

Convert 2D Images to 3D Image

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Introduction

Image processing gives a major contribution to the modern technology such as robot navigation, medicine, video games, three dimensional televisions etc. And also there are some places we cannot ever reach those places, which are war areas, space, deep sea etc. But we can get satellite images. Those images can be processed by image processing techniques. Therefore, recently image processing is a widely developing part of the technology.

The 3D view means third dimension of depth which can be perceived by the human vision in the form of binocular inequality. Human eyes are located at slightly different positions which can observe different views of the real world. The brain is then able to reconstruct the depth information from these different views. A 3D display takes advantage of this phenomenon, creating two slightly different images of every scene and then displaying them to the individual eyes. With an appropriate disparity and calibration of parameters, a correct 3D perception can be identified

2D to 3D conversion is also an important step in image processing. By the support of Matlab® software, it is possible to develop algorithms for 2D to 3D image conversion. Matlab® is one of the major software in image processing, because it has its own programming language. Whole algorithm is run by the concept of stereovision. With two images of the same scene captured from the slightly different views and get the 3D view is identified as stereovision. Binocular stereo vision uses only two images.

Methodology

The algorithm was developed to construct a 3D view by using two views of an object. Then the same points of the each image were identified. Then using algorithms for stereovision a depth map was generated. This describes the depth factor for each point of consideration. Through this the related 3D image was developed. In the second stage of this research further improvement was done to get the depth map of the 3D view according to the light intensity. The color changes of the depth map showed the variation of the image with the distance. Finally, by plotting these data on X, Y, Z coordinates the 3D view was constructed.

This 3D construction was developed using three algorithms. One was used to identify the same point of the different images. The other two algorithms were developed to get the 3D image and the graph.

Results and Discussion

The two different images were combined to get the 3D image. The image shows perspective of the object. The final graph was helped to identify the length, width and the depth of the object.

Construction of the depth map is a critical point of this work. A good depth map gives the opportunity to construct a good 3D view. Smoothing algorithms can be introduced to further smoothening of the 3D view. And the researcher should also be careful not to lose any important data of the object under consideration.

Conclusions

A 3D image can be developed by using two or more 2D views. Matlab® software was supported to develop the algorithm. And it is very important step for the latest technology. This work can be extensively used in many areas in technology discussed under the introduction where the 3D vision is important.

References

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