OPEN INNOVATION – OLD TRAFFORD MUSEUM TOUR EXPERIENCE

RedDevils1999

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MUSEUM TOUR

TROPHY ROOM

AR Trophy Room Proposal : The app highlights the prominence of a trophy won, and also plays a video of the pivotal moments of that season. Enabling the visitor to relive the moments that were truly magical.

Working of the App

- The visitor in the Trophy Room uses his Museum AR App and points towards a trophy
- The app displays then displays information of the title and year won.
- The user has the option to watch the pivotal moments of that season which won us the trophy
- The user can also access the corresponding years' table, stats and the squad.

On Click Plays
2011 Premier League Title:
Chicarito scores in 30 second against Chelsea in a title winning match.

The Proposal

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TROPHY ROOM

#20 Premier League Titles:
2013 Final game under Sir Alex at Old Trafford, one of the most emotional video for a Red Devil.

The app can be applied to as many trophies in the trophy room, and the app helps to bring out the prominence of each trophy in our glorious history.

AND SOLSKJAER HAS WON IT!!!!!
Champions League 1999 , Camp Nou 2 Goals in extra time, and Manchester United reach the Promise Land .

MACHEDAaaa!!!
Premier League 2009 Macheda scores after coming on, scores a winner on debut to win the game vs Aston Villa.

The Proposal

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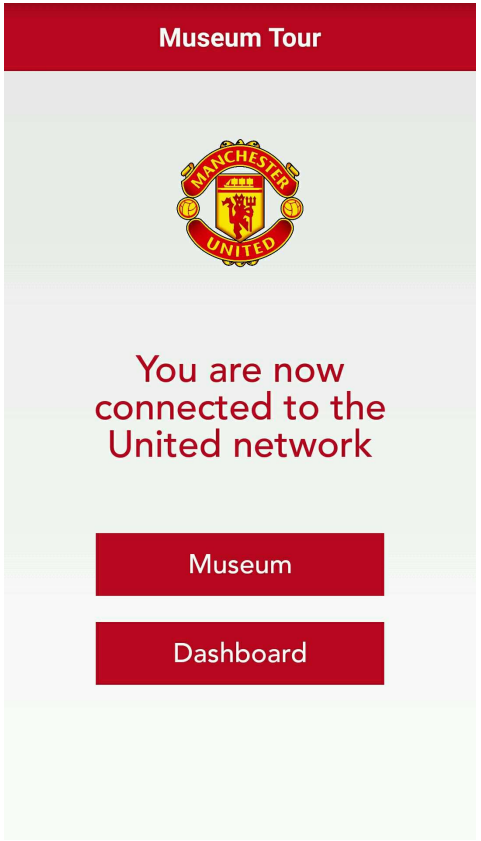
Prototype

To demonstrate the working of the idea, we have made a prototype application.

We have taken five trophies of varied complexities and assigned it to various trophies won by Manchester United over the years. We are trying to mimic the trophy room scenario at Old Trafford. The trophies are scanned using the app and are recognized. Information like match statistics and videos can be played for each of the trophies.

Click here to watch the video



MUSEUM TOUR

Instructions

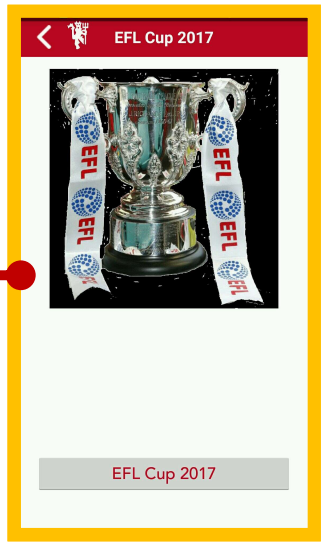
Click here to download the .apk file on an Android phone (Marshmallow or previous versions)

For the working of the prototype, the phone must be connected to the internet

Allow the app to access the Camera and Storage. Select the Museum Tour option. Point the camera to the set of images to see the working of the app

