

A NEW STRATEGY FOR DSM GENERATION FROM HIGH RESOLUTION STEREO SATELLITE IMAGES BASED ON CONTROL NETWORK INTEREST MATCHING

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ABSTRACT:

Interest point matching is the key technique for image registration. It is widely used for 3D shape reconstruction, change detection, medical diagnosis, computer vision and pattern recognition. Although numerous algorithms have been developed for different applications, it is still a problem to process the local distortion of images that are normally acquired with different viewpoints. Remote sensed images are normally acquired with a wide baseline and typically contain local distortion due to ground relief variation. Basically interest point matching algorithms can be grouped into two categories: area-based and feature based. Although the area-based and feature-based algorithms have their own particular advantages in specific circumstances, they all face the common problem: ambiguity in homogeneous areas, such as grass, water, highway surfaces, building roofs, etc. The recent developed control network interest point matching algorithm can reduce the ambiguity and avoid false matches by using spatial information. In this paper, we proposed a new strategy to generate digital surface model from high resolution satellite stereo images based on the control network interest point matching. We commence our paper with a brief review of current research on interest point matching. We then introduce the proposed algorithm in detail and describe experiments with high resolution satellite images. Through experiment, digital surface model was successfully created from the stereo images. The experiment results show that the proposed algorithm can successfully process local distortion in high resolution satellite images and can avoid ambiguity in the homogeneous areas.

TOPIC: Image processing and pattern recognition

ALTERNATIVE TOPIC: Not Specified