

## SUMMARY OF Ph.D. DISSERTATION

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<p>Title</p> <p>Modeling and Generating Arbitrary View Images from Multiple Camera Images.</p>		
<p>Abstract</p> <p>In this paper, the methods for modeling the target objects and generating arbitrary view images of them from multiple camera images are described.</p> <p>Recent years, visual expressions using computer graphics (CG) technique are appearing. However it costs terribly to create such expressions with high quality CG for movies and games and so on. Because of the background, there are some approaches to create such movies automatically using computer vision (CV) techniques. First, I focus on the elementary techniques to generate arbitrary view images, and after that, I propose a method to model the target object and generate arbitrary view images using these elementary methods.</p> <p>First, I describe a background subtraction method using both color and disparity images not to extract shadow areas around foot as the object areas.</p> <p>Next, we describe a new algorithm to reconstruct the object using Octree and Shape from Silhouette method. It makes the process time to reconstruct the objects faster.</p> <p>Further, we describe a new concept to define a virtual space Orthographic Projective Grid Space (OPGS) using only relations between camera images to avoid calibrating cameras, which is one of the most difficult problems. The previous method that defines Projective Grid Space (PGS) has a problem that the model represented in the space gets skew in Euclidean space because of camera geometry. However, the skewness generated by the OPGS is further lower than that generated by PGS. To prove the benefits, I show some experimental results using Microfacet Billboarding method that is known as a method to generate fine arbitrary view images from even coarse voxel model.</p> <p>Finally I propose a method to generate arbitrary view image from multiple camera images and I show shared virtual space communication system as one of the concrete systems that use the method.</p>		