Click here to see the entire wireframe

Upon recognizing the object, the corresponding trophy opens up



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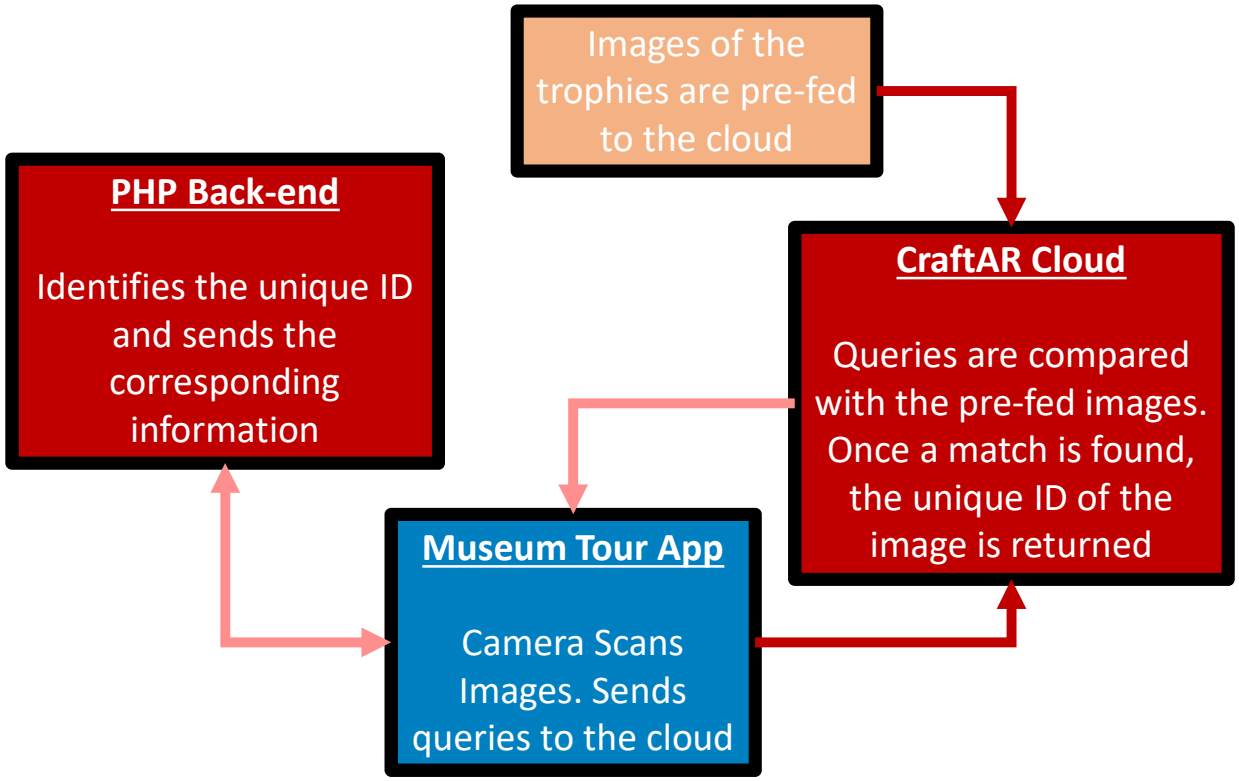
Prototype Technical Details

Application type	Android Application Compatible with Android Lollipop, Android Marshmallow
Permissions	Camera, storage
Backend	PHP
Database	MySQL
Programming language used	Java for mobile application. Screens are designed using xml
Framework	SaaS (Software as a Service)
External Libraries	CraftAR Cloud Image Recognition API

Prototype Workflow



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CraftAR Image Recognition

External Library : **CraftAR Cloud Image Recognition API**

The backbone of our application is the external library used. It is a lightweight, highly accurate library which can be scaled up for a large application.

CraftAR is also available for iOS devices . For devices running operating systems other than Android or iOS, we can use JavaScript to make a web application.

The library has been tested for difficult angles, low-light conditions and highly reflective objects. The accuracy and versatility of the application can be seen in the demo video shown earlier.

We have used the Finder Mode for scanning of objects. In this mode, continuous queries are sent to the server until a result is found. This provides a very seamless experience to the user

Download the library

1. https://github.com/Catchoom/craftar-php
2. https://catchoom.com/documentation/image-recognition-sdk/android-image-recognition-sdk/classes/

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Deployment and Scalability

For the deployment of the app, each of the trophies in the trophy cabinet will have to be scanned in the real lighting conditions from various angles.

