「校際傑出學術論文授權暨發表會」

論文摘要表

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論文名稱	由空間分割圖像控制來探討平面圖像之多層次表現
英文論文名稱	The Research of the Multi-layer Representation of Graphic Image by Controlling Space Division Image
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中文關鍵詞

多層次圖像、立體影像、光柵技術、全像術、剪紙藝術

外文關鍵詞

Multilayer image、Three-dimensional image、lenticular、Holography、Paper-cutting

中文摘要

　　過去在繪畫表現手法當中，藝術家常透過圖像畫面分割、重疊等方式，圖像藉由層層累積相疊，表現影像空間之多層次概念，而現今資訊

與科技發達的社會，立體影像已經是人人生活上可接觸到的。本研究主要探討以平面的剪紙影像，透過雙眼視差中空間分割原理與全像術，進行平面圖像轉化至具有深度立體之多層次圖像的表現原則，本研究以剪紙圖案為元素，透過三組實驗媒材：1.透明片、2.光柵片、3.全像片，來表現多層次剪紙圖像立體化。

　　文獻探討主要針對「多層次圖像重疊表現」、「立體影像視覺影像成因與科技應用」、「傳統剪紙藝術與現今創新應用」三個部份探討，了解三者之間關係與應用。延續文獻探討，也發現可在精確找出平面剪紙與立體影像結合的規則，因此透過三組實驗來探討平面圖像多層次表現，最後延伸實驗結果並進行創作計畫與展覽。本研究將使用兩種非光學拍攝之立體影像技術，呈現剪紙圖像立體化，進行平面影像進入立體影像應用之聯結，最後再使用反射式全像攝影，將剪紙圖像具真實深度與層次之立體影像表現。透過實驗得到以下結果：

1. 圖像大小與複雜度的不同，會影響透明片上圖像的線條分割之粗細與疏密之立體化效果，建議後續研究可藉由圖像大小與複雜度之相關實驗進行延伸研究。
2. 光柵立體影像清晰度與深度之間關係具有相對性，因此建議製作圖像時應選中間值以達到兩者關係平衡，尤其是需強調細密且複雜的線條之剪紙等圖像。
3. 紙材能降低拍攝反射式全像之拍攝物體成本，且能由不同光反射率之紙材進行層次變化設計，透過全像拍攝後，讓平面剪紙創作達到具有深度之多層次表現。

英文摘要

　　Among the painting techniques in the past, artists frequently apply image splitting, overlapping, layer accumulating to represent the multi-layer concept of space in an image. Three-dimensional images are accessible for everyone in the modern society filled with information and technology. The research mainly explores the expression principle while transferring graphic images to multi-layer images through the techniques of spatial segmentation in binocular disparity and holography. The paper-cut patterns are designed to be the elements, and three experimental media are used to test different stereo effect of multi-layer images: celluloid, lenticular, and hologram.

　　There are three parts discussed in the reference: "the overlapping representation of multi-layer images," "the factors of stereo images and visual images, and technology application," "the traditional paper-cut art and its creative application in nowadays." The principle of integrating graphic

paper-cut design with stereo images is generalized and applied to make three experiments. Eventually, the experimental results are extended to make creations and exhibition. The study applies two kinds of non-optical technology to make the stereo paper-cut images, and then creates three-dimensional images with real depth and layers through the technique of reflection holography.

The conclusions are made through three experiments below:

1. Image size and complexity will influence the lines width and density on the celluloid. Future research could be extended through the related experiments of image size and complexity.

2. There is relativity between the clarity and depth of the lenticular images. Therefore, it is suggested to select the average to get the balance while making the patterns, especially for the paper-cut pattern which is detailed and complex.

3. The use of paper as the object could reduce the cost when making reflection holograms, and different reflected rate of the paper could be used for layer variation. The graphic paper-cut will achieve multi-layer representation with depth perception through the holography.