2015-16 survey Lenskart has approximately 4.8 million users and Carwale has 12.7 million. Ticket booking websites like BookMyShow has 31.5 million users which is way more than the other websites still it is not using such technology for its users. Since there is no such technology currently in the ticket booking system. Also the implementation of this project is dissimilar to that of the former. The scope of this technology as mentioned earlier is theatre on which the 3D technology is implemented. The current example of it is BookMyShow and scope of this project is for 31.5 million users.

Nodes in an ICN are rarely connected, and typically only for short durations. Further, they have limited buffer space and battery life. Thus, messages routing method in ICN environment needs to be carefully chosen. In such cases, context aware can improve the delivery probability by improving the routing decision. Based on the encountered node context, an informative decision is made to weather the message is forwarded.

The remainder of the paper is organized as follows. Section 3 presents the context aware in ICN. The message delivery probability with context aware is evaluated in Section 4. Finally, some conclusions are given in Section 5.
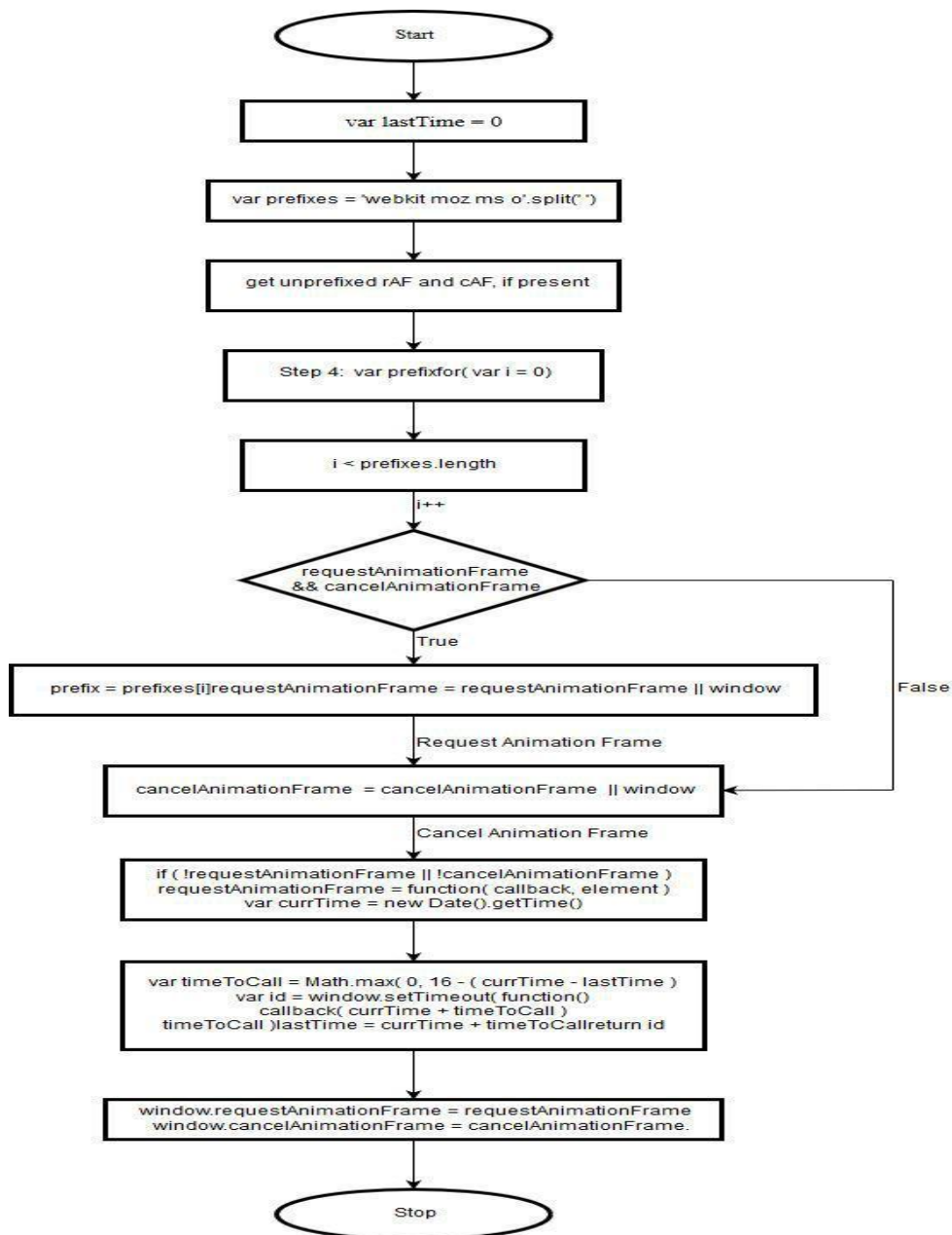
III. PROPOSED ALGORITHM

