

**Declustering n-connected components for segmentation of iodine implants in C-arm fluoroscopy images**

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Dynamic dosimetry is becoming the standard to evaluate the quality of radioactive implants during brachytherapy. It is essential to obtain a 3D visualization of the implanted seeds and their relative position to the prostate. For this, a robust and precise segmentation of the seeds in 2D X-ray is required. First, implanted seeds are segmented using a region-based implicit active contour approach. Then, n-seed clusters are resolved using an efficient template based approach. A collection of 55 C-arm images from 10 patients are used to validate the proposed algorithm. Compared to manual ground-truth segmentation of 6002 seeds, 98.7% of seeds were automatically detected and declustered showing a false-positive rate of only 1.7%. Results indicate the proposed method is able to perform the identification and annotation processes of seeds on par with a human expert, constituting a viable alternative to the traditional manual segmentation approach.

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