LINE SEGMENT BASED PATTERN DETECTION

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ABSTRACT

A novel solution for detecting the boundaries between areas of different brightness. Its goal is to provide a way to detect the boundaries between unclearly separated areas characterised by tonal transition. Our solution solves this problem by separating areas of different brightness and gives coordinates of boundary segments. It can be used as one of the steps in modern hierarchical image analysis techniques.
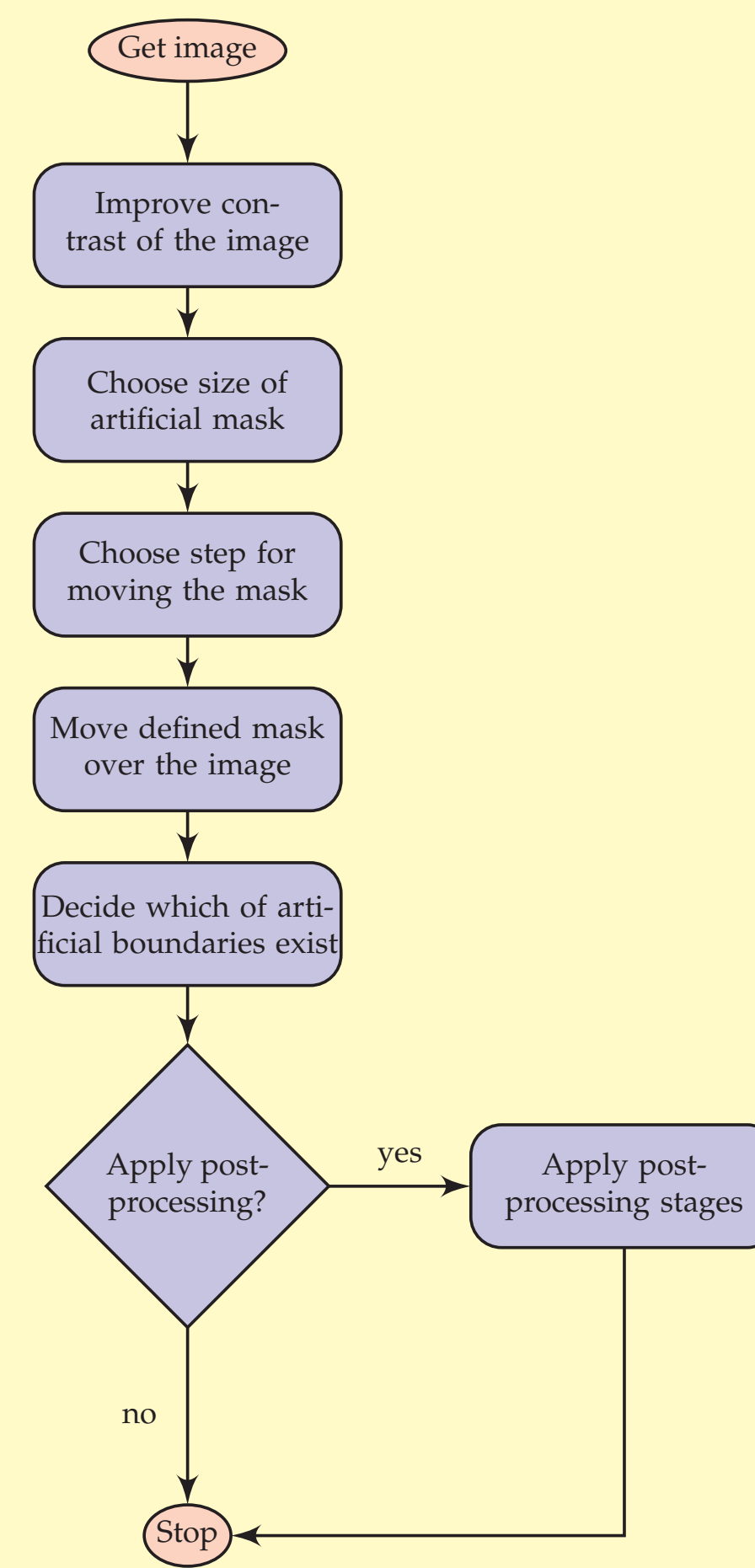
VISUALIZATION

Clearly (a-c) and unclearly (d-f) visible boundaries:

(a, d) – boundary from left upper corner to right bottom corner,
(b, e) – boundary from left bottom corner to right upper corner,
(c, f) – horizontal boundary, in the middle of image

a)   b)   c)   d)   e)   f)
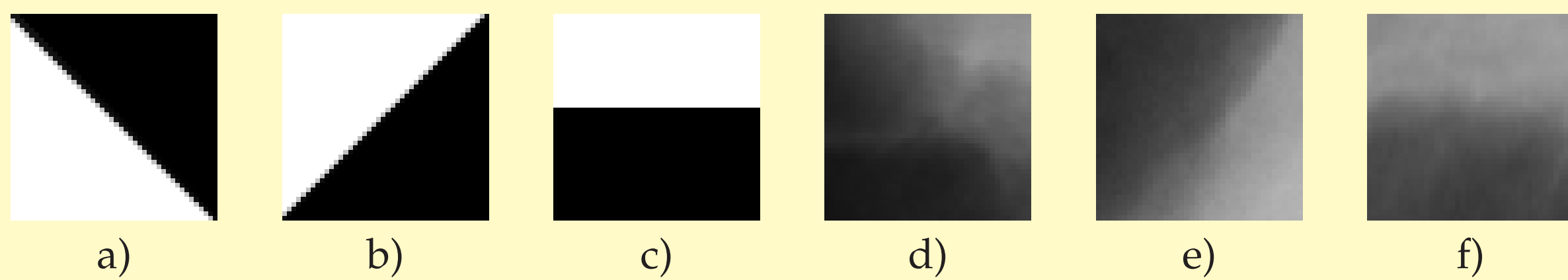
SOLUTION

The solution is based on moving defined artificial mask (presented below) over image. User can choose the size of the mask and the step to move the mask. Decision which of boundaries e_1, e_2, e_3, e_4 exist is based on dedicated, image adaptive calculations.
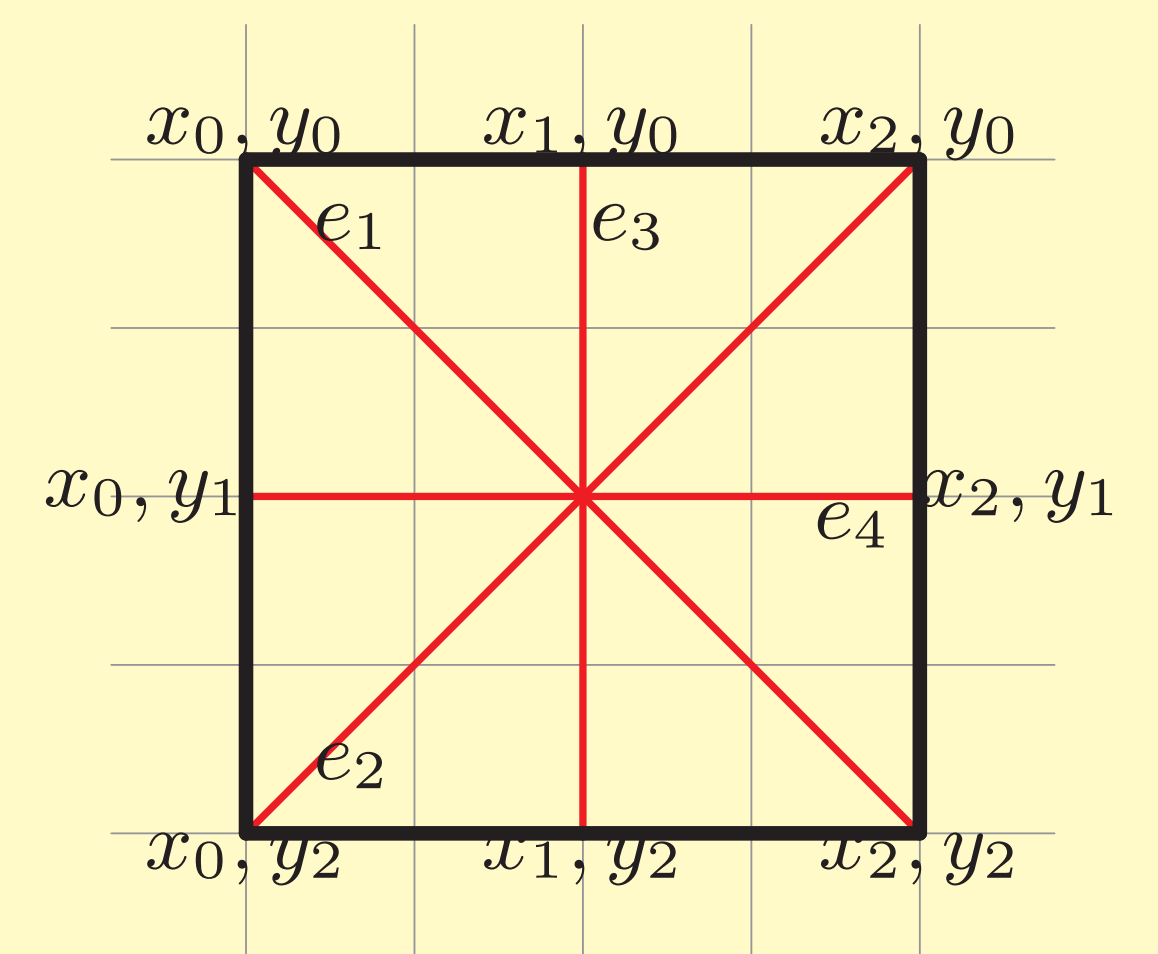
APPLICATION TO MEDICAL IMAGES

