

UDXR Assignment2

Siddharth Gupta 2021355

Design process:

Brainstorming and Ideation:

Went over various ideas in mind and narrowed down on a state-wise cultural experience. Chose 2 states for now, Rajasthan and Kerala.

Research and Content Gathering:

Began by researching the unique cultural aspects, traditions, history, and heritage of each Indian state. Gathered multimedia content, such as images, videos, 3D models, and textual information, related to these aspects.

Educational Objectives and Target Audience:

Our goal was for users to learn or gain insights into Indian culture through a visual AR experience. Identified our target audience, which included students, tourists, and anyone interested in Indian culture.

AR Marker Selection:

Chose appropriate AR markers or triggers for each state. A state map shape was quite apt.

AR Content Development:

Used Unity and AR development tools (like Vuforia) to integrate the content with the chosen AR markers. Ensured that 3D models, videos, and textual information were displayed accurately and in an engaging manner.

Future Scope:

A similar format may be extended to incorporate all the states to educate people about the state-specific cultural aspects. Other non-state specific cultural aspects of India like Classical Music instruments including sitar/flute may also be incorporated as separate AR experiences following a similar format but completely dedicated to these non-state specific aspects.

Background studies:

FOR RAJASTHAN

Rajasthan, known as the "Land of Kings," is a vibrant and culturally rich state in India, celebrated for its diverse heritage and traditions. Here's a brief overview of some key elements of Rajasthani culture:

Hawa Mahal (Palace of the Winds):

Hawa Mahal, located in the Pink City of Jaipur, is an iconic architectural marvel. Built in 1799 by Maharaja Sawai Pratap Singh, its unique honeycomb-like structure allows cool air to circulate through its 953 small windows. These intricately designed windows, known as "jharokhas," were traditionally used by royal women to observe street festivals and processions while maintaining their privacy.

Chand Baori (Stepwell):

Chand Baori, situated in the village of Abhaneri, is one of the deepest and most stunning stepwells in the world. This architectural marvel was constructed in the 9th century and features a symmetrical pattern of steps leading down to the water source. Chand Baori showcases the ingenuity of ancient Rajasthani architects in harnessing and conserving water, a precious resource in this arid region.

Traditional Dance and Music:

Rajasthani culture is renowned for its vibrant and expressive folk dances and music. The state boasts a variety of traditional dance forms, including the energetic Kalbelia dance performed by the Kalbelia tribe, the graceful Ghoomar dance known for its twirling movements, and the vigorous Bhavai dance performed with pots balanced on the head. These dances are accompanied by traditional instruments like the dholak, harmonium, and sarangi.

Ornate Doors and Architecture:

The architecture of Rajasthan is characterized by intricate and ornate designs, often seen in the grand doorways and entrances of palaces and havelis (mansions). These doors are adorned with detailed carvings, often depicting mythological and cultural motifs, showcasing the craftsmanship and artistic heritage of the region.

Kaavad (Portable Shrine):

The Kaavad is a traditional wooden storytelling device that originated in Rajasthan. It consists of intricately painted wooden panels hinged together to form a portable shrine. Each panel narrates a different part of a story, typically depicting Rajasthani folklore, epics, or historical events. Kaavads are used by storytellers to convey tales of heroism and culture to the community.

Kumbhalgarh Fort:

Kumbhalgarh Fort, located in the rugged Aravalli Hills, is one of Rajasthan's most impressive and historically significant forts. It was built by Rana Kumbha in the 15th century and is famous for its massive walls, which are the second-longest continuous wall in the world after the Great Wall of China. The fort's architecture and strategic location make it a testament to the region's military prowess and heritage.

Rajasthan's culture is a vibrant tapestry of art, history, and traditions. Its architectural wonders, traditional dances, and intricate craftsmanship continue to enchant both locals and visitors, offering a glimpse into the rich heritage of this captivating state in India.

