ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 1, January 2018

Automated Detection of Targets and Retrieve the Corresponding Analytics Using Augmented Reality

[1] Dr. Suvarna Kumar G, [2] Dr. Sandhya Devi G, [3] Mr. Chanakya P

***Abstract* - Augmented reality is defined as the collection of the digital (or) computer generated information like images, audio, video, 3d models etc. and overlay them over the real time environment. Augmented reality can be thought as a blend between completely synthetic and completely real. Augmented reality provides scope in a wide range of industries like manufacturing, retail, gaming, advertisement, Tourism etc. and brings out new dimensions in the modern digital world. As it overlays the content, it makes the users to enhance the knowledge by providing the content blended with real world. In this application, we integrated augmented reality with data analytics and integrated with cloud so the virtual content will be generated on the basis of the data present in database and we used marker based augmented reality where every marker will be stored in the database with corresponding unique ID. This application can be used in wide range of industries for different business processes but in this paper we mainly focus on the marketing industry which helps the customer in gaining the knowledge about the products in the market which mainly focus on their prices, customer feedback, quality and other benefits. This application also focus on providing better market strategy information for marketing managers who obtain the data about the stocks, sales, customer response about the product etc. In this paper we also included the reports from the feedback got from different people after the demonstration and finally we presented the future scope of Augmented Reality in different business processes by integrating with new technologies like cloud, big data, artificial intelligence etc.**

***Keywords:* --- Augmented Reality, Data Analytics, Catch Room, Marketing and Sales.**

1. INTRODUCTION

Augmented Reality is simply defined as the virtual world on top of real world environment which brings out the scope for human imagination to be visualized which sought out the thinking of the human and brings out the clear idea about his imagination. Augmented Reality like other graphical interfaces gives us ability to bring usable information into visual spectrum in real time wherever we are. There are three characteristics that need to be present for true Augmented Reality

1. AR combines real and virtual environment
2. AR interactive in real time
3. AR operates and used in the 3D environment

As Gene Becker of Lightning Laboratories puts in Augmented Reality is

1. A technology
2. A field of research
3. A vision of future computing
4. An emerging commercial industry
5. A new medium for the creative expressions

Augmented Reality facilitates the user to project the virtual content generated from different sources on top of their corresponding real world objects.

Figure 1: Augmented Reality with Head Mounted Display [9]

II. PROBLEM DEFINITION

As most of the market completely rely on the reports that are being generated from their sales and feedback of the customers, we are implementing a system which is robust in generating such kind of reports for customer as well as marketing people like firm owner, marketing manager using the concept of augmented reality integrated with

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 1, January 2018

data analysis and cloud storage which brings out the solution helps in understanding the market, customers and value for the product in the market. This also reduces time in understanding the product and also reduces time in knowing the information about the product.

III. RELATED WORK

This research work resembles a real time system which usually plays a major role in making the marketing strategies it replaces barcode scanners or Unique ID input methods and brings out the report generation and user feedback into mobiles using Augmented Reality with just a simple scan on the product. This includes two modules; one is identifying the product using Augmented Reality which uses marker based Augmented Reality algorithm and other module is retrieving the data corresponding to the identified product where a lot of algorithms/tools like R, Hadoop comes depending upon the requirement for analysis and overlay the data on the screen.

IV. METHODOLOGY

Initially the live video is processed through the camera, embedded into the application and then each frame is extracted from the video and analyzed for marker or object tracking. The procedure involved is depicted through the figure in the side pane. The procedure is as follows; initially once the application starts the camera for capturing the live feed and in this process application tracks the targets which can be an image or a marker. The below image describes the process of entire marker based augmented reality

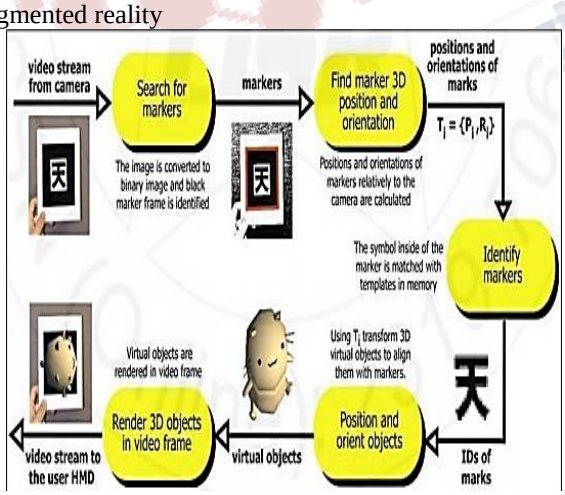

Figure 2Process of Tracking the Targets and Rendering with objects [7]

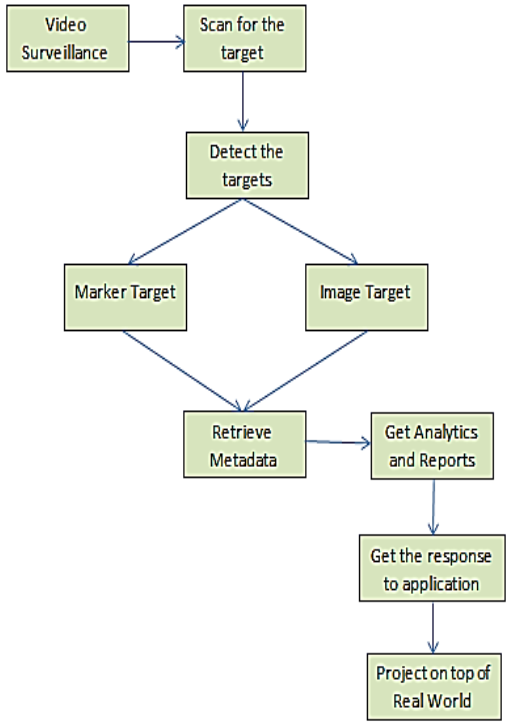

Figure 3 Process of the Application

In order to achieve the above described process we have several API's available over the internet and we accessed Catch Room Cloud Recognition API in order to track the targets in the live stream and we need to connect with another data source for analytics which comes under the part of a data scientist depends on the business requirement.

