



3D Video from 2D Using a Single Camera System

Technology No. z03043

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3D Object Geometry from a 2D Video

A single camera system creates 3D data from a 2D video and reduces costs and complexity of traditional systems for obtaining 3D geometry data. Typical methods for obtaining 3D geometry from a 2D video require either a complicated multiple camera system or a single camera system that only has limited uses. For example, some single-camera 3D systems require the target object to be planar while others will only produce 2D information about the object or scene. These single 3D camera systems often result in errant results due to loss of complete 3D kinematic data. As such, a need exists for a single-image method for determining the 3D geometry from a 2D video without a cumbersome or limited function system.

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Gait Analysis, Robot Guidance and Applications Using Object Depth

The single camera system and algorithm can obtain the 3D geometry and depth of an object from a single 2D video. This 3D image analysis is possible as long as the distances between the scene or image and the camera are known. Since only one image-recording device is necessary, this method is simpler and less costly than other methods involving multiple camera setups. Additionally, this method is more accurate than other single camera systems. This device could be especially useful in studies of gait analysis, robot guidance, and other areas where determining object depth from a video is important.

BENEFITS OF A SINGLE CAMERA SYSTEM FOR OBTAINING 3D OBJECT DATA FROM A 2D IMAGE

- Less expensive method for obtaining 3D geometry of an image
- More simple set-up and use
- More useful results for a broader spectrum of applications that use object depth, including gait analysis and robot guidance
- Elimination of problems typically associated with single camera systems without any added equipment

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