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A SEMIAUTOMATIC APPROACH FOR GENERATION OF SITE MODELS FROM CARTOSAT-2 MULTIVIEW IMAGES

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Abstract. In the last decade there has been a paradigm shift in creating, viewing and utilizing geospatial data for planning, navigation and traffic management of urban areas. Realistic, three-dimensional information is preferred over conventional two dimensional maps. The paper describes objectives, methodology and results of an operational system being developed for generation of site model from Cartosat-2 multiview images. The system is designed to work in operational mode with varying level of manual interactivity. A rigorous physical sensor model based on collinearity condition models the "step n stare" mode of image acquisition of the satellite. The relative orientation of the overlapping images is achieved using coplanarity condition and conjugate points. A procedure is developed to perform digitization in mono and stereo modes. A technique for refining manually digitized boundaries is developed. The conjugate points are generated by establishing a correspondence between the points obtained on refined edges to analogous points on the images obtained with view angles ±26 deg. It is achieved through geometrically constrained image matching method. The results are shown for a portion of multi-view images of Washington City obtained from Cartosat-2. The scheme is generic to accept very high resolution stereo images from other satellites as input.

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