In the prototype, the images are stored in the cloud for ease of demonstration. For the deployment, ‘On-Device Image Recognition’ library of CraftAR could be considered.

We could also explore the possibility of streaming the content from a local server which will retain the features of a cloud without using the internet.

PHP based backend admin panel to manage content easily and dynamically

PLAYERS CORNER

Deployment and Scalability

The proposal for Players Corner is on the same lines as the trophy recognition.

Deployment of this feature will require taking pictures of all the jerseys.

The proof of concept is demonstrated in the previous slides

MUSEUM TOUR

VIRTUAL JERSEY

Virtual Jersey Try On:

- Through the app the user at the Jersey Corner can pick a 3D Virtual Jersey from Yester Years and Try Them on
- The user can then take a picture of him/herself with the Jersey on. Personally I would love to try on the 1992-1993 Jersey.

The Proposal

VIRTUAL JERSY

Prototype and Deployment

This is a proven concept for various applications

It can be executed in multiple ways

1. Identifying particular pixels and replacing with them with corresponding pixels of the Manchester United Jersey
   https://github.com/akash0x53/virtual-dressing-room
2. Identifying the body outline of the person standing in front of the camera and overlaying the 3D object, in this case the jersey, on the user
   https://github.com/anthonyheckmann/KinectDressingRoom

Both the concepts are well proven and are executable using different programming languages.

Applications and services from like Unity 3D and CraftAR. A big part of the algorithm and proof of concept overlaps with the Museum Tour and Virtual Photo Booth concepts.

VIRTUAL PHOTO BOOTH

VIRTUAL PHOTO BOOTH

Virtual Photo Booth Working:

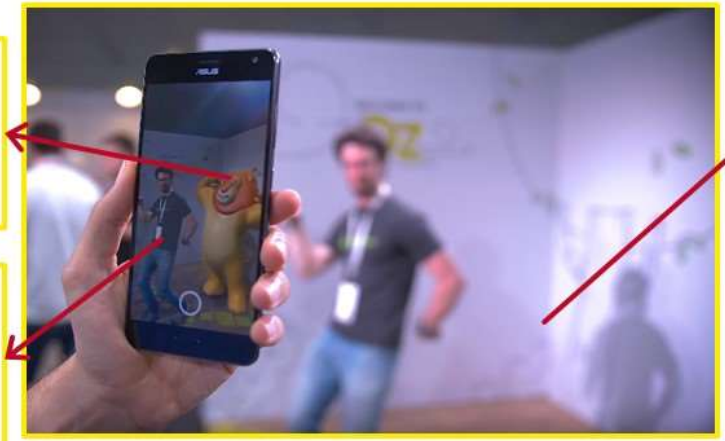
- Proposal to have a dedicated area(Photo booth) where a visitor can take a virtual photo with the star of the squad and legends of the past.
- The museum visitor stands in the Photo Booth and for instance, a virtual Hologram image of 3D video Ryan Giggs can be seen in the Phone screen next to the Visitor, subsequently a photo can be clicked.
- We could also have TV screens to show the relative position of the visitor and the Virtual Image of the Players
- Technology : We integrate Google Tango to the app to achieve the expected example

Virtual Hologram of the Player:

A 360 degree video of the player needs to be recorded and then projected on screen as seen in this example

Visitor gets his picture taken with his favorite Player:

The visitor gets to pose with the superimposed player and then take a picture



Virtual Photo Booth Area:

This area serves as an anchor point , based on which the app recognizes the anchor point and then projects the player onto the frame,

The Proposal

VIRTUAL PHOTO BOOTH

Prototype

To demonstrate the working of the idea, we have made a prototype application.

