

全像箭頭指標於緊急出口標示系統中的應用

研究生：詹浩然 指導教授：黃雅玲
崑山科技大學視覺傳達設計研究所

摘要

全像立體影像媒材具有廣泛的應用特性，本研究以應用的角度切入，試圖結合全像立體影像與具有方向性的箭頭指標設計，應用全像之 Z 軸深度與立體感表現特性改善過去平面指標的不足。

有鑑於傳統的緊急出口指示燈於火災發生時易被濃煙覆蓋導致逃生困難，因此本研究運用雷射光可穿透濃煙之特點，以及全像立體影像之投影概念設計「跨時代全像逃生指標系統」。當濃煙產生時，系統內部投影裝置將自動啟動，及時將全像箭頭指標投影至地面，幫助民眾視認方向並順利逃生。

研究首先就全像、箭頭指標及緊急出口指標等現況進行分析整合，藉由三組實驗來探討箭頭指標於三類型全像片中清晰度與辨識度最高的影像設計規則，最後延伸實驗結果創作三組全像指標產品。本研究透過實驗得到以下結果：

1. 針對穿透式全像箭頭投影，雷射光還原角度 90° 入射全像片，其箭頭造型與原拍攝物體最為相近，且能完整呈現向上之方向性。
2. 針對反射式全像箭頭指標，實驗證明背景輝度之運用的確能加強指標圖像之清晰度。實驗結果顯示背景輝度 60% 之圖像最能表現「向上」之方向訊息，而背景輝度 75% 之圖像最能表現「向前」之方向訊息。
3. 針對點矩陣式全像箭頭指標，實驗證明在黃色背景或藍色前景的狀況下可確認其影像具有顯著清晰度，且配色規則與平面指標大不相同。

關鍵字：全像立體影像，箭頭指標，緊急出口標示系統

The Application of Holographic Arrow Signage on the Emergency Exit System

Graduate Student: Chan, Hao Jun Advisor: Huang, Ya Ling
Graduate School of Visual Communication Design,
Kun Shan University

Abstract

Holography is now in widespread use, the study attempts to integrate holography with the directional arrow signage design, and apply the Z-axis depth and 3D feature of holography to improve the shortage of the graphic signage.

Due to the traditional emergency exit sign is easily covered by dense smoke in fire accidents, the study applies the laser light which could go across the smoke and the concept of holographic projection to create “Epochal Holographic Exit Sign System.” The projection installation would be started automatically when there is smoke occurred, and the holographic arrow signage is timely projected on the floor, helping people to recognize the direction and exit smoothly.

The study begins with the analysis and integration of holography, arrow signage and emergency exit signage, and then explores the design principle of arrow signage in three different kinds of holograms through three experiments. The experiment conclusions are used to create three holographic signage products. The conclusions are shown below:

1. For the transmission holographic projection, 90° is the best angle for the reconstructed laser light, which the arrow formation is similar to the original object.
2. For the reflection holographic arrow signage, the experiment shows the background with 60% luminance is the best to represent “upward” information, and the background with 75% luminance is the best to represent “forward” information.
3. For the dot-matrix holographic arrow signage, it confirms that the patterns could be recognized clearly under the background of blue or the foreground of yellow, moreover, the color combination rule of dot-matrix hologram is completely different from the rule of the graphic signage.

Keywords: Holography, Arrow Signage, Emergency Exit System