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Review of Image Representation in E-Commerce

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***Abstract*—** In today's E-Commerce market mostly all the vendors like Amazon, Flipkart, Snap deal and other E-Commerce websites are show its product in the form of 2D image. Our world is exist in 3D but we mostly use 2D view for see something virtually (include newspaper image, TV advertise, template). All these things are come under boundary and resist the customer to provide full view of product. So in this paper we are representing the positive points and drawbacks of the existing system. It will help to build the proposed system. Generally each e-commerce website show different views of products by uploading images in 2D view due to this customer face problem they can't see the fully view of product. Very few websites shows their products in 3D view using flash player, but the problem with showing 3D view of product using flash player. First its static i.e. it will show the 3D view of the products with generated flash file. Second thing it needs flash player to run the 3D view of product. In this paper we represent existing system merits and demerits and give brief view about the present system.

***Keywords*—** 2D image , 3D image generation algorithm and various method.

I. INTRODUCTION

As earlier we are know if we want to buy the product then we must go to the shop and analyze the product , barging about price and also demand show other different product that satisfy my requirement like price , quality , attractive. Up to the 19th century we all are follow this process. New invention come into the market that is computer, internet, GUI viz. due to this entire thing whole world connected with single line that is World Wide Web we also called as internet. This will help to create a new online market today we called as E-Commerce market. Here all the things are available customer no need to go outside for shopping. They got easily available on one click with lots of discount, offer from various vendors.

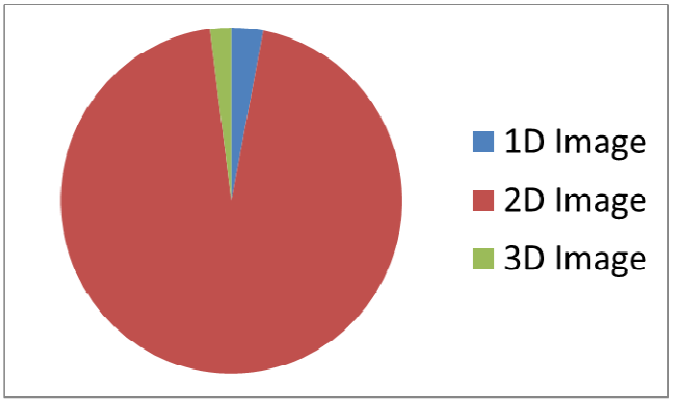

Fig :- 1.1 Image share in E-Commerce market

In this market representing the product is in 2D images. 2D images have only 2 Dimensions. That cannot give the actual idea about the product like its depth, full view of product. This will resist the customer to view the buying product. As shown in **fig 1.1** present the E-Commerce market share of three types of images are 1D image, 2D image and 3D image. The ratio of the image share are the 1D image is 3% , 2D image is 95% and remaining 3D image is 2%.Mostly 95% vendors use the 2D images that's cover lot more part of the market. But the benefit of 2D image is the no need the extra features like graphics processing unit (GPU), higher computational power and complex algorithm to display images. In this paper we give the brief introduction about existing system of the E-Commerce market and also present the different factor of this market.

II. EXISTING SYSTEM

Today's E-Commerce market covers all type of product and its available with one click no need to extra efforts to buy something. You can buy anything at your home without face any problem like traffic, holiday, strike outside, vendor disappointing response and other physical parameters. Consumer can easily view, compare the product, price, various offer on the different sites. That will help to customer to buy the right product with right price and right quality. It also provides the customer review which will help the feature customer to take a decision on the selected product.

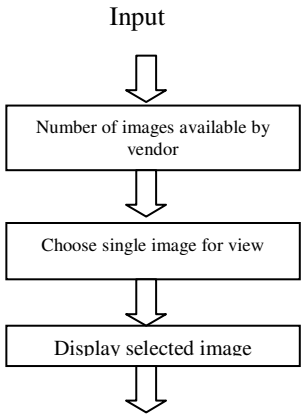

Fig: - 1.2 Block Diagram of Existing system

The existing system is shown fig 1.2. In this system vendor upload the number of images of his/her product for available online sell. When the client enter in to the market then he login like flip kart, Amazon, Snap deal and other online website. After that he find required product also compare with other product related to his choice. There are lots of option available related product like specification, company info, product price with special offers and discount. And the main thing is customer review which will help to decide to buy the product or not. The review available with rating is also help to decide about product and vendor like if vendor rating is high then customer mentality is vendor sell the product genuine and also quality is good exactly opposite if the rating is low then customer avoid buying the product.

