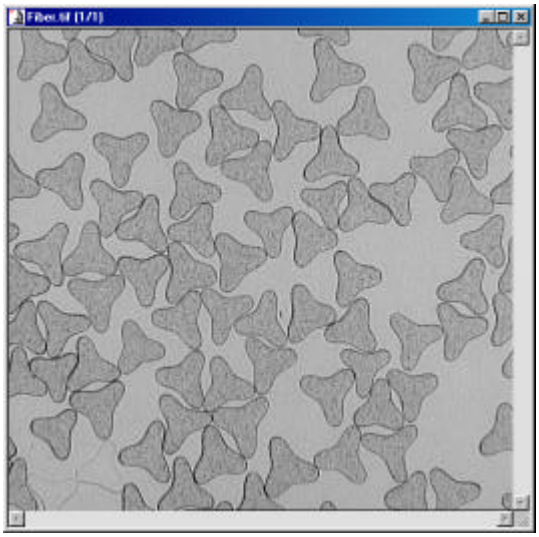
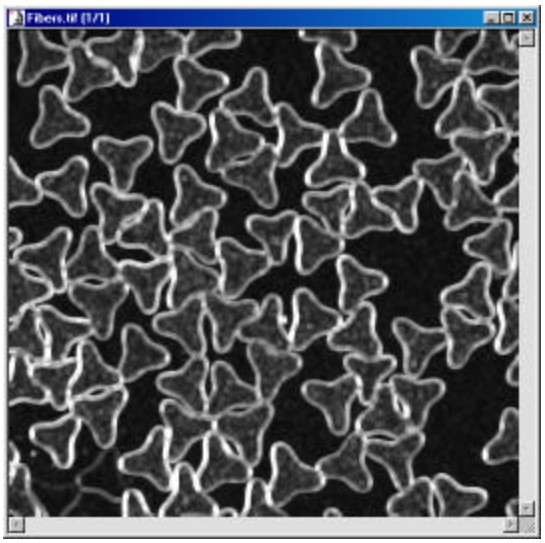
Image-Pro PLUS
The Proven Solution™

Fiber Analysis

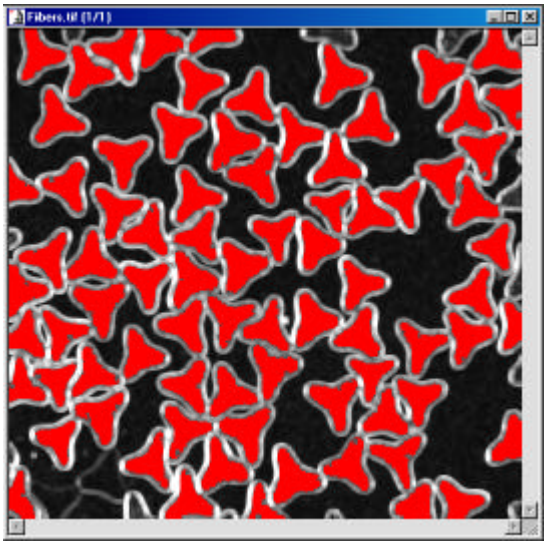


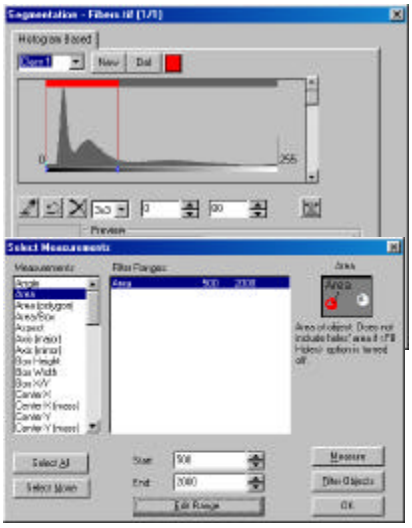
A common problem involves the measurement of objects like the textile fibers in this image. Often it is difficult to separate objects by simply setting discrete threshold values. This example illustrates one possible solution.

Procedures:
- Edge Finding Filter (Variance)
- Manual Threshold setting
- Creation of Mask Image
- Thinning the Inverted Mask Image
- Boolean OR operation (Mask OR Original Image)
- Count/ Size

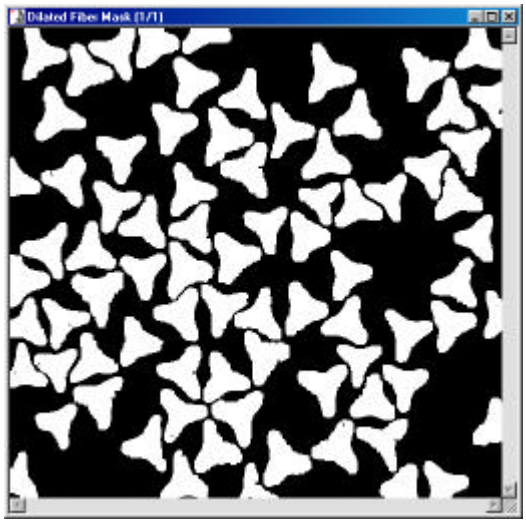


Application of an Edge Finding Filter. Image-Pro's Variance filter replaces the target pixel with the standard deviation of its neighborhood.