FOR KERALA

Kerala, often referred to as "God's Own Country," is renowned for its rich and diverse cultural heritage. Here's a glimpse into the various facets of Kerala's vibrant culture:

Kathakali Dance:

Kathakali is one of the most iconic traditional dance forms of Kerala. It combines elements of dance, drama, and elaborate makeup. Performers, adorned with intricate costumes and colorful masks, enact stories from Indian epics like the Mahabharata and Ramayana through stylized movements and expressions. Kathakali is a visual treat that captures the essence of Kerala's classical arts.

Temple Architecture:

Kerala boasts an impressive array of temples renowned for their exquisite architecture. The state's temples feature intricate carvings, soaring gopurams (temple towers), and stunning mural paintings. The Padmanabhaswamy Temple in Thiruvananthapuram and the Guruvayur Temple in Thrissur are prime examples of Kerala's temple heritage.

Elephants:

Elephants hold a special place in Kerala's culture and religious traditions. They are often seen in temple processions, festivals, and rituals. The majestic animals are adorned with intricate caparisons and carry the deity during important ceremonies, adding an aura of grandeur and spirituality to the events.

Food:

Kerala is famous for its delectable cuisine, known for its generous use of coconut, spices, and rice. Traditional Kerala meals, served on banana leaves, feature dishes like appam, puttu, dosa, and a variety of curries. The state's seafood is particularly renowned, with dishes like Kerala fish curry and prawn masala being popular choices.

Colorful Temples:

Kerala's temples are not only architecturally splendid but also visually captivating due to their vibrant colors. Temple walls and roofs are often adorned with bright, intricate artwork, including murals and frescoes, depicting various religious and mythological themes.

Onam and Other Festivals:

Onam is the most celebrated festival in Kerala, marking the harvest season. It features colorful processions, boat races, traditional dances like Thiruvathira Kali, and the iconic floral carpet known as "Pookalam." Other festivals like Vishu, Thrissur Pooram, and Theyyam festivals showcase the state's rich cultural diversity.

Bananas:

Bananas hold a special place in Kerala's culinary and cultural landscape. They are used in various forms, from ripe bananas in traditional desserts like banana chips and payasam to raw bananas in savory dishes. Banana leaves also serve as eco-friendly plates for serving food.

Kerala's culture is a fascinating blend of art, spirituality, and tradition. Its colorful festivals, graceful dance forms, and delectable cuisine reflect the warmth and diversity of the people who call this enchanting state home. Kerala's unique cultural tapestry continues to captivate both residents and visitors alike.

Development:

Unity along with the vuforia plugin were used for the development process. Appropriate images for the image targets were chosen and were uploaded in the target manager on the vuforia development website. This target dataset was then downloaded in the form of a unity package which was then imported into unity.

Various videos and blogs were referred to in order to overcome the steep learning curve of using unity. Especially, for including video and audio playbacks that only play when the image target is visible in the viewframe and not otherwise, this required editing and writing the C# scripts for fulfilling this function.

