

幾何校正法應用於無人載具空拍影像從事災區調查分析

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摘要 無人載具為近年來所廣泛使用之遙控飛行器，其所能擔任之任務非常多，舉凡都市發展建設之探勘、農漁牧之調查、環保監測、公路偵搜、森林經營、坡地防災監測、水土災害與海岸偵防之監控、災前監測與災後調查等。然因無人載具從事航拍作業經常受其先天條件所限，以致所獲取的資料僅能做為判釋之用，必須從事幾何校正以提高影像之精確度，方能充分發揮其功能。

為提昇無人載具航拍影像之實用性，本研究使用 Erdas Imagine 8.4 軟體，就其所有多種不同的幾何校正模組中進行比較，結果以橡皮伸張法（Rubber sheeting）及多項式法（Polynomial）兩種較適用於無人載具空拍影像之幾何校正。經研究得知其中非線性橡皮伸張法更適用於無人載具空拍影像之校正，此法可隨控制點數的增加而提高其精度。

研究中並將影像成功地套入立體模擬查詢系統，以擴展無人載具空拍影像之應用方向，除了能做為影像判釋之外，隨著未來影像品質之提昇，將可有效輔助災區調查分析之工作。

關鍵詞：無人載具、橡皮伸張法、多項式法。

Application of Geometric Correction Method to Remotely Piloted Vehicle (RPV) Airscape Image for Surveying and Analysis of Disaster Areas

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ABSTRACT RPV has been widely used for different purposes in recent years. These have included surveying the development of city infrastructure, researching agriculture, fishery and farming, monitoring environmental protection, highway driving, forestry management, and disaster prevention like floods or mud-rock flows. However, RPV is restricted to congenital conditions and acquired data is used for differentiation only. In order to increase the accuracy of the images and to concern their function, some corrections are necessary.

This study compares several Geometric correction models of Erdas Imagine 8.4 to increase the practicability of RPV's photos. The result shows that the Rubber Sheetting Method and the Polynomial Method are the two proper models used in correcting images

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taken by RPV. It also shows that the Non-linear Rubber Sheeting Model is more accurate, and the accuracy is raised by increasing the number of Ground Control Points.

The images are successfully simulated in 3-D systems to extend the practical application of RPV. We believe that it can be effectively used to survey and analyze a disaster area by increasing the quality of images.

Key Words: remotely piloted vehicle (RPV), rubber sheeting, polynomial.