Click here to watch the video

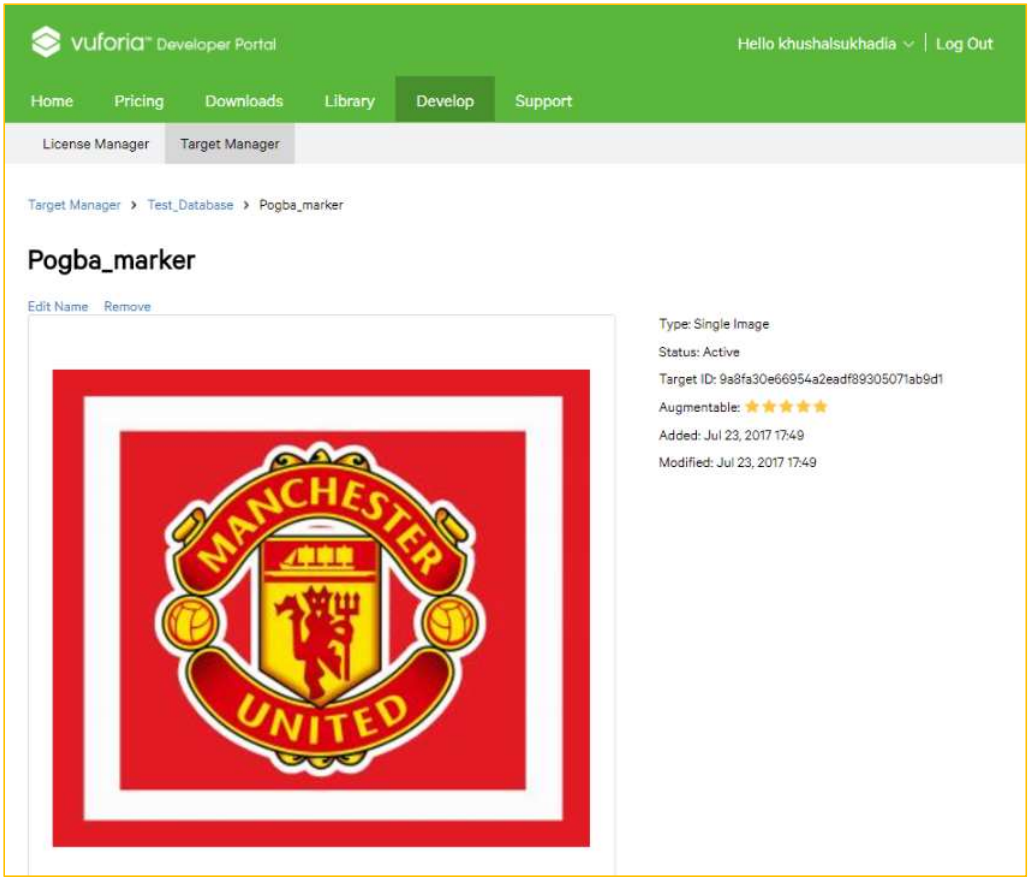
VIRTUAL PHOTO BOOTH

Markers

Markers are patterns that the phones/computers recognize with the camera input. Each marker is associated with a different virtual object

The markers are made using Vuforia Developer Portal and integrated with Unity 3D. Vuforia analyses the markers for their quality and readability.

Markers to be used are designed so as not to look out of place in the scenario.



VIRTUAL PHOTO BOOTH

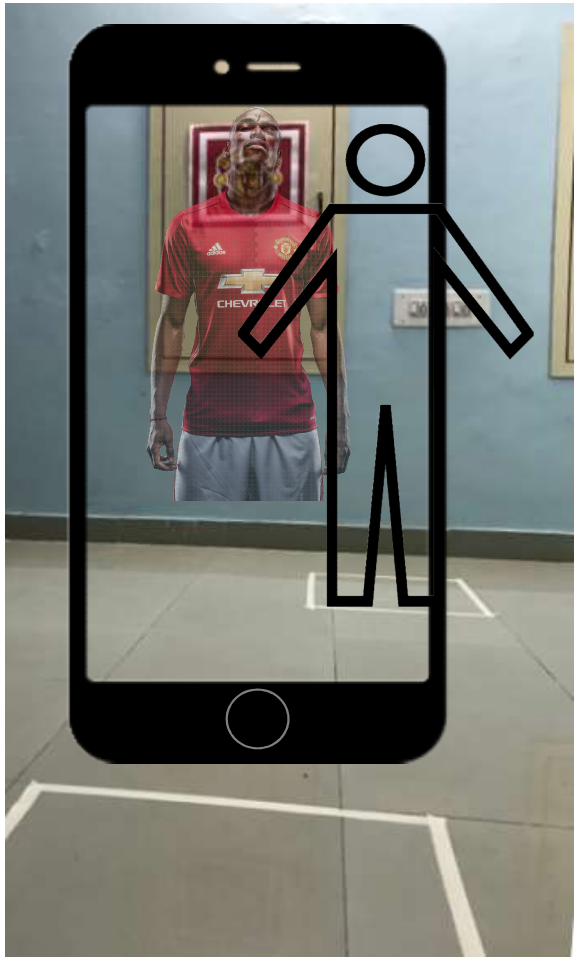
Working of Prototype

The app recognizes pre-fed custom markers which are scanned by the phone's camera.