Here also lots of technical thing is use like manage the website, servers, database, and security viz. But the customer only relate with information, he is not interested with technical related term. Information like product images, written content specification, vendor information with different price and discount offers. The look of product is mainly come from the available images on the website. They can idea about product depth, length or we can say physical specification of the product. Here the main role of product description is represent the available images. The big research scope is available regarding image representation on the web. Here we are take some research paper for know about past research information regarding image representation. Those papers key points mentioned here for show what research has been done up to this time.

III. KEY POINT

In the year 2006, E. Delage, H. Lee, and A. Y. Ng have done research on how to construct the 3D image from the single image.[1] Mostly for the 3D reconstruction of image use single image concept but it's hard to find the depth of the image. With the help of single image depth estimation cannot done by geometry formulae like straight forward implementation of stereopsis. In this paper, they focus exclusively on 3d reconstruction from a single indoor image. The first vision is twofold they anticipate that monocular vision cues could later be applied in conjunction with binocular. Try to restricting our attention to monocular 3d reconstruction. It allows us to more clearly explain what kinds of monocular vision of signal are useful for depth estimation. Specifically, monocular cameras are cheaper, and their installation is less difficult than, stereo cameras. More importantly, the accuracy of stereo vision is fundamentally limited by the standard distance between the two cameras, and performs poorly when used to estimate depths at ranges that are very large relative to the baseline distance.

N. Elfiky, T. Gevers, A. Gijsenij, and J. Gonzàlez done the work on the color constancy of 3D image in the year 2014. They focus on color constancy [2]. Today mostly all the images are available in colored some images are in black white format for give some different look but color is main focus. Sometime due to light source are affect the color of object. If the object of color will change then it is difficult to understand the object. That affects the negative impact on image. For that remove the external light source from the image. Here the value of pixel use for the estimate the illuminant and also different method they are used to get the image statistics, define the classification of image. They use the investigation depth, local statistic and color constancy algorithm for "Find the relation between depth pattern and color constancy", on the basis of statistics select best color constancy method. Main drawback of this system is not giving the error proof solution. It improved the 40 to 50 % of angular error but remaining 50 to 60 % error may be occurred and also extracting the geometry feature of efficiency.

Three researchers are H. Wang, S. Gould, and D. Koller have done work on the understanding the cluttered indoor scene in the year 2010.[3] For understanding the indoor scene from a single image in terms of recovering the layouts of the faces like floor , ceiling , walls , window and the available furniture. But the main problem with this is the furniture and wall decoration is different as per culture. In this paper they tackle the problem by introducing latent variable to check the clutters, so with the help of this observed image is jointly explained by the face and clutter layouts. Modeled parameter is defined in the maximum margin formulation which is constrained by extra prior energy terms that define the role of latent variable for parameterizing the global geometry of an indoor scene. That considers the model room as a box. They can generate a parametric family of boxes characterizing the outlines of the floor, ceiling, walls, and furniture. The problem can be formulated as picking the box that best fits the image. As per the experiment using this system use the dataset which consist of 314 images and each image has hand labeled box and clutter layouts. They also provide training test on the

basis of that they generate the result. It concluded the difficult to improving the geometric structure as well as clutter layouts from a single image. They use the latent variables for account the indoor scene and define the role of latent variable.

On the "3D reconstruction of urban scene from the single view " research is done by the O. Barinova, V. Konushin, A. Yakubenko, K. Lee, H. Lim, and A. Konushin in the year 2008[4]. As other researcher like here also use the single image for constructing 3D view. They focus on create 3D model are visually pleasant. They chose appropriate 3D model structure and formulate the task of 3D reconstruction as model fitting problem. They achieve computational efficiency by special processing together with stepwise search of 3D model parameters dividing the problem into two smaller sub-problems on chain graphs. Here they use horizon level and vanishing points estimation that cover the Horizon level estimation, Lines filtering, vanishing points estimation. They represent the algorithm for inferring rough 3D structure from a single image of urban scene. They impose constraints on the geometry assuming that scene is composed of ground and a number of vertical walls, which is the case for urban scenes. Implement greedy search of 3D model parameter they divide the problem into sub problem incorporate appearance geometry properties and context via CRF model with the help of supervised learning and then solve for geometry via MAP inference.

