AUTOMATED CLASSIFICATION OF FLUORESCENT IN SITU CASES (TueAmPO3)

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Abstract :

The evaluation of fluorescent in situ hybridization images (FISH) is one of the most widely used methods to determine Her−2/neu status of breast samples, a valuable prognostic indicator. Conventional evaluation is a difficult task since it involves manual counting of dots in multiple images. In this paper we present a multistage algorithm for the automated classification of FISH images from breast carcinomas. The algorithm focuses not only on the detection of FISH dots but also on overall case classification. The algorithm includes two combined stages for nuclei and dot detection respectively. The dot detection consists of a top−hat filtering stage followed by 3D template matching to separate real signals from noise. Nuclei segmentation includes a non−linearity correction step, global thresholding and a geometric rule to distinguish between holes within a nucleus and holes between nuclei. Finally, the marked watershed transform is used to segment cell nuclei with markers detected as local h−dome maxima.
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*** Abstract : (cont.)**

Combining the two stages allows the measurement of FISH signals ratio per cell nucleus and the collective classification of cases as positive or negative.

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* Abstract : (cont.)	The system was evaluated with receiver operating characteristic (ROC) analysis and the results were encouraging for the further development of this method.