Once the markers are recognized, it's corresponding image / 3D animation appears on the screen.

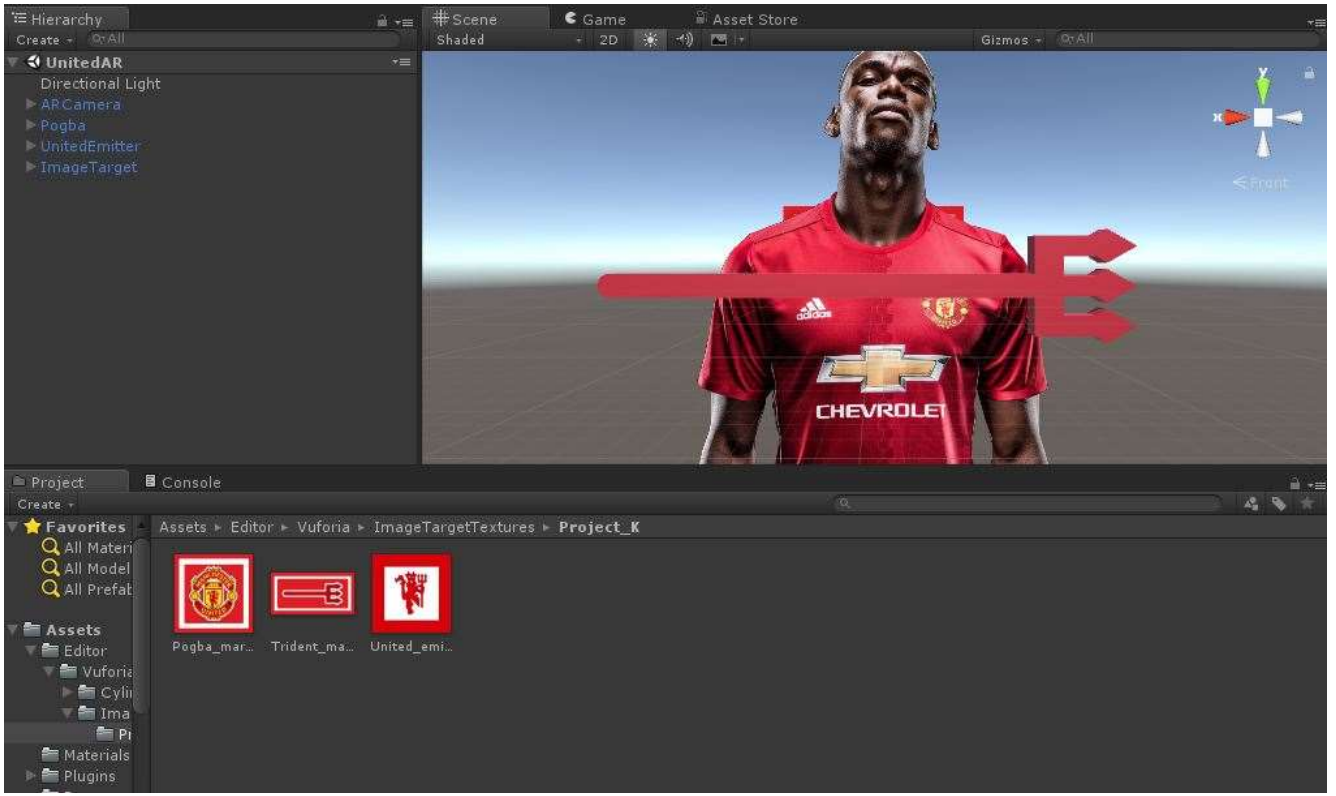
With the appropriate 3D rendering and when seen from the phone, this gives an impression that the virtual 3D object is part of the scenario.