A code snippet of the edited parts:

```
protected virtual void HandleTargetStatusChanged(Status previousStatus, Status newStatus)
{
    var shouldBeRendererBefore = ShouldBeRendered(previousStatus);
    var shouldBeRendererNow = ShouldBeRendered(newStatus);
    if (shouldBeRendererBefore != shouldBeRendererNow)
    {
        if (shouldBeRendererNow)
        {
            onTrack.Invoke();
            OnTrackingFound();
        }
        else
```

```

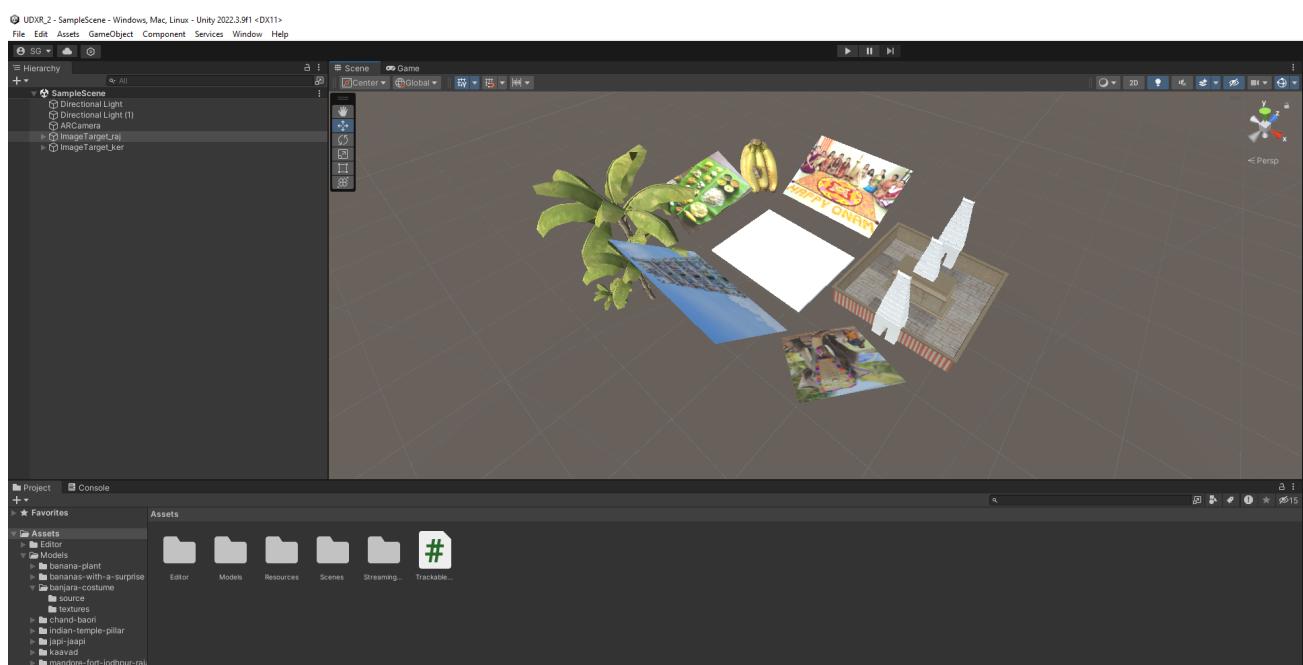