When it comes to Augmented Reality, the tracks are stored in cloud and we use cloud recognition API in order to track the targets, Catch Room provides different classes like Capture, Cloud Recognition, Image, and Image Selector.

Here is the complete step by step process of methodology:

1. At First, camera will be switched on or video surveillance will start
2. At the time of scanning, when the target is found ; it fetches it metadata and intimate to server
3. Once a request goes to the server, it either performs data retrieval or data analytics and generate the response

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 1, January 2018

4. The response will be received by the application at client side and turns that response into required format
5. Once the format is available it will project on top of scanning area in the application

Algorithm We Used

1. Login with proper authentication; system identifies the user
2. User can be store manager or a customer and switches the camera
3. If(User)

```
{
Camera.Start();
    //Starts Camera for live feed
        While(Camera.track())//Tracking
  {
                If(Object.Found)
//When Object Found
                ShowResults(User);
  }
}
```

4. ShowResults(User):

```
If(Customer)
{
ShowFeedback();          //Feedback from customers stored in database
ShowLive();//Feedback system generated with specific formula
}
If(StoreManager)
{
dataFromAnalytics();
ConvertToSpecificFormat();
}
```

ShowLive() Formula

Product Rating=(Number of products sold)/No. of Scans

No. of Scans = Its Global counter for every product increments when product is scanned by customer

There are four Rating Levels

S.no.	Rating Category	Rating Range
1	Excellent	Rating > 1.5
2	Good	Rating between(1-1.5)
3	Satisfactory	Rating between(0.2-1)
4	Poor	Rating <0.2

Table 1 Different Rating Levels

V. EXPERIMENTAL RESULTS

A. Marker Based Result

We took the scenario as the business operation is to find out what are all the products bought from the vendor and what is the stock and profit/loss statement analysis are required. So the marketing managers set some markers for every vendor so we search for the target and retrieve the results

Figure 4 Target Marker

The above figure is the marker for the vendor group of products once the target is scanned the report will be *overlay on it like* this

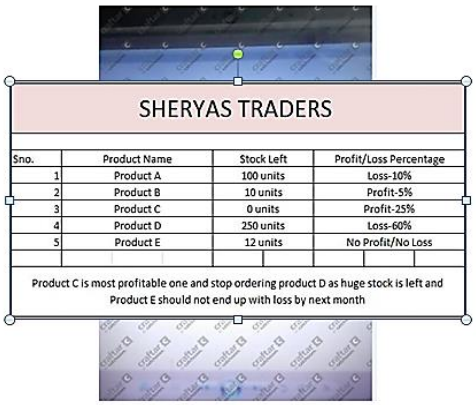

Figure 5 Marker Based Result

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 1, January 2018

B. Image Based Result

In this scenario, customer scans on a product and gets the ratings from the customers who bought that product and here once the customer scans the product he gets the customer feedback as an overlay on the product.

Figure 6 Image Marker-Product Label

This is the image target when camera scans the target check the below which gives the customer feedback about the product Please Note one thing as here we used trial version on catch room API there is a mark-up at the time of scanning and retrieving the results Basically the main difference in image and marker is the recognition algorithm changes a bit.

Figure 7 Image Based Result -For Customer

VI. CONCLUSION

The proposed system is very much useful in understanding the market and even gives an insight about the product to the customer and helps in choosing the product. This reduces the burden on customer in choosing the product and reduces the burden on the marketing team in making the marketing strategies; even helps them to reduce the time and usage of laptops and other large size systems and introduce the mobility which brings ease in the work. This system also allows video surveillance option which gives the stock and marketing information on live. This system brings out digital trends in the area of marketing and sales. This kind of methodology can be applied in many verticals like education, entertainment, and manufacturing etc. to enhance their business process.

REFERENCES

[1] Matt Bower, Cathie Howe, Nerida McCredie, Austin Robinson, David Grover AUGMENTED REALITY IN EDUCATION – CASES, PLACES, AND POTENTIALS

[2] http : // www. csc. kth. Se /~ alx /courses /DT2140 /olwa l_ introduction_ to_ar_2010_03_05.pdf

[3] http :// web. cs. wpi. Edu /~ gogo /hive /papers /Milgram _Takemura _SPIE _1994.pdf

[4] http :// www .openspace3d. com /lang /en /newsactualites / (Dt:20-03-2017)

[5] http :// www. twoguysandsomeipads. Com /2013_ 08_ 01_ archive. html

[6]http://larisamoniz.pbworks.com/w/page/36890577/Present%20Uses%20for%20Augmented%20Reality%20in%20Education (Dt:22-03-2017)

[7] https :/ / www. ijsr. Net /archive /v3i12 /U 1 V C M T Q x M D k5.pdf (Dt:12-04-2017)

[8] https://catchoom.com/solutions/augmented-reality(Dt: 23-03-2017)

[9] https://www.extremetech.com/extreme/224618-2016-is-turning-out-to-be-an-amazing-year-for-augmented-reality (Dt: 02-04-2017)