# Convert 2D shapes in to 3D images

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## Abstract

There are several complex programs that using for convert 2D images to 3D models with difficult techniques. In this paper ,it will be introduce a useful technique  and using simple Possibilities and language for converting 2D to 3D images. The technique would be used; a three-dimensional projection using three images for the same shape and display three dimensional image from different side and to implement the particular work, visual programming with 3Dtruevision engine would be used, where its given acceptable result with shorting time. And it could be used in the field of engineering drawing.

## Keywords

## 1. Introduction

There area several fields in the computer sciences among theme is image processing where it's play main rule in many important applications in real world, such as security, healthy, comfort, and so on. These application using image processing under three terms:

- Computer Graphics: Models to Images .
- Computer Photography: Images to Images.

- Computer Vision: Images to Models.

Each term in turn it includes many techniques, and used in several applications, such as face or edge detection, recognition, and more than. Also each one  may be passing through several steps (image analysis, acquisition, enhancement, restoration, segmentation,…), each step applied using deferent methods and algorithms.[1]

The evolution in the field of visual images, especially holographic images and use them in many areas (engineering, TV, etc.), makes  the researchers concerned with, who configure these images and what are the best ways and means to conform 3D images.

Programs and methods used have been well-developed for the formation of three-dimensional images with the development of the software possibilities and means to display three-dimensional down to the moment where appeared, the CAD software and hardware scanner laser devices and tri-dimensional display.

In this paper will interested with how generate 3d model. Where there are many ways to create a three-dimensional images among them

**Journal of AL-Qadisiyah for computer science and mathematics    Vol.9   No.2   Year  2017**
**ISSN (Print): 2074 – 0204      ISSN (Online): 2521 – 3504**

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created it using bilateral dimensional images, where will take image or more and converted certain path to the hologram can be seen as someone who simulates reality.

The methods used for convert 2D to 3D image may be based on single capture that's called monocular, while the other methods based on taken more than one capture from deferent directions and connect together to form 3D image, this method called binocular.

While the algorithms used are:

1. Binocular disparity
2. Motion
3. Defocus using more than two images
4. Focus
5. Silhouette
6. Defocus using a single image .
7. Linear perspective
8. Atmosphere scattering.
9. Shading
10. Patterned texture
11. Bilateral symmetric pattern
12. Occlusions
13. Statistical patterns.
14. Other depth cues

Each one from these algorithms has features and style for forming 3D images can be seen in details in[2].

Despite the great advances made in the field of visual and holographic images and their application but the research in the area of how to configure these images, especially the engineering shapes very few and mostly depends on the ready programs such as AutoCAD and others different algorithms that used for the purpose of distinguishing between forms [ 3].

From the most important fields is moving of 3D object that based on 2D shapes and using specific algorithms [4].

So we will introduced in this research method for formation of geometric forms in the three-dimensional images based on bilateral same format and using a standardized algorithm and the

potential represented by a simple Visual Basic language and engine.

## 2. Three and two dimension imaging

Every thing in real world is three-dimensional but its pictures represent two dimensional, so one dimension is produce by projection process. One important task in the computer vision is to generate 3D perspective or since of thing based on two-dimensional (2D) image of it from different angle. For example, rather than displaying an environment from directly above (a planar or bird's-eye view), perspective view technologies generally display the environment from a 30° or 45° angle. Holographic and other true 3D technologies are being developed, but most interest in 3D displays concerns [5].

Can be abstract the comparison between 2D and 3D from computer vision view as the following table [6].

| No | 3D displays | 2D displays |
|---|---|---|
| 1 | more compelling | Less compelling |
| 2 | Integrated | Not integrated` |
| 3 | fraught with ambiguity and distortion | represent space with faithfully |

Table(1): comparison between 2D and 3D display.

Our goal was to find a useful distinction among them and match for get complementary characteristics of the views.

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## 3. Particular work

We used simple language visual basic, and 3Dtruevision. Where VB have many characteristic such as easy programming and understanding, fast, support object oriented, easy discover the error, and more than advantages that make any simple user can deal with it and using in its applications.

While 3Dtruevision is a commercial engine supports several language such as VB, C++, C#,…,etc. Used for manipulating with 3D shapes.

In our work we taken three images for each shape from different angles, and configured three projections using code of 3Dturevision engine.

Our method has some features such as:
- Easy understanding.
- Fast and easy execution and appear the results.
- Can be used in several applications such as engendering and animation.

But this method has some recordes such as; the pictures must have the same size equal to 100 pixels with type of BMP

