HEAT DIFFUSION BASED DETECTION OF COLONIC POLYPS IN CT COLONOGRAPHY (ThuPmOR2)

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Abstract :

Computer Aided Detection (CAD) in Computed Tomography Colonography (CTC) aims at detecting colonic polyps that are the precursors of cancer. We propose a polyp detection /identification algorithm with a built−in enhancement scheme. The underlying idea of the proposed method is to utilize the nonlinear heat diffusion process, which is closely related to the nonlinear diffusion filtering, to generate a vector field that is correlated with the shape of the colon wall. The nonlinearity is used to specifically enhance the difference between polyp and nonpolyp structures to improve the detection and the identification performance. The method was evaluated on real patient CTC data acquired from a polyp−rich volunteer. 3 FPs (17 FPs) were achieved at 6/7 (7/7) sensitivity levels for polyps larger than 8mm.

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