A. Saxena, M. Sun, and A. Y. Ng have done the research on the "Generating 3D image structure from a single image" in the year 2008.They consider the problem of estimating information of 3D structure from a single image of a free environment [5]. Their motive is to create 3D models which are both quantitatively perfect as well as visually attractive. For each regular path in the image, it uses a Markov random field (MRF) to gather a set of "plan parameters" that capture together the 3D location and 3D coordination of the path. The MRF trained by supervised learning model, both image depth clues as well as the connections between different parts of images. Other than assuming that the environment is prepared for a number of small planes, our model makes no clear rules regarding the structure of the scene. That helps to the algorithm for capture much more detailed 3D structure than does prior and also gives much better experience in the 3D created using image based rendering equal scenes with important non-vertical structure. In this paper they are mainly focus on monocular vision, learning depth, machine learning and scene understanding, scene analysis, depth cues. They represent an algorithm for gathering detailed information of 3D structure from a single 2D image. That approach begins by over - segmenting the image into many equal regions called the super pixels and use MRF to infer the 3D position and orientation each. This system or algorithm gives significantly better results than prior art.

In this paper D. Hoiem, A. A. Efros, and M. Hebert have done the work on "How to recover surface designs from an image ". [6] Their focus on the reconstruct the surface layouts form a single image. Humans have an amazing capability to directly hold the overall 3D structure of a scene ground orientation, relative position of major landmarks. This capability is totally absent in popular recognition algorithm. It seems very likely that have collect the surface design of the scene that should be deliver support for numerous tasks, including recognition, navigation, and novel view synthesis. They take the first step towards constructing the surface layout, a labeling of the image with geometric variables which roughly describe the 3D scene orientation of each image region. Various subdivision frame work provides strong three-dimensional support allowing a wide variety of cues like color, texture and perspective. They are focus on the surface layout, spatial layout, geometric context, scene understanding, and model driving segmentation, image understanding, and object recognition. By focusing surface estimation as a recognition problem they are able to recover the rough surface design in an extensive variety of outdoor scenes. They construct the 3D image with the help of number of frames and obtain 3D image.

IV. MERITS AND DEMERITS

Above we see the various researches about the image representation in 2D and 3D and also see the conversion from single 2D image into 3D image by the various methods. But we know that every method have some advantage and disadvantage. So the merits and demerits of the above key point mentioned in Table 1.1.

Table: - 1.1 Merits & Demerits

Sr no	Title	Author	Merits	Demerits
1	A dynamic Bayesian network model for autonomous 3D reconstruction from a single indoor image	E. Delage, H. Lee, A. Y. Ng	Possible to construct the 3D view from single indoor image.	It fails in scene which contains little texture, such as many indoor scenes.
2	Color constancy using 3D scene geometry derived from a single image	N. Elfiky, T. Gevers, A. Gijsenij, J. Gonzàlez	Remove the extra light source from the base image for getting better view of image.	It does not give the 100% guaranteed solution.
3	Discriminative learning with latent variables for cluttered indoor scene understanding	H. Wang, S. Gould, D. Koller	It supports Geometric methods	It use the data set which require more space and computation

				power for identify the object
4	Fast automatic single-view 3D reconstruction of urban scenes	O. Barinova, V. Konushin, A. Yakubenko,	Algorithm is able to assume the rough 3D structure from a single image	It can't generate full 3D view from a single image
5	Make3D: Learning 3D scene structure from a single still image	A. Saxena, M. Sun, and A. Y. Ng	Here use the machine learning which help provide the better result	It uses the super pixel for getting 3D so overall computation power is increased
6	Recovering surface layout from an image	D. Hoiem, A. A. Efros, and M. Hebert	It support the many frame work for getting the 3Dimensional parameter	Algorithm work on the number of frame for obtains desired output it will difficult to implement because of its complexity.

V. CONCLUSION

The outcome of this research shows the past work regarding constructing the 3D view from image. Each researcher worked very well to improve 3D Imaging Technique, Almost all of them worked on single photo/image to make 3D view. The quality and accuracy of the 3D view is not much great with single image, as single image shows only 2D view.

3D view generated by previous researcher's models is non-interactive user interface. This is some major Disadvantage but we are going to remove these disadvantages.

We propose a system that will create 3D view from multiple images. That will creates photo-realistic 3D calibrated view of images within seconds.

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