# EFFECT OF GROUND CONTROL POINTS LOCATION AND DISTRIBUTION ON GEOMETRIC CORRECTION ACCURACY OF REMOTE SENSING SATELLITE IMAGES

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**ABSTRACT:**

Remote sensing imagery, from satellites, is inherently subjected to geometric distortions. Therefore geometric corrections, as preprocessing operations, are normally required prior to imagery analysis and extraction of information. The most common approach for geometric correction is the use of mapping polynomial. . It depends on 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 accuracy of the geometric correction process depends mainly on the number of selected GCPs (polynomial order), the identified features on the image (road intersections, airport runway intersections, bends in rivers features and the like), and on the distribution of the selected GCPs over the distorted image area. The effect of number of GCPs on geometric correction accuracy was presented [1] by the authors and others. In this paper the effect of the selected location of GCPs (the identified features on the image: road intersections, airport runway intersections, bends in rivers features and the like or the others), and the way of distribution of the selected GCPs over the distorted image area on geometric correction accuracy are presented. The Root Mean Square Error (RMS), are calculated and used as a measure of accuracy of the obtained results.

**TOPIC:** Image processing and pattern recognition
**ALTERNATIVE TOPIC:** Remote sensing applications