s
A. *Request Animation Frame Polyfill:*

- Get prefixed rAF and cAF, if present.
- Loop through vendor prefixes and get prefixed rAF and cAF.
- Fallback to setTimeout and clearTimeout if either request/cancel is not supported.
- Put in global namespace.

IV. PSEUDO CODE

Step 1: Start.

Step 2: varlastTime = 0;

    var prefixes = 'webkitmozmso'.split(' ')

Step 3: get unprefixedrAF and cAF, if present

Step 4: var prefix

    for(vari = 0; i<prefixes.length; i++) {

    if (requestAnimationFrame&&cancelAnimationFrame)

    prefix = prefixes[i]

    requestAnimationFrame = requestAnimationFrame || window[prefix + 'RequestAnimationFrame']
cancelAnimationFrame = cancelAnimationFrame || window[prefix + 'CancelAnimationFrame'] || window[prefix + 'CancelRequestAnimationFrame']

Step 5: if (!requestAnimationFrame || !cancelAnimationFrame)

    requestAnimationFrame = function(callback, element)

    varcurrTime = new Date().getTime();

    vartimeToCall = Math.max(0, 16 - (currTime - lastTime))

    var id = window.setTimeout(function()

    callback(currTime + timeToCall)

    timeToCall)

    lastTime = currTime + timeToCall

    return id

Step 6: window.requestAnimationFrame =

    requestAnimationFramewindow.cancelAnimationFrame =

    cancelAnimationFrame.

Step 7: End.

V. UML Diagram

Use Case Diagrams: A use case describes a system's behavior as it responds to a request that originates from outside of that system. In other words, a use case describes "who" can do "what" with the system in question. The use case technique is used to capture a system's behavioral requirements by detailing scenario driven threads through the function requirements. A defined purposeful, interaction between a system and a human of non human actor that is playing a specify role outside the system.
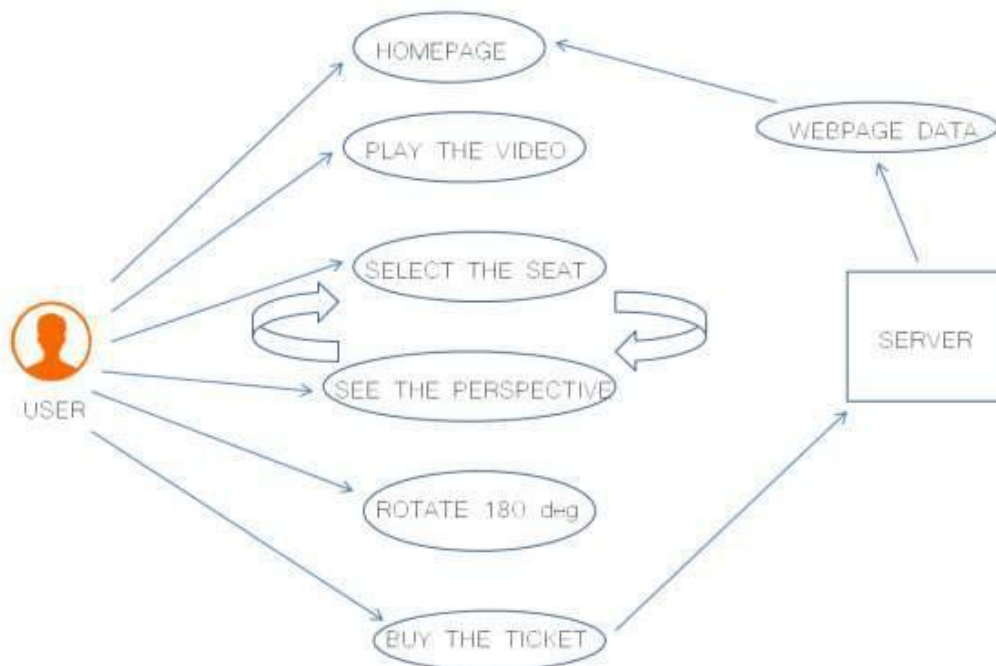
Figure