This can be captured as still shots by taking screenshots of the phone



VIRTUAL PHOTO BOOTH

3D Rendering Using Unity3D

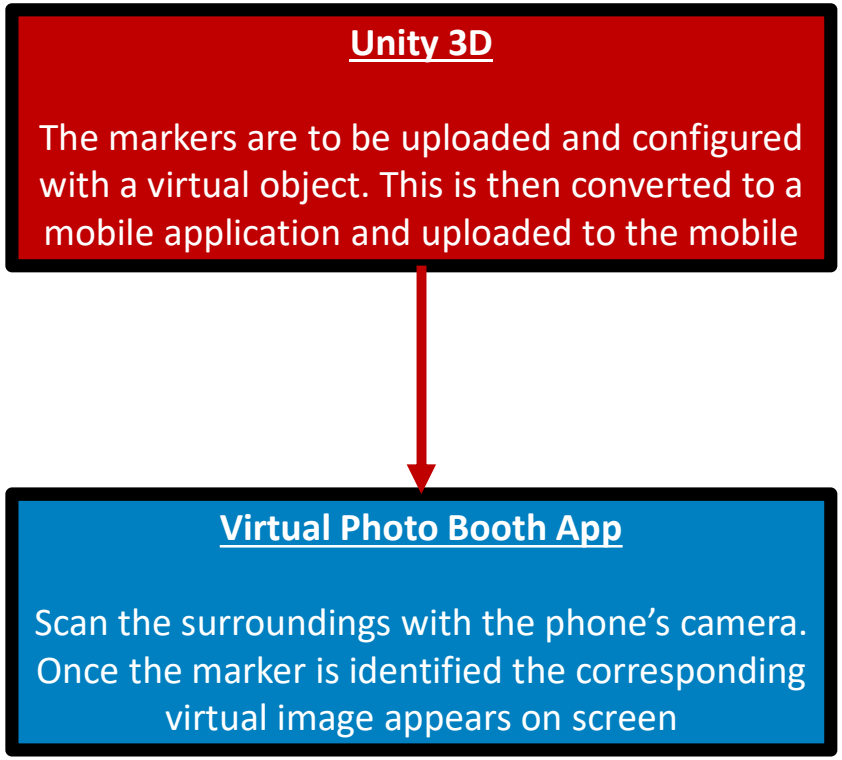


VIRTUAL PHOTO BOOTH

Technical Details

Application type	Android Application Compatible with Android Lollipop, Android Marshmallow
Permissions	Camera
External Libraries	Unity 3D, Vuforia

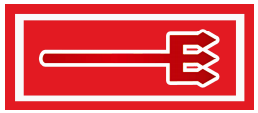
Workflow



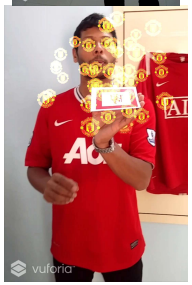
VIRTUAL PHOTO BOOTH

Prototype

Marker



Virtual Photo Bhooth



VIRTUAL PHOTO BOOTH

Instructions

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VIRTUAL PHOTO BOOTH

Unity 3D & Vuforia

External Library : **Unity 3D & Vuforia**

The backbone of this feature is Unity 3D application. It provides real-time entertainment in the space of Augmented Reality.

Both the applications are built for multiplatform integration and seamless working.

The possibilities in Augmented Reality are endless with this integration

The accuracy of markers and their identification from a far distance is crucial to the success of an Augmented Reality application. With the apt lighting, and accurate 3D rendering of the players, records from virtual photo booth can seem very realistic.

