

Abstract

Digital terrain model (DTM) represents an important data source in many applications. DTM must fulfil the requirements for accuracy and completeness. This diploma thesis offers an overview of methods for data collection, and DTM generation. Main attention is devoted to methods for digital terrain model quality checking such as quality of input data, methods for comparing DTM with more accurate reference data like visual, geometrical or statistical methods. The maximum attention is devoted to photogrammetric methods, especially to the backprojection method. The big advantage of this method is that it works with original aerial images.

Benefit of this diploma thesis is an algorithm for automatic checking of digital terrain model with backprojection method with fixed DTM point, newly with image matching in coloured images. One part of the diploma thesis is an implementation of designed algorithm in the Matlab script language including graphic users interface that makes it possible to choose various parameters for image matching.

This algorithm has been verified on a practical example of two digital terrain models with a different accuracy and a different way of generation. After that the algorithm has been verified on a more broken terrain where DTM was made from contour of ZABAGED database. All models were checked and in two cases were also improved with the aid of coloured aerial images in scale 1:25 000. At the end of the diploma thesis there are recommendations for optimal setting of parameters for image matching in coloured images for these concrete images and digital terrain models.