Figure No. 5.1:Use Case Diagram

VI. SEQUENCE DIAGRAM

Sequence Diagram is a kind of interaction diagram that show hoe process operate with one another and it what order and are used to represent or model the flow of messages, events and actions between the objects or components of a system. Time is represented in the vertical direction showing the sequence of interactions of the header elements, which are displayed horizontally t the top of the diagram. The diagrams are used primary to design, document and validate the architecture, interface and logic of the system by describing the sequence of actions that need t be performed to complete a task or scenario. UML sequence diagrams are useful design tools because they provide a dynamic view of the system behaviour which can be difficult to extract from static diagrams or specifications.
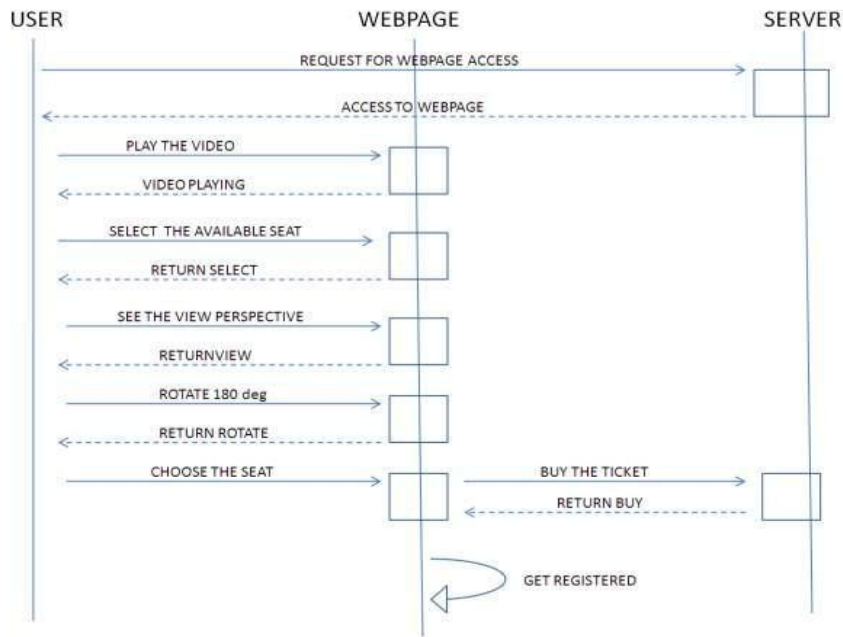
Figure No. 6.1:Sequence Diagram

VII. IMPLEMENTATION OF SYSTEM DESIGN

The proposed system consist of a 3d model of the cinema on website where the user can select the view as per seat and give realistic view of the website using the perspective origin function in css. This function will determine the angle on x axis as well as on y axis for each seat and the view is provided as per the selected seat.
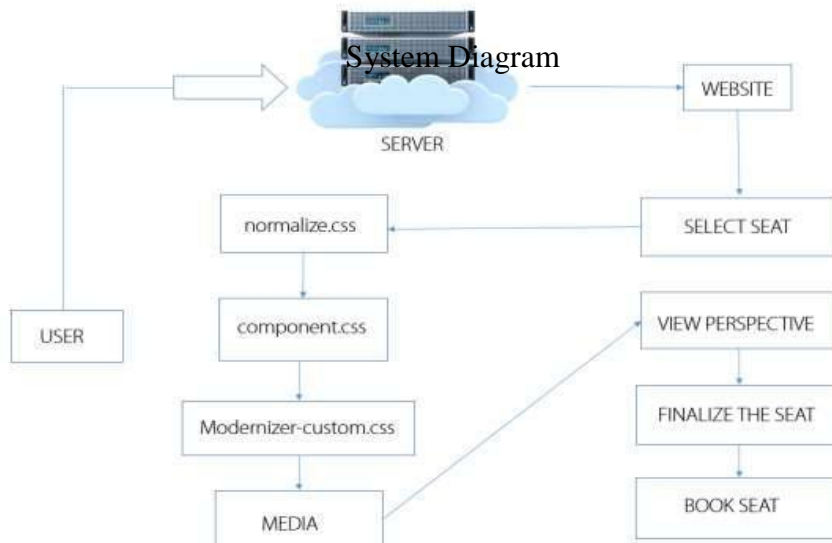