VIRTUAL PHOTO BOOTH

Area Demarcation, Deployment and Scalability

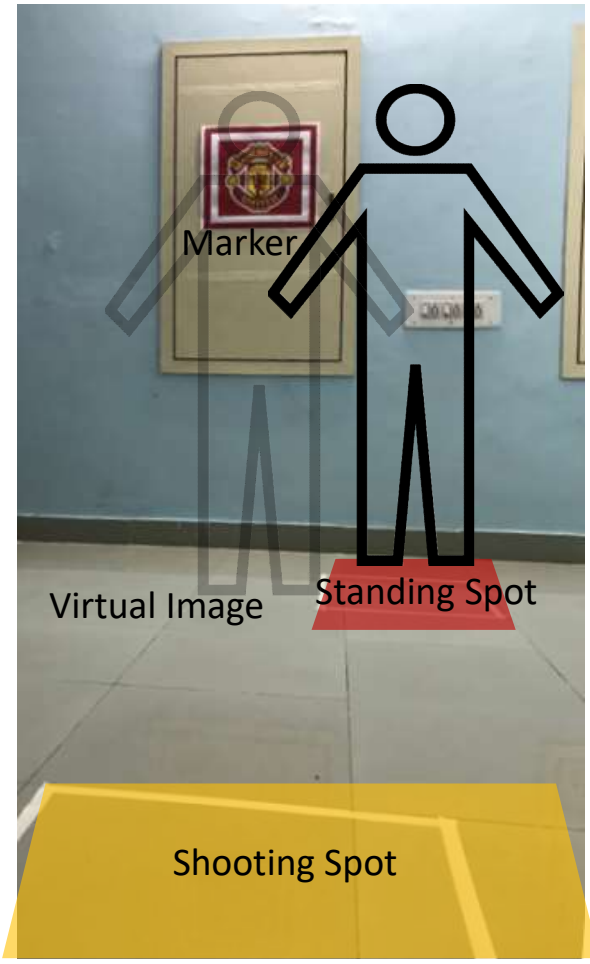
Once the markers are made of appropriate size and configured with the respective virtual object, we must assess the area from where the snapshots needs to be saved and the place where the virtual image would appear.

This is done to keep the perspective of the virtual image and the person appearing alongside.

We have demonstrated three scenarios

1. With Paul Pogba
2. With the Manchester United Trident
3. With Manchester United logos emanating from the Red Devil

The possibilities are endless to develop unique scenarios, especially with the rapidly developing Augmented Reality space with blurs the line between reality and imagination. We may use animated virtual objects to make the scene seen as realistic as possible.



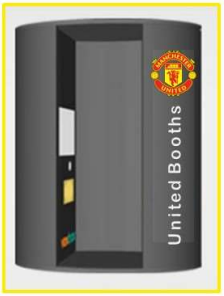
Fan – Player Engagement

Deployment

The proposed idea alongside, coupled with the Virtual Photo Booth and Virtual Jersey will make it a very interactive and engaging experience for the fans.

All the previous features can be integrated with popular social media platforms to increase fan engagement.

Fan - Player Engagement



Video Booths:

- Visitors can enter the booth and convey their love for the past and present players and manager.
- Visitors can get creative with their messages.
- We could encourage them to sing songs and make it a fun video.
- The video is then compiled to a minute, using machine learning to get the best video compilation (similar to Google Photos).
- The video can then be played across social media platforms on a weekly basis.

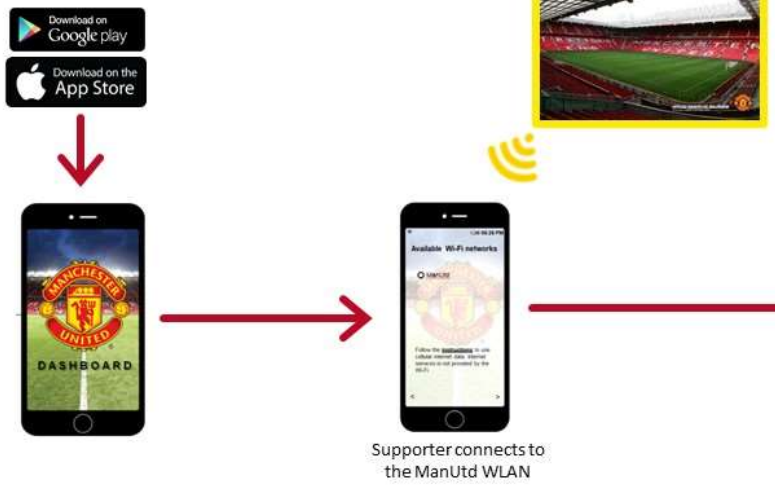
The Proposal

THE UNITED DASHBOARD

The UNITED DASHBOARD

The United Dashboard is an exclusive Mobile App to enhance in-stadium viewer experience. It aims at increasing fan engagement on match days.