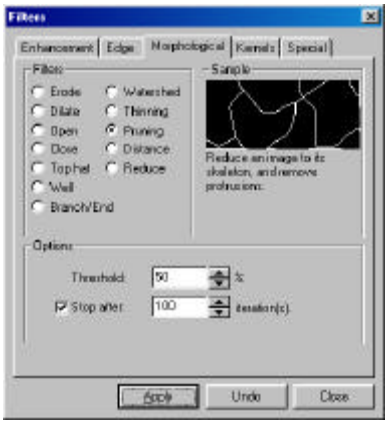




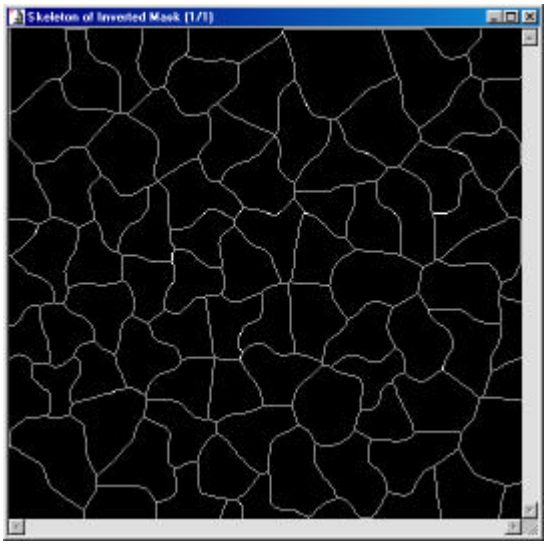
The threshold was set manually to define objects having gray values from 0 to 120. This identified the interior of each of the fibers. A size exclusion range was set to eliminate small regions between individual fibers and the large regions in the background that contained pixel values similar to the pixels values within the fibers.



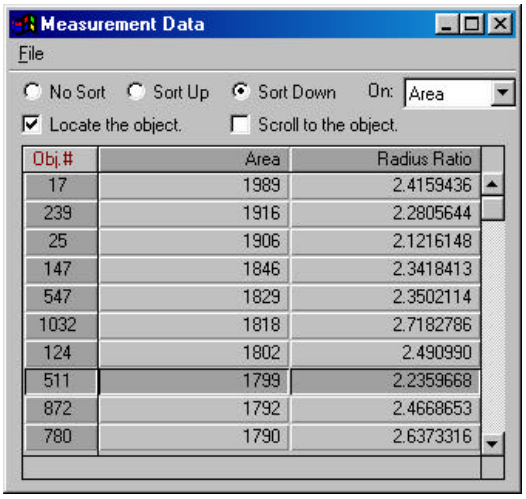
The mask image of the thresholded fiber interiors was dilated to more closely approximate the dimensions of the fibers. Then the image was inverted.



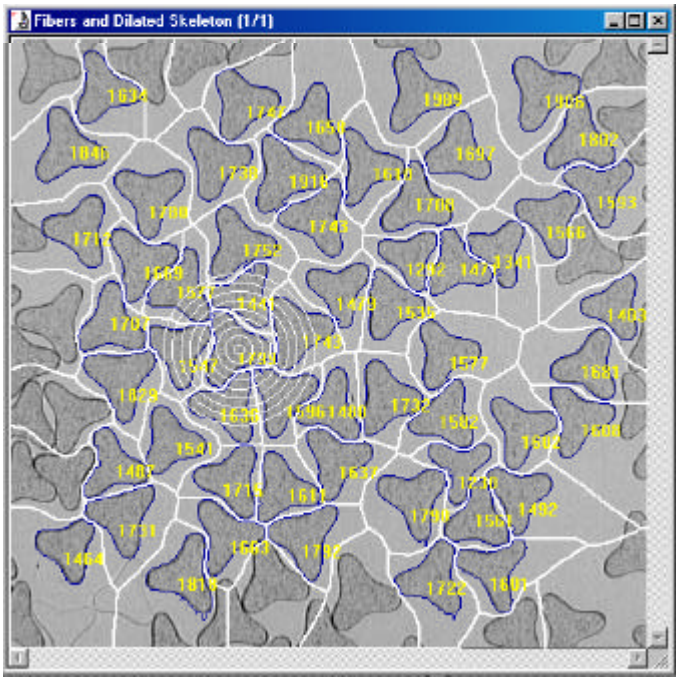
Next a morphological Thinning filter was used to reduce the inverted image to its skeleton. The thinned image was then combined with the original image using a Boolean OR operation to creat the image to be measured.



The fibers were thresholded and measured in terms of Area and Radius Ratio. The clean borders option was selected to eliminate partial fibers along the image edge



Obj.#	Area	Radius Ratio
17	1989	2.4159436
239	1916	2.2805644
25	1906	2.1216148
147	1846	2.3418413
547	1829	2.3502114
1032	1818	2.7182786
124	1802	2.490990
511	1799	2.2359668
872	1792	2.4668653
780	1790	2.6373316



Clicking on the Object number in the measurement data list generates a radiating signal identifying object #511

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