Figure No. 7.1: System Block Diagram

The above figure aims to enhance the booking process, by letting the user see the perspective before buying the tickets.

1. The normalize.css and component.css file consist of the pseudo code for the perspective which are linked to HTML page.
2. Modernizer-custom.css consist of all the function required to run the css and also the HTML page connected.
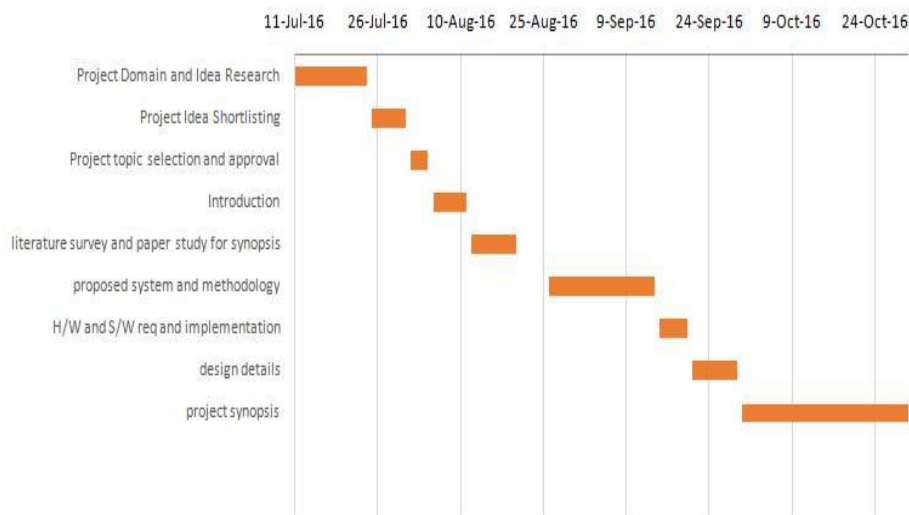
VIII. **GANTT CHAT DIAGRAM**
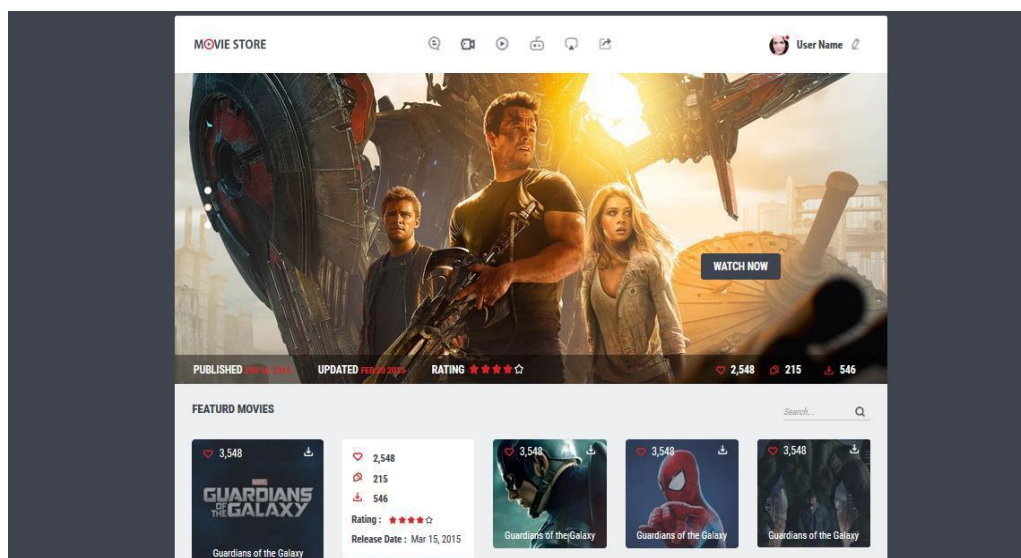