    {
        onLost.Invoke();
        OnTrackingLost();
    }
}
else
{
    if (!mCallbackReceivedOnce && !shouldBeRendererNow)
    {
        // This is the first time we are receiving this callback, and the target is not visible yet.
        // --> Hide the augmentation.
        OnTrackingLost();
    }
}

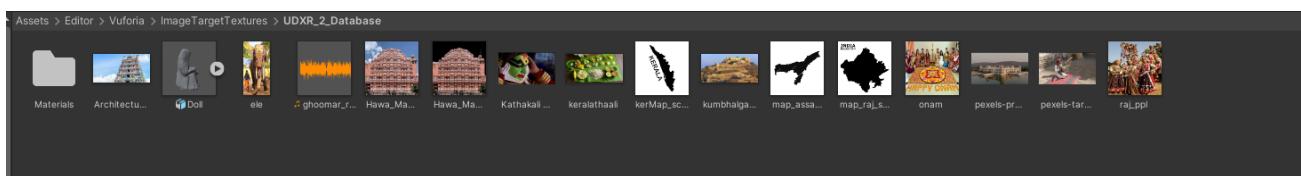
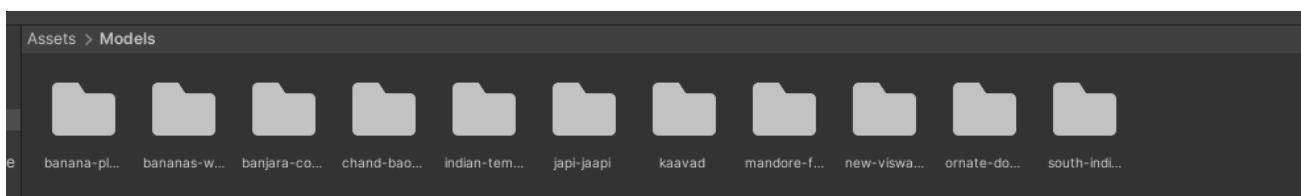
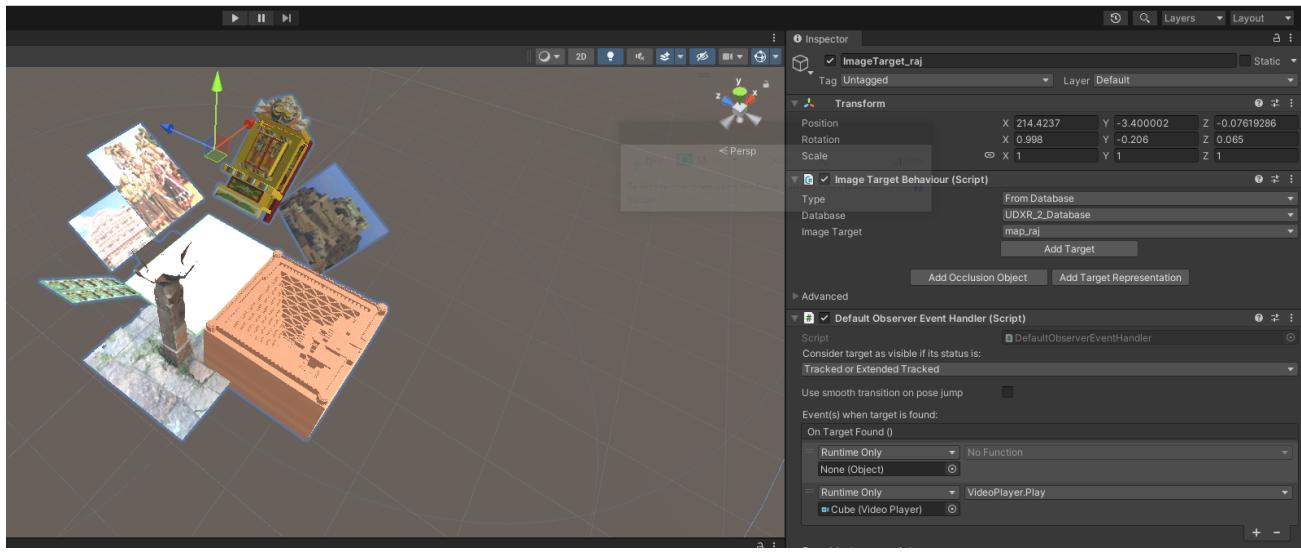
mCallbackReceivedOnce = true;
}

