

SLUM URBAN THREE-DIMENSIONAL RECONSTRUCTION FROM ENVISAT SATELLITE DATA IN EGYPT

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Abstract:

Most critical challenges of world is growing of urban slum areas. In fact, they are considered the main source of criminals and diseases due to lacking in perfect housing, unsanitary conditions, poor infrastructures and occupancy security. The poor in the dense urban slums are the most vulnerable to infection due to (i) inadequate and restricted access to safe drinking water and sufficient quantities of water for personal hygiene;(ii) lack of removal and treatment of excreta; and (iii) lack of removal of solid waste. This study aims to aim to investigate the capability of ENVISAT ASAR satellite and Google Earth data for three-dimensional (3-D) slum urban reconstruction in developed country such as Egypt. The main objective of this work is to utilize 3-D automatic detection algorithm for urban slum in ENVISAT ASAR and Google Erath images were acquired in Cairo, Egypt using Fuzzy B-spline algorithm. The results show that fuzzy algorithm is the best indicator for chaotic urban slum as it can discriminate them from its surrounding environment. The combination of Fuzzy and B-spline then used to reconstruct 3-D of urban slam. The results show that urban slums, road network, and infrastructures are perfectly discriminated. It can therefore be concluded that fuzzy algorithm is an appropriate algorithm for chaotic urban slum automatic detection in ENVSAT ASAR and Google Earth data.

Keywords: Slum urban automatic, ENVISAT ASAR,Google Earth,Fuzzy B-spline, Three-dimensional