Strength of the solution is presented on mammographic images. Results of detection of homogeneous areas (a, b), streaks (d) and microcalcifications (c, e, f) are shown.

a)   b)   c)   d)   e)   f)
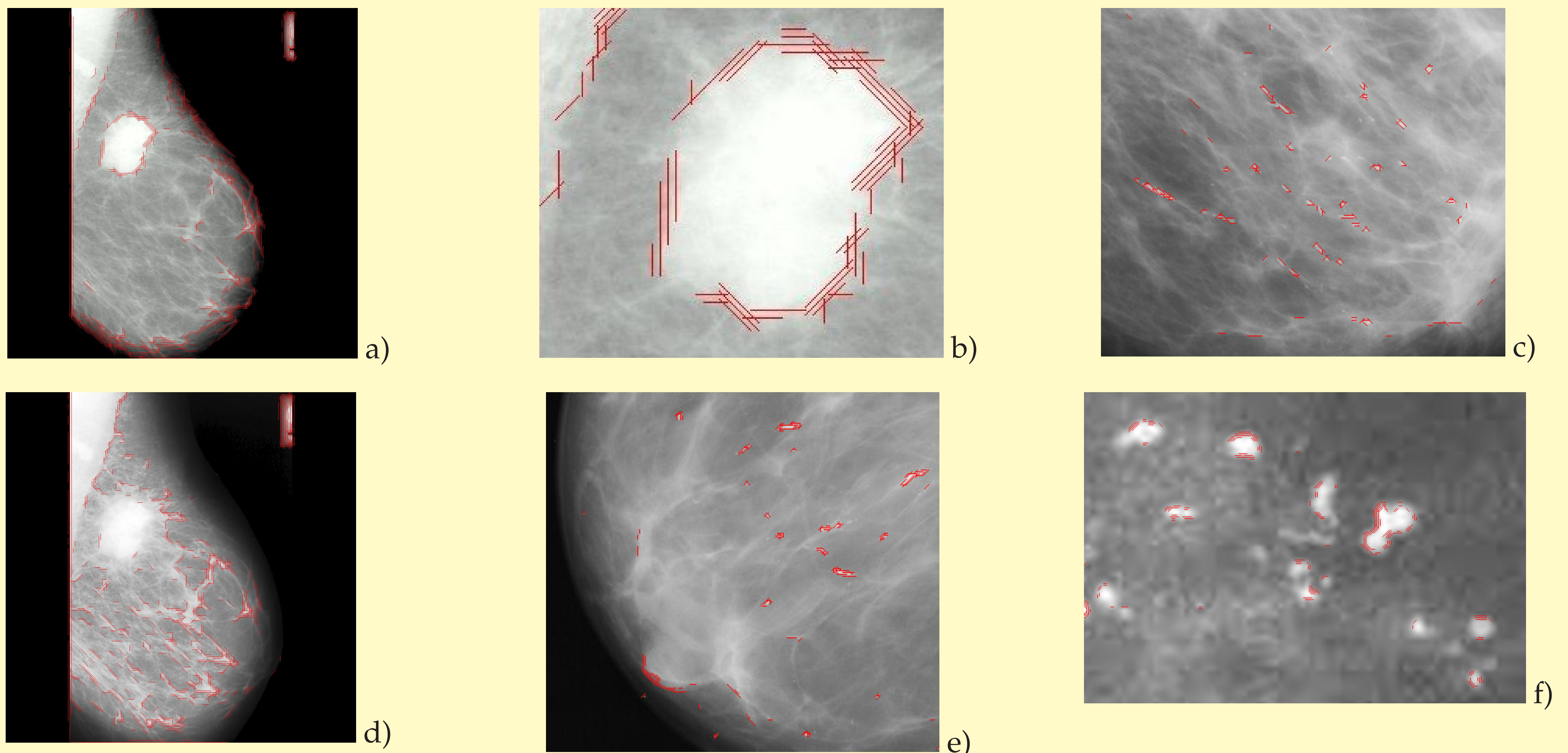
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