Can be abstract the work with the following flowchart:
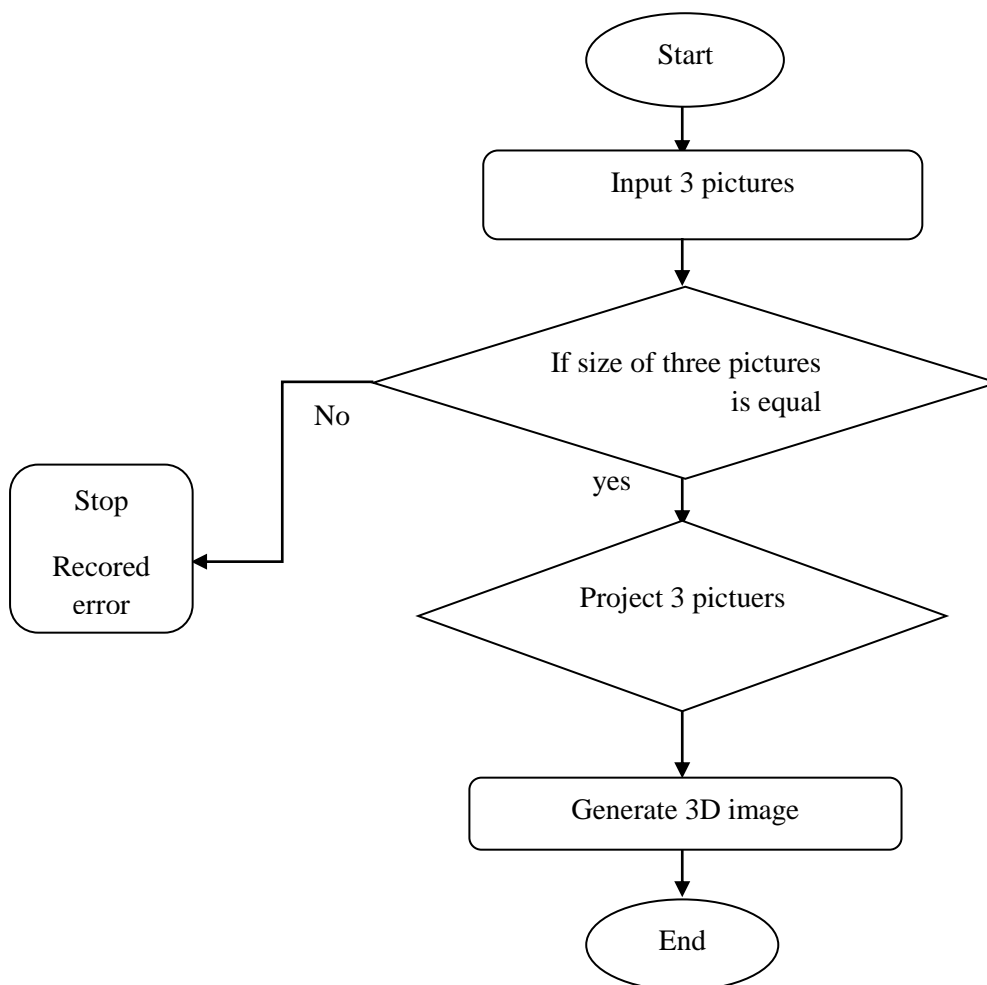


Figure(1):flowchart of converting 2D to 3D images

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## Converting Algorithm

Step1: input three picture. BMP (front, right, top)

Step2: check if three picture have the same size

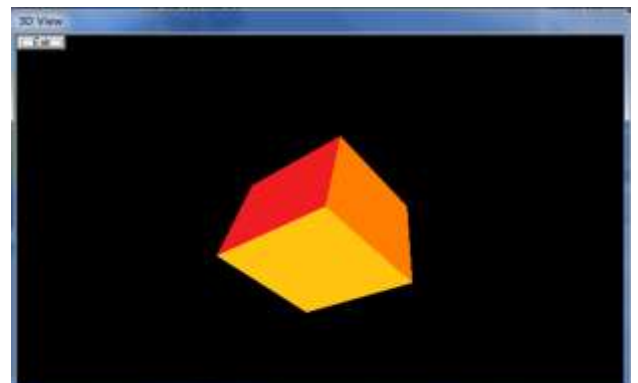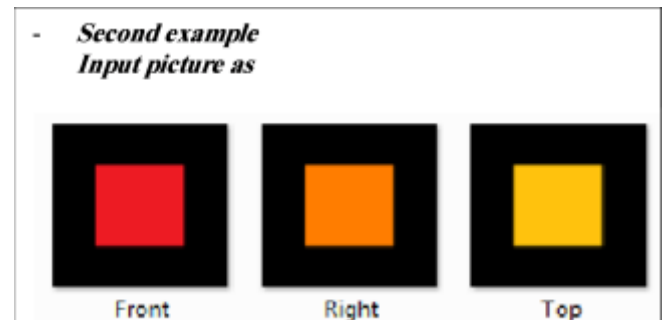    If  its equal size then goto step3

    Else  stop and  record error

Step3: send image to engine to project

    Pic1(x,z)=project (front(x,y), top(y,z))

    Pic2(x,w)= project( pic1(x,z), right(z,w))

Step4: display pic2 from different side using engine

Step5: stop

## 4.The result

### - *First example*

Input picture for rectangle (top,right, side)



Resulte as





## 5.Conclusion

In the world of multimedia applications try more from our, to simulate human perspective system to things in the real world by configuration of 3D model. There for we trend to using easy technique and simple components represent with VB language and 3Dturevision engine for deal with 2D pictures and projection it to conform different 3D images, can be used in more applications specially engendering and architecture.

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# تحويل صورة ثنائية الأبعاد  ألى  صورة ثلاثية الابعاد

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**المستخلص :**

هناك العديد من البرامج المعقدة التي تستخدم لتحويل الصور 2D لنماذج 3D مع التقنيات الصعبة. في هذه الورقة، فإنه سيتم تقديم تقنية مفيدة واستخدام إمكانيات بسيطة ولغة لتحويل 2D إلى 3D الصور. وستستخدم هذه التقنية مجسم  ثلاثي الأبعاد باستخدام ثلاث صور لنفس الشكل وعرض صورة ثلاثية الأبعاد من جانب مختلف وتنفيذ المشروع، والبرمجة البصرية مع محرك 3Dtruevision سيتم استخدامها، حيث لها نتيجة مقبولة نظرا مع وقت القصير. ويمكن استخدامه في مجال الرسم الهندسي.