```

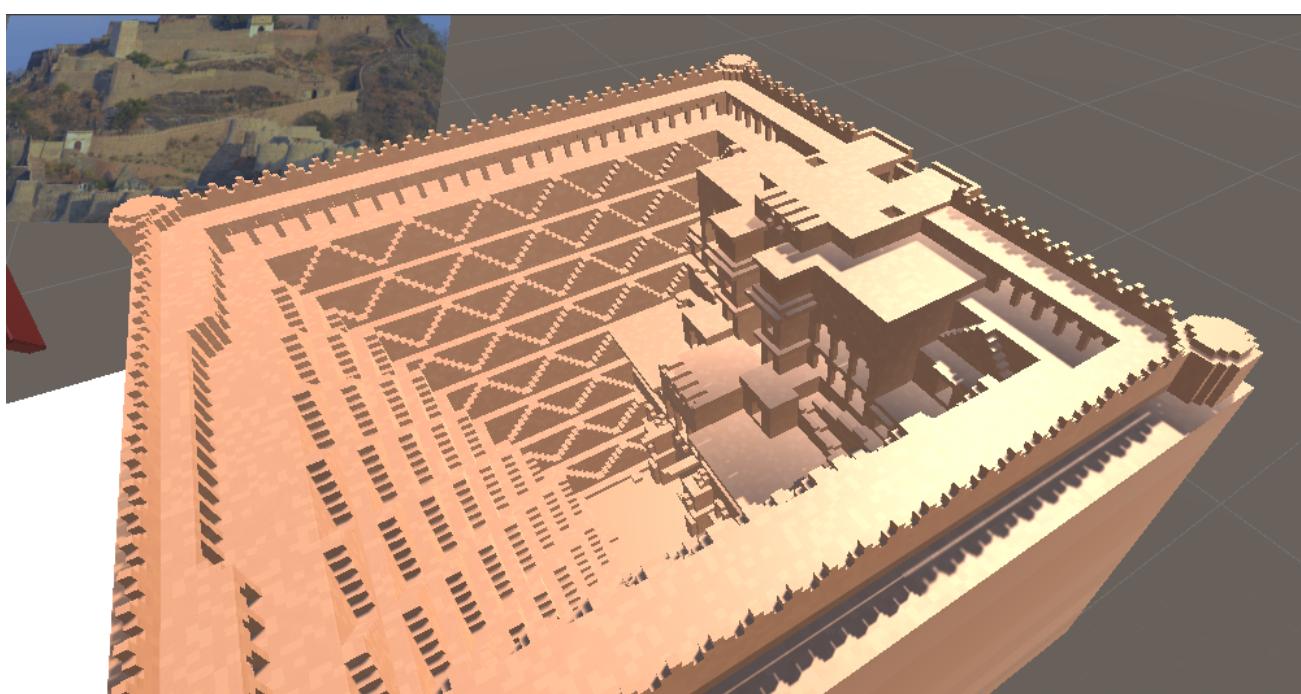
Fitting 3d models were chosen to enhance the experience and apt images and videos that speak of the culture of the chosen places.

Screenshots:

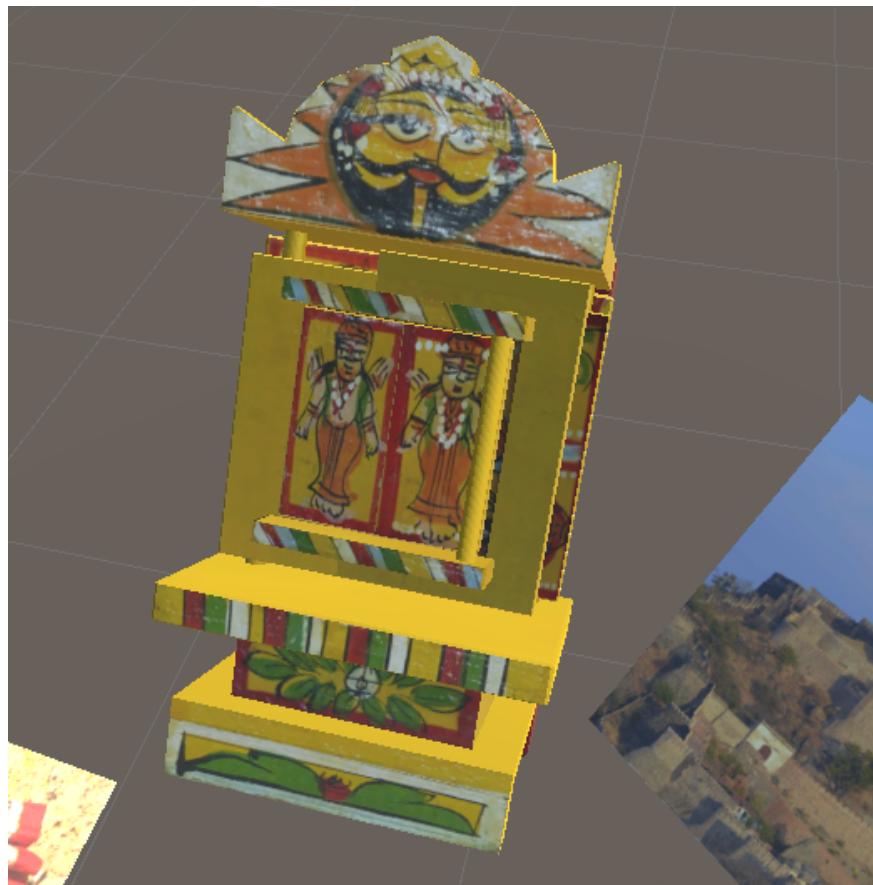


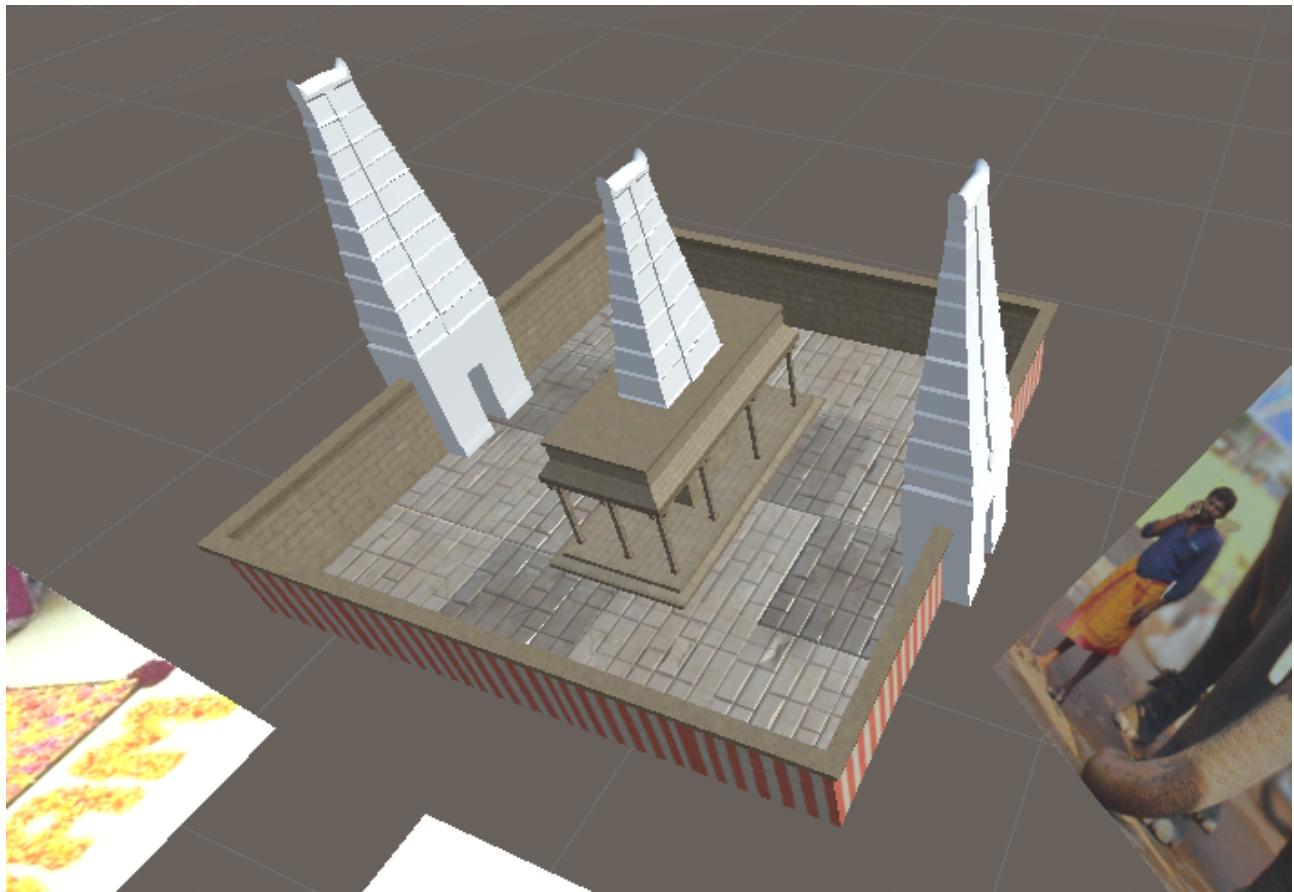


