

A10-029作品名稱 **舞動精靈****Dance-Sprite**隊伍名稱 **魔法一點靈 Touch Point Of Magic**隊長 **范啟威** 交通大學電子工程研究所隊員 **洪義峰·廖元功** 南台科技大學電機工程系研究所指導老師 **許毅然** 南台科技大學電機工程系**作品摘要**

現今簡報、會議報告、演講或是產品的推銷等，幾乎常常利用投影機投影當做媒介。另外由於投影機價格的降低，帶動了教育與娛樂的需求。要引導演講者及與會者之間的契合，雷射筆是基本的配備工具。藉著光點的移動，清楚的引領目前講者所敘述的內容。本研究主要以雷射光點作為滑鼠鼠標，一般市售的雷射光筆不僅可以作為指引筆，並且還可以做為滑鼠的功能使用，達到精簡且人性化的操作目標。整個系統猶如從遠方控制一觸控面板，操作者可以單獨使用一支雷射筆就可以完成簡報的指引、控制PowerPoint 的上下頁、及滑鼠的移動、點擊、雙點擊等功能。舞動精靈進一步的發展遠距的“多點觸控”的技術，以期在簡報時能有更佳的表现效果，並且在教育與娛樂的領域能夠增添更新、更多元的應用元素。本作品完成完成遠距多點觸控的目的；並且利用FPGA硬體技術發展作高速、高解析的多點偵測技術，來解決大顯示畫面。另外，舞動精靈進一步將成果應用推廣至數位多媒體與教育應用或是其它的領域中。

Abstract

Projectors are often used in the conditions of the conference meeting, the oral speech, the promoted sales, etc. The lower cost of the projects is reduced, then the more market requirement of the entertainment and the education is enlarged. A laser point is the fundamental tool to indicate the keynote contents to the listeners. The speaker makes a distinct report to the listeners by moving the place of the luminous laser point. The research is concerned with the topics which the place of a laser light point is used as an indicator of current keynote speech and a cursor of mouse function. The system is as remote touch screen. The functions of the PowerPoint software, such as the page up, the page down, and the hyperlinks etc., can be remotely executed when the laser light is put on the screen.

The “Dance-Sprite” is further focus on the multi-touch function. The coordinate of the laser light spot is analyzed by the hardware of an image based FPGA. The personal computer is not necessary in the image analysis process, and then the resources of the computer are not occupied. The efficiency of the proposed method is higher than one of the software method. A new hardware technology will be improved to speed up frame rate based FPGA. The applications of multi-media and education field will be constructed in this research.