Dedication

Just to

Who have taught me a lot through the life and

Who trained me how to change to better.

Dear father.

Who taught me what is the meaning of life and

filled my heart with delight.

Dear mother.

The deepest feeling who always supported.

Dear brothers and sisters.

Who have supported me and taught me the

meaning of hope.

To friends, colleagues and my teachers.

Abstract

Geometric distortions are inevitable in aerial photographs due to many factors, such as the curvature and rotation of the earth and the motion of the scanning system. Ground control points (GCPs) are important features used in non-parametric approach for aerial image rectification. The most common approach for geometric corrections is the use of polynomials equations, which depend on the selection of several clearly discernible points, called Ground Control Points (GCPs), in the distorted image, and map them either to their true positions in ground coordinates (e.g. latitude, longitude) measured from a map, or to georeferenced image (corrected before), coordinates of corresponding points, through a mathematical transformation, that will convert the raw image coordinates into the desired coordinates. The rectification results are evaluated by using the total Root Mean Square Error (RMSE).

In this study two tests were carried out: the first, the effect of the distribution of three, six and ten control points was investigated , The second test examined the effect of densification of control points on the accuracy of the geometric correction. The most important result obtain from this study was that the bad location and bad distribution of the selected GCPs lead to an increase in the average RMS error value of correction of an image which should be taken into consideration; for example, when selecting the GCPs selected in one line no image was obtained. The results obtained from the densified GCPs used to adjust the aerial photograph showed approximately the same results as when using 3 point. Therefore, the use of the three GCPs is quite enough for the adjustment of the aerial photograph. The process that preserves time and money.

الخلاصه

إن حدوث التشوهات الهندسيه في الصور الجوية حتمي لعدة عوامل منها تقوس الارض ودورانها والحركة الخاصة بنظام المسح . إن نقاط الضبط الأرضية معالم مهمة تستخدم اكثر الطرق الشائعة للتصحيحات الهندسيه هي استعمال المعادلات كثيرات الحدود ،والتي تعتمد على إختيار نقاط ممكن تميزها بوضوح ومتعددة تسمى نقاط الضبط ألأرضية ، في الصورة المشوهه وتحديد مواضعها في الخريطة إما وفقا لمواقعها الصحيحة حسب الاحداثيات الأرضيه (خط الطول ، خط العرض) والتي تقاس من الخريطة أو تحديد مواضعها في صورة مصححه مسبقا وفقا لإحداثيات النقاط المناظرة لها من خلال التحويلات الرياضية والتي تحول إحداثيات الصورة الخام إلى الاحداثيات المطلوبة .

يتم تقييم على نتائج التصحيح باستخدام الجزر التربيعي لمتوسط مربعات الأخطاء.

في هذه الدراسة تم إجراء إختبارين : الأول إختبار أثر توزيع النقاط على دقة التصحيح الهندسي والثاني إختبار تكثيف النقاط على دقة التصحيح الهندسي . ومن أهم النتائج المتحصل عليها في هذه الدراسة أن الموقع والتوزيع الخاطئ يؤديان الى زيادة في الجزر التربيعي لمتوسط مربعات الأخطاء والذي يجب وضعه في الإعتبار مثلا عند إختيار النقاط في خط مستقيم فإنه لا يتم الحصول على صورة .

زيادة عدد نقاط الضبط الأرضية المستخدمة لضبط الصورة الجوية يؤدي تقريبا الى نفس النتائج فى حالة إستخدام 3 نقاط لذلك نجد أن إستخدام ثلاث نقاط كافي لضبط الصورة وذلك يؤدي الى توفير الوقت وتقليل التكلفه.

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