研究生： 林佳樞

學號：78842108

論文名稱: 無人載具定點拍攝影像校正之應用探討

英文論文名稱: Application of the Image Rectification Taken from Vertically Uplift UAV

【中文摘要】

由於河域之調查與管理的範圍甚廣，由地面進行全面的調查不但頗有困難且曠日費時，若由地面拍照則角度極為有限而難以周全，且有見樹不見林之缺點。加上近年來溪流沿岸之土地利用變遷劇烈且天然災害不斷，甚有影響其河相、河川水理、河岸景觀乃至危及安全之勢。近年來以遙感探測的方法進行河川管理的工作，因可達省時省工的效果，乃成一可行的趨勢。本研究以無人載具針對台中市筏子溪就其拍攝之影像進行分析與探討，獲得如下之得：

1.本研究所用之影像攝於 11 月份且天候不佳，雖有濛霧發生，但影像之解析度卻相當良好，對於較小的地物判釋仍能符合需求，倘能避開有濛霧之天候進行拍攝，應可獲得較清晰之影像。

2.無人載具因重量輕易受側風及氣流之影響而偏離航道與產生航偏角、傾角及航高變化，甚難按照原先設計之航線飛行；若採用本研究所用之定點垂直起飛並拍攝之方式，即可降低其影響。惟垂直起飛點之選定宜配合試區之核心區位，俾有利於保留影像較準確之核心區及切除畸變較大的邊緣區

之影像處理工作，以提高影像之品質。

3.本研究以 Photoshop 5.0 進行無人載具所攝得影像之接合雖在影像邊緣接合處仍有些許誤差，但對判釋影響不大，可進行河川的現況調查、監測及判釋，具有不錯的視覺效果。

4.應用無人載具所攝得並經過處理之影像，除了可用以掌握到：河灘地利用的最新狀況與監視砂石場以避免河砂被過度開採、及早發現與處理亂倒廢棄物以避免環境之加速污染、監測有些人員由地面無法到達之處及被非法佔用之河灘地以節省人力之浪費之外。若欲檢核附近無高地或高樓之道路修築與河川整治工程施工進度之工地時，無人載具亦可提供大範圍的影像以發揮其用途。

5.本研究區因位於軍機與民航機之飛航路線上，為避開飛機以免發生意外，前後共拍攝 4 天次，造成影像接合時色彩不同；若能縮短工作之日期差異與天數以減少其影響，並使用標準鏡頭加上濾鏡，應可獲得更佳之結果。

【英文摘要】

Owing to the area of the river investigation and river management is vast and multifarious. It is not only difficult but also time-consuming to investigate from the ground point and the observed angle is limited for us to take the photographs from the ground, and it is hard to finish it completely. Moreover, the land-use along the bank has changed violently and the natural disasters has occurred constantly these years, so that it effected river landscape, river management, riverbank scenery, even to the security. Recently, remote sensing is a consequential tendency to advance the river management for saving time and labor.

The images were taken by Unmanned Aerial Vehicle (UAV) was used to

analyze and investigate the Far-Ji Chi of Tai-chung City. The following were the conclusions of this study:

1.The studied images were taken in Nov. 2000. Although the weather were not well and had some drizzle, the spatial resolution were well and even the small features could be interpreted.

2.Because UAV is too light to overcome the effect of air stream and may produce some distortion and yawing, the method that was used in this study (fly up directly from the fix points and take pictures by remote controller) was an available one.

3.Although there were some errors in the mosaics edge by using Photoshop 5.0 to process the photograph images, it was available to surveying, detecting and interpreting in visualization.

4.The processed images those were taken by UAV can be used to detect the situation of river bed and to prevent from overdeveloping, find as earlier as soon the thrown wasted litter and to prevent from polluting, detect the points those man can not arrive and illegal used river bed to save labor, to check the proceeding of engineering work schedule.

5.Because the study area is on the route of airline and in order to preventing event from happening, the photographed dates were four days and those caused the difference of image tone. It would be better to shorten the date period as short as possible when take pictures.

6.The referred photographic basic map presented the key role in this study. We used the map that was printed in 1995 and some new key feature couldn’ t be found from it. So the newer map will afford more correct feature to check. The newer map the better availability it will afford.