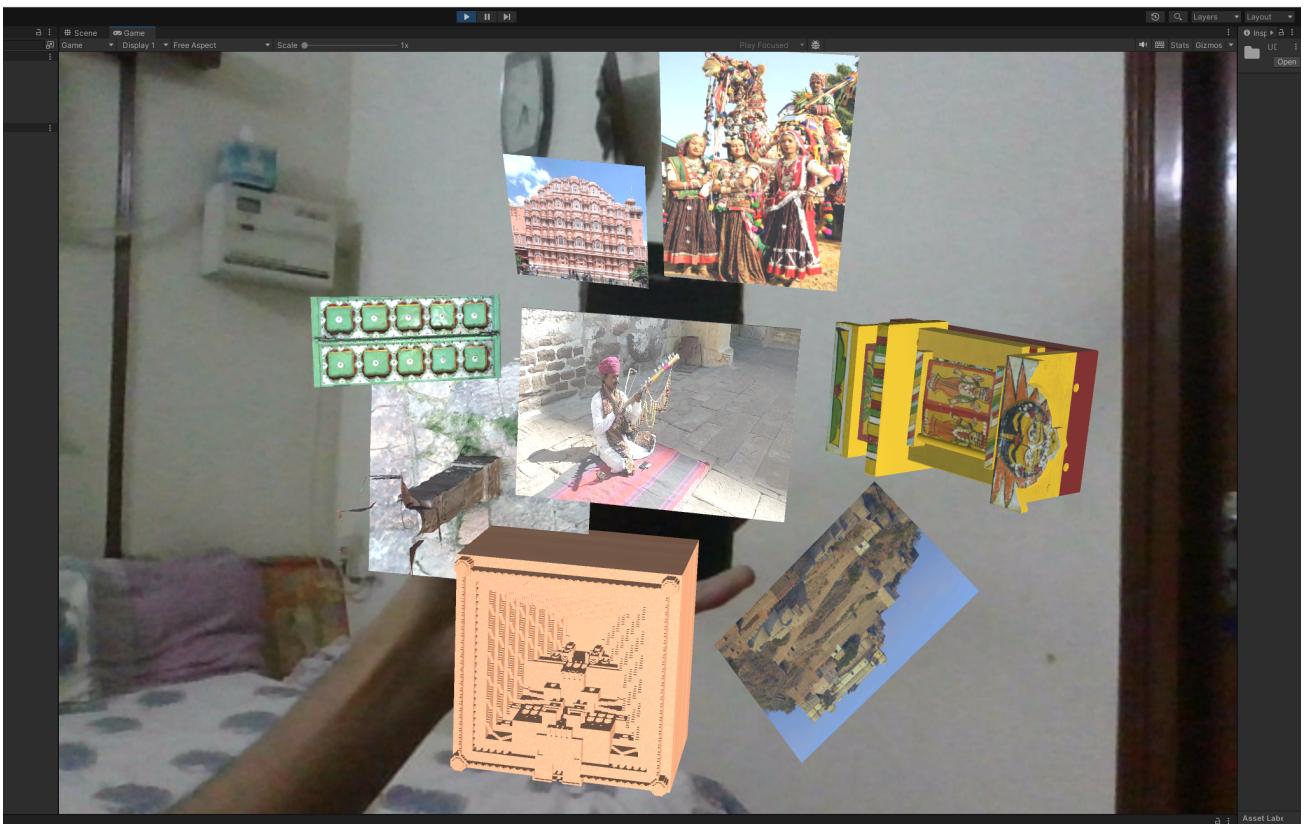
Baoli:



