SVCell technical overview

Automated Image Recognition with Recipes

- Single click application execution provides automated image import, enhancement, segmentation, measurement and classification
- Individual recipes can be ordered in a recipe list for each application and saved
- Easy recipe sharing and porting
- Application images can be loaded into a Field of View (FOV) list for batch processing with recipes
- The entire experimental outcome can be quickly evaluated inside the unique RFrame integrated image and data analysis user interface

Image Viewing

- 4 dimensional (x, y, channel, time) FOV viewing and processing
- N-channel color viewing and processing
- Time based FOV navigation
- FOV thumbnail view
- FOV merging by channel or time
- Zooming and magnification tools
- Confidence map viewing panel
- Unlimited number of masks for each channel
- Intensity mapping for visualization
- Time-lapse image alignment

Data Analysis

- Large number of object and field measurements
- Spatial and intensity calibrations
- Object statistics displayed in spreadsheet
- Region of interest (ROI) graphics overlain on the objects in images to facilitate selection linking
- Selection linking between object spreadsheet rows, image ROI overlays and chart data points to facilitate integrated image and data review
- Dot plot and histogram charts
- Trace-plots
- Measurements, statistics and field measurements displayed in the RFrame spreadsheet and charts
- Gate from charts to create sub-populations
- Display sub-population data points overlain on the parent population charts
- Color ROIs and data by FOV and sub-population
- Spreadsheet sorting
- Export data to comma separated values format (MS Excel readable)

Import Recipe Teaching

- Automate the import of individual frames on the filesystem into a multi-channel, time-lapse FOV list
- Relative import option to support application deployment

Segmentation Recipe Teaching

- Unique "teach by example" drawing interfaces
- Two modes of confidence mapping
- Confidence map viewing
- Threshold tools with bimodal offset option, as well as histogram percentile units option
- Homotopic threshold provides automatic partition of adjacent objects
- Adaptive threshold provides automatic image normalization prior