Morphological Profile Examples

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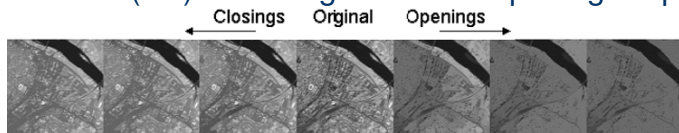
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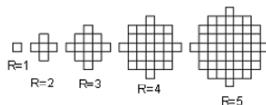
Morphological profiles

- Opening by reconstruction isolates structures that are brighter than their surroundings.

- Closing by reconstruction isolates structures that are darker than their surroundings.

- These operations are applied using increasing structuring element (SE) sizes to generate morphological profiles.

- Structuring element: disk
- Variables:
    - Number of openings/closings
    - Radius increment (step size)
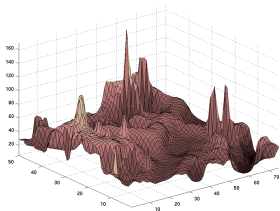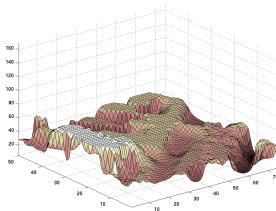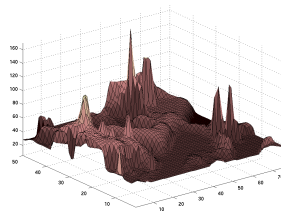
Morphological profiles

(a) Grayscale image   (b) SE

(c) 3D representation   (d) Opening by rec.   (e) Closing by rec.
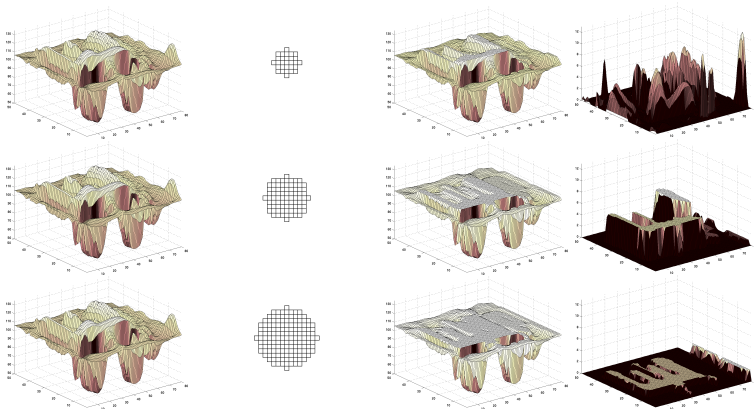
Figure 1: Opening and closing by reconstruction example.
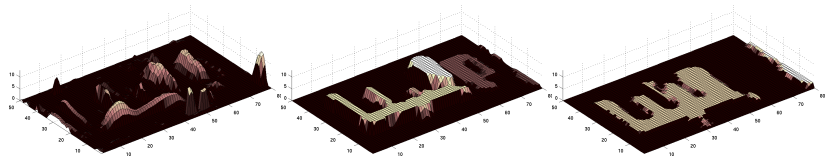
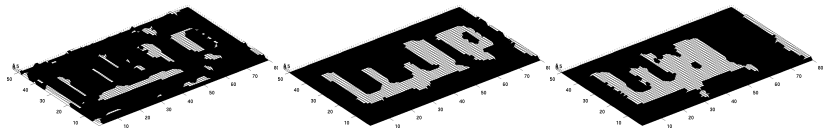(a) Grayscale   (b) SE   (c) Opening MP   (d) Derivative MP

Figure 2: Example morphological profile (MP) and its derivative (DMP).

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(a) Opening DMP

(b) Thresholding at DMP > 0

Figure 3: Example connected components with DMP > 0.

(a) False color image

(b) A connected component for SE size 3

(c) A connected component for SE size 5

(d) A connected component for SE size 6

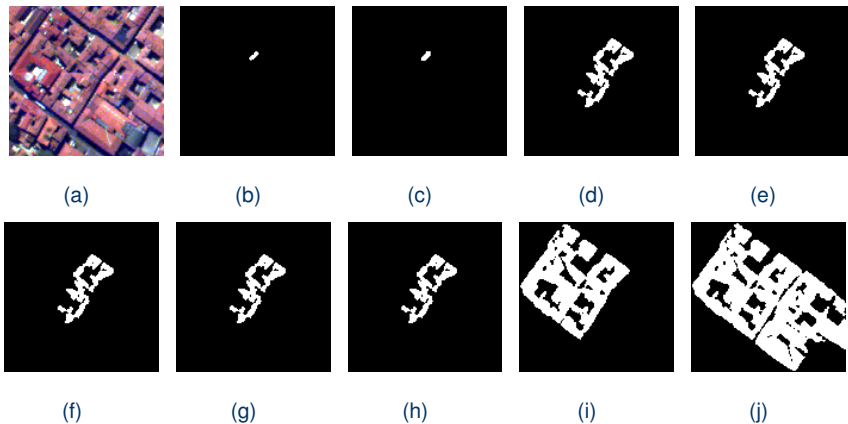Figure 4: Example connected components for a building structure.

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Figure 5: Example connected components for SE sizes 2 to 10.