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Presenting author: P. Van Osta, Union Biometrica N.V., European Scientific Operations, Ciplastraat 3, B-2440 Geel, Belgium. Email: pvosta@unionbio-eu.com

***Title: The application of scale space and the spatial color model in microscopy***

Additional authors: K. Ver Donck\*, J.M. Geusebroek\*\*, L. Bols\*, J.Geysen\*, B.M. ter Haar Romeny\*\*\*

\*Union Biometrica N.V., European Scientific Operations, Ciplastraat 3, B-2440 Geel, Belgium.

\*\* ISIS, Faculty of Science, University of Amsterdam, Kruislaan 403, 1098 SJ Amsterdam, the Netherlands

\*\*\* TU Eindhoven, Faculty Biomedical Technology, Biomedical Imageprocessing, Den Dolech, 5600 MB Eindhoven, the Netherlands

Abstract:

Linear scale space

Grayscale microscopy images acquired with a B/W camera contain structural features for which grayscale scale space provides a robust detection framework. The scale space framework offers robust extraction of features for most computer vision tasks, despite the presence of noise. Feature detectors (2D) can be constructed based on differential invariants, which are relatively insensitive to changes in illumination condition and signal to noise ratio, which is an important feature in light microscopy.

Spatial color model

For color light microscopy we use the spatial color model as proposed by Koenderink and Geusebroek to select different colored regions and objects. Differential invariants can be constructed which are insensitive to changes in illumination, color temperature and illumination intensity.

Conclusions

Scale space and the spatial color model provide the microscopist with a powerful and intuitive framework for the detection of features in microscopy images.