SEMI-AUTOMATIC ROAD TRACKING USING PARALLEL ANGULAR TEXTURE SIGNATURE

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ABSTRACT—Road tracking is a promising technique to increase the efficiency of road mapping. In this paper, a semi-automatic road tracker, Parallel Angular Texture Signature (PATS), is presented. The tracker is object-oriented in some sense, because it makes best use of the texture signature of road primitives on high-resolution remotely sensed imagery. Our tracker uses parabolas to model the road trajectory and predicts the position of next road centerline point. It employs PATS to get the moving direction of current road centerline point, and it will move on one predefined step along the moving direction to reach a new position, and then it uses curvature change to verify the newly added road point. Moreover, we also build compactness of Angular Texture Signature polygon to check whether the PATS is suitable for subsequent tracking. Repeat the above steps until the whole task is finished. Extensive experiments demonstrate that the proposed tracker is capable of efficiently extracting most of main roads from medium and low resolution imagery, and reliably and robustly extracting most of ribbon roads from high resolution SAR and optical imagery.