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Research on Multi-view Video Coding

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In recent years, various multimedia services have become available and demands for realistic multimedia systems are growing rapidly. The multi-view video can offer arbitrary viewpoints of dynamic scenes and thus allows more realistic video to users. It includes multiple video sequences captured by several cameras at the same time, but at different positions. Because of the increased number of cameras, the multi-view video contains a huge amount of data. Therefore, we need to compress the multi-view sequence efficiently without sacrificing the visual quality significantly.

MPEG/JVT is currently working on a new standard for multi-view video coding (MVC).



The basic MVC scheme includes an inter-view prediction structure with hierarchical B pictures for each view. The key problem here is how to predict the target image using one or more adjacent images to exploit the inter-view correlation efficiently. One approach is to form an appropriate prediction structure in both the spatial and temporal domains. We can also compensate the global disparity in the prediction stage. Another issue in MVC is illumination compensation. Although the same kind of cameras is used, the captured images may have some illumination and color changes from one view to another. Thus, we need to design a method for compensating the illumination changes before the main coding operation. The other issue in MVC is to generate an intermediate view as an additional reference frame. Using estimated disparities of adjacent images, we can synthesize the middle view image and incorporate the interpolated view in the coding stage. In this talk, we will demonstrate some experimental results of MVC.

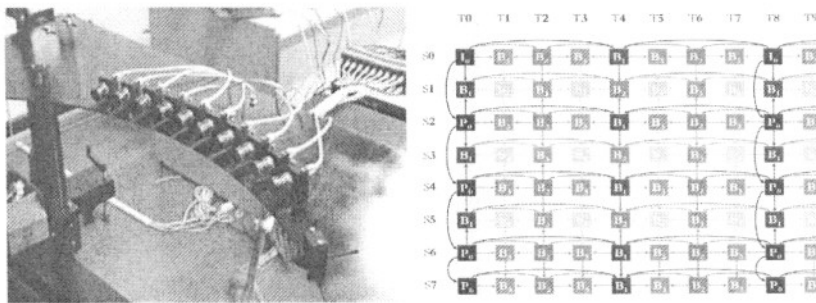


Fig. 2 Multi-view Camera (left) and Prediction Structure of Multi-view Video Coding (right)

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