Figure No. 8.1 (a): Gantt chart

IX. **SIMULATION RESULTS**

FIGURE 9.1: FIRST THE USER SELECTS THE MOVIE HE WANTS TO WATCH AND CLICKS ON WATCH NOW.
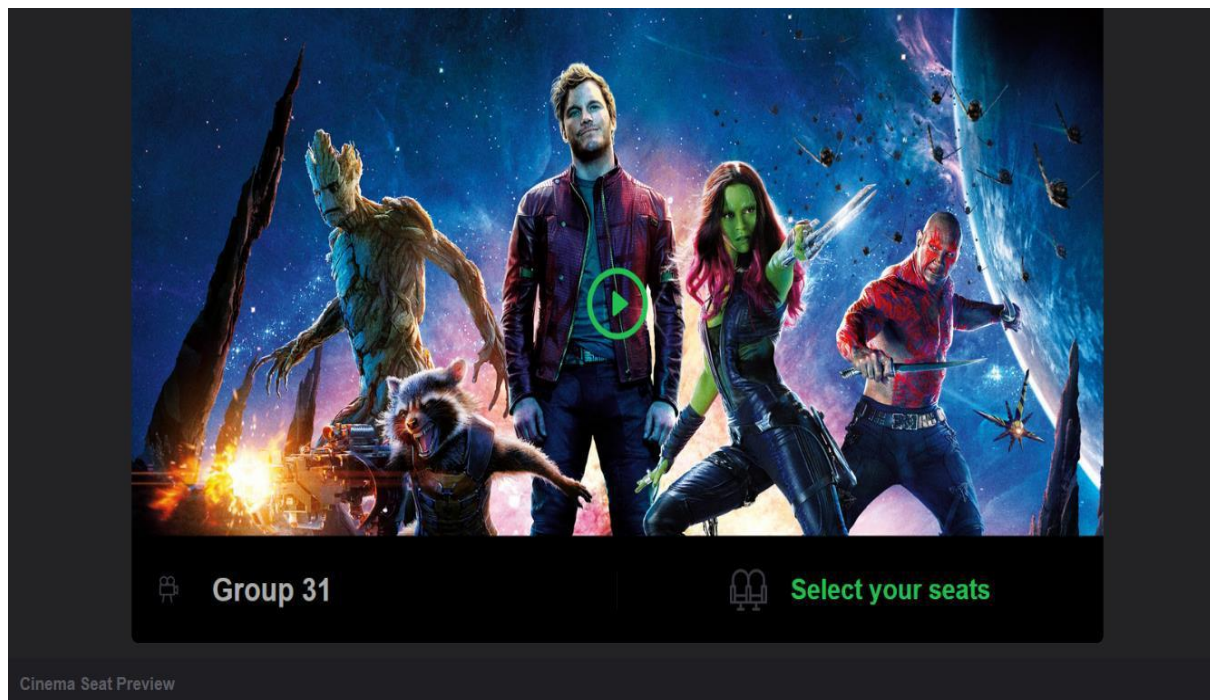
FIGURE 9.2: THE USER IS REDIRECTED TO SEAT PREVIEW WEB PAGE WHERE HE CLICKS ON SELECT THE SEATS.

FIGURE 9.3: THE USER CAN SELECT AS MANY SEATS AS HE WANTS AND VIEW THE PERSPECTIVE AND 180 DEGREEROTATION.
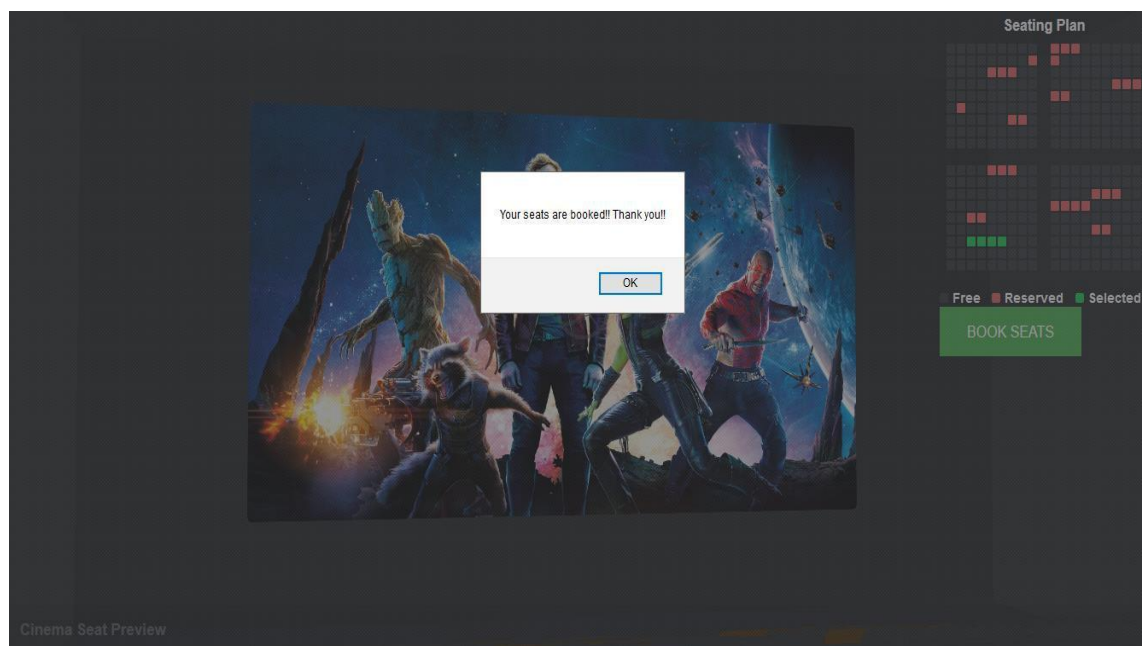
FIGURE 9.4: ONCE THAT IS DONE THE USER SELECTS BOOK SEAT AND POPUP SAYS "YOUR SEATS ARE BOOKED"

X. CONCLUSION ANDFUTUREWORK

The proposed Cinema Seat preview system with the help of latest technology and some minor changes in the code this technology is compatible with every website so that any website can have 3d parallax view for the users. The purpose of WebGL is to bring hardware-accelerated 3D graphics to the Web without plug-ins. In other words, web browsers will directly support 3D graphics and lessen the need to install plugins.Thus this technology as mentioned earlier is theatre on which the 3D technology is implemented. The current example of it is BookMyShow and scope of this project is for 31.5 million users. The system can be extended to Stadium where matches are played though it requires an extensive use of Web GL and 3D perspective. The system can be used for the simulation of movie theatre where how the seats order should be planned before even the theatre is built.

REFERENCES

[1]   RM. J. G. Angco and R. O. Atienza, "Depth perception through adaptive 3D view perspective and motion parallax," Wireless and Mobile (APWiMob), 2015 IEEE Asia Pacific Conference on, Bandung, 2015, pp. 83-88.
[2]   Y. Zhao, R. An, X. Chi and W. Shi, "Visual comfort improvement for 3D video based on parallax adjustment," 2016 SAI Computing Conference (SAI), London, 2016, pp. 1339-1343.
[3]T. Kawakami, M. Date, M. Sasai and H. Takada, "Optical Linear Blending of Viewing Zones Using Convolution of Iris for Smooth Motion Parallax Autostereoscopic 3D Display," in Journal of Display Technology, vol. 12, no. 2, pp. 143-152, Feb. 2016.
[4]P. Goorts, S. Maesen, D. Scarlino and P. Bekaert, "Bringing 3D vision to the web: Acquiring motion parallax using commodity cameras and WebGL," 2013 International Conference on 3D Imaging, Lie??ge, 2013, pp. 1-6.
[5]Q. Xu, G. Zhai, M. Liu and K. Gu, "Using Structural degradation and Parallax for reduced-reference quality assessment of 3D images," 2014 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, Beijing, 2014, pp. 1-6.
[6]   https://en.wikipedia.org/wiki/Seating_plan   https://forums.asp.net/t/1960542.aspx?[7] How+to+make+Cinema+Hall+Seat+Booking+Website
[8]   https://www.w3schools.com/html/html_links.asp
[9]   https://www.w3schools.com/js/js_functions.asp

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