Kaavad:







Resources Submitted:

1. AR application source file (Unity) and apk - GitHub
2. Video Recording - drive link
3. Report - description of your project - above

Drive Link:

https://drive.google.com/drive/folders/1hZ2oUuFei7YS6wV25iayQPxbd2jHoT8G?usp=drive_link

References:

- <https://www.youtube.com/watch?v=oC9k5Yd4020>
- <https://www.youtube.com/watch?v=tn4tIJZRVOE>
- <https://www.youtube.com/watch?v=014n6HnJl6Q>
- <https://www.youtube.com/watch?v=ysT8IXSfxZ0>
- <https://chokhidhani.com/welcome-indore/culture-of-rajasthan/>
- <https://travel.earth/why-is-rajasthani-culture-so-fascinating/>
- <https://www.tourmyindia.com/blog/top-30-must-see-forts-and-palaces-in-rajasthan/>
- https://www.google.com/search?sca_esv=566938770&rlz=1C1UEAD_enIN987IN987&q=hawa+mahal&bm=isch&source=lnms&sa=X&ved=2ahUKEwikrYusrmmBAxVcS2wGHTCDBmAQ0pQJegQIDhAB&biw=1280&bih=603&dpr=2
- <https://www.youtube.com/watch?v=Ckw4RKKVE3k>
- <file:///C:/Program%20Files/Unity/Hub/Editor/2022.3.9f1/Editor/Data/Documentation/en/Manual/CreatingComponents.html>
- <https://docs.unity3d.com/560/Documentation/Manual/HOWTO-importObject.html>
- <https://3dmdb.com/en/3d-model/jal-mahal-3d-model/3512542/>
- <https://3dmdb.com/en/3d-model/sheesh-mahal/9897990/>
- <https://anyconv.com/skp-to-obj-converter/>
- <https://www.youtube.com/watch?v=cdJlk-NoeYk>
- <https://docs.unity3d.com/560/Documentation/Manual/HOWTO-ImportObjectSketchUp.html>
- <https://www.youtube.com/watch?v=fp7WjlxbFjQ>
- <https://www.youtube.com/watch?v=AudlxKdSFcM>
- https://www.youtube.com/watch?v=tVYxT_AxBck&list=PLuyGnM-G9V1wZPc642NnFSqhs0bKFag7x&index=6
- <https://sketchfab.com/search?q=bamboo+house&type=models>
- <https://www.youtube.com/watch?v=sA-A1YwA8jA>
- <https://www.travelogyindia.com/kerala/culture-of-kerala.html>
- https://www.google.com/search?q=kerala&tbo=isch&ved=2ahUKEwie37iNzcmBAxWFUWwGHYPSBwEQ2-cCegQIABAA&oq=kerala&gs_lcp=CgNpbWcQAzIKCAAQigUQsQMQQzIKCAAQigUQsQMQQzIICAAQgAQQsQMyCggAEIoFELEDEEMyBQgAEIAEMgQIABADMg0IABCKRCxAxCDARBDMgciABCkB RBDMgUIABCABDIICAAQgAQQsQNQAFgAYNIFaABwAHgAgAF-iAF-kgEDMC4xmAEAqgELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=YYATZd6qGIWjseMPg6WfCA&bih=603&biw=1263&rlz=1C1UEAD_enIN987IN987&hl=en
- <https://developer.vuforia.com/targetmanager/project/deviceTargetListing>
- <https://developer.vuforia.com/vui/develop/licenses>