

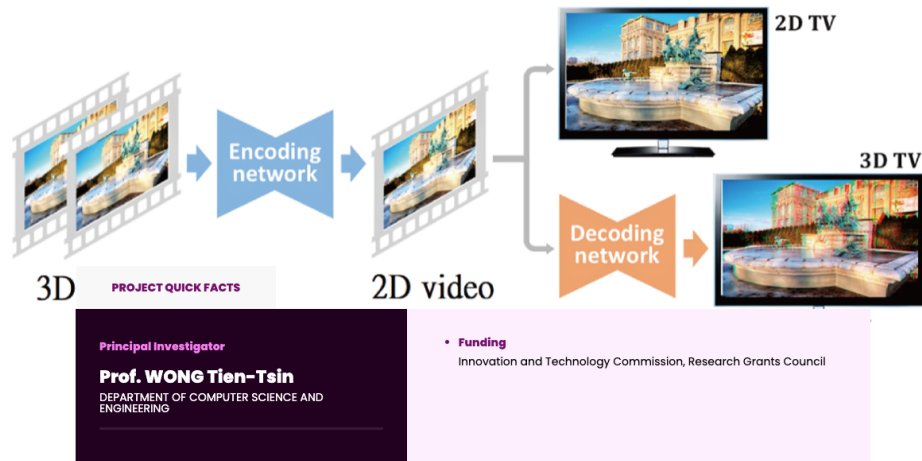


Reversible 3D-2D Video Conversion System

#Imaging

#Advancedsystems

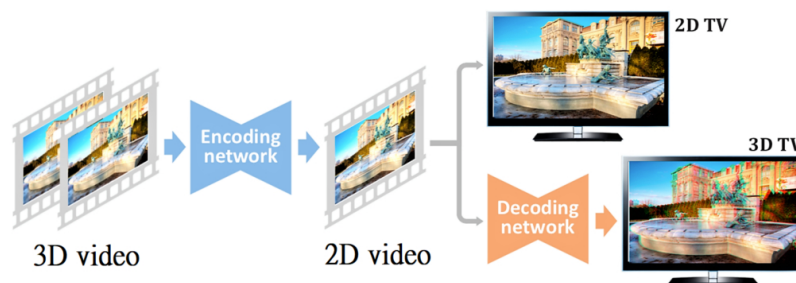
#2019



Digital 3D films and TV shows consist of videos from two perspectives. The large file size of 3D videos makes it difficult to broadcast in current TV channels or stream over the internet. Conventional 3D-to-2D conversion transforms a video from binocular to monocular by cropping one side of the video, and the converted 2D video is therefore unable to be reverted to a 3D video without loss of quality. To solve the problem, we develop a conversion and restoration process for videos and images based on deep neural network. It offers high quality conversion of 3D videos to 2D videos and a backward-compatible solution to recover 3D videos, almost without loss of quality, when 3D visual display is applied. This novel system enables transmission of videos containing stereo information in the existing distribution channels, such as TV and online media.

Uniqueness and Competitive Advantages:

- We formulate the 3D-2D video conversion as an encoding and decoding process embedded in deep neural network learning model
- Stereo information is encoded in the converted 2D video when a 3D video is being transformed, which can be decoded for stereo viewing if 3D visual display is applied
- Both converted 2D video and recovered 3D video are visually no difference from the original video
- Converted 2D videos, as ordinary single-view videos, are available for TV broadcasting and online streaming



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