WLAN broadcasts to all the supporters in the stadium.



The Proposal

Dashboard

Deployment and Scalability

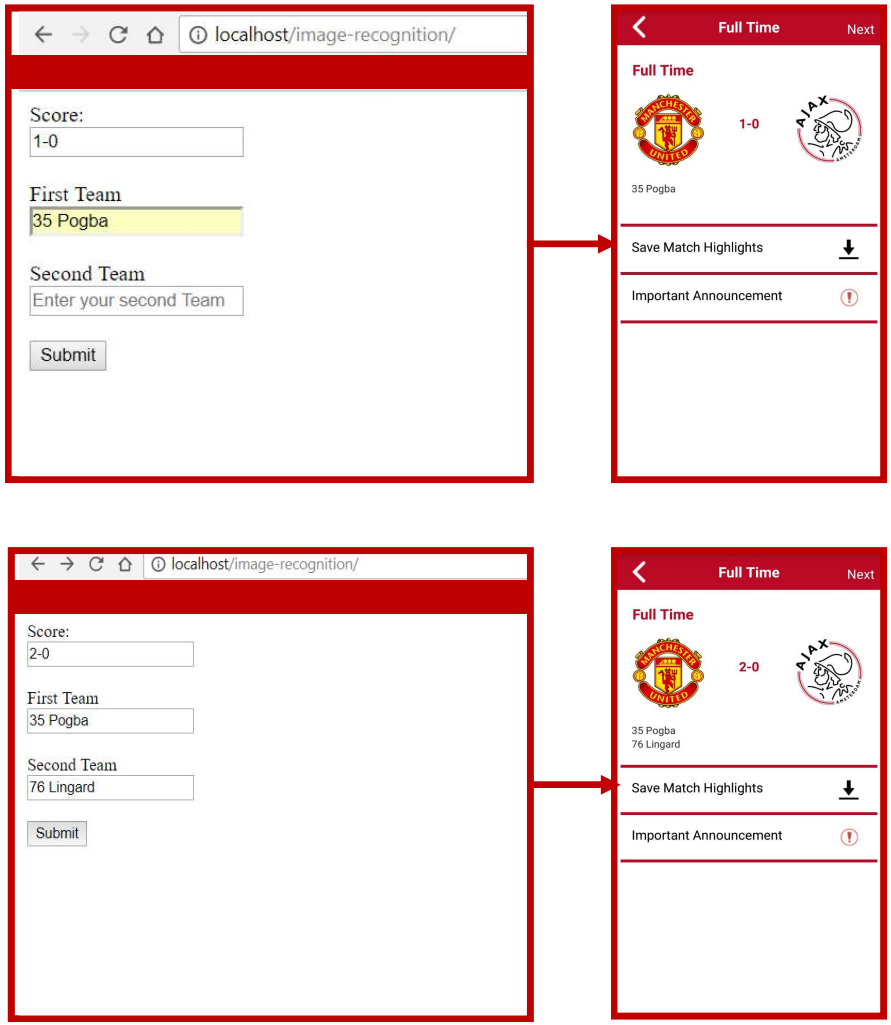
To demonstrate the app, we have made an admin panel linked to the local server.

Once the fields are submitted, the corresponding fields in the application are updated in real-time.

As the IP address of the network where the prototype may be tested is unknown, we have made a web page where the concept can be verified.

We can reconfigure the app with the static IP you provide us at the time of evaluation or deployment. Alternatively, please use the link here to verify the working of the concept. Other media will be pushed to the app using the same concept.
http://www.goteso.com/test/vj/image-recognition/

Wireframe of the Dashboard is shown here



Github Link to RedDevils1999

https://github.com/khushalsukhadia/RedDevils1999-Museum-Tour-AR-Application

Museum Tour APK File – APK Folder > new-museum.apk

Museum Tour Trophy Images Folder - Trophy Images

Virtual Photo Booth APK File – APK Folder > ManutdAR.apk

Virtual Photo Booth Marker Images - Virtual Photo Booth - Markers

YouTube Link to the video - https://youtu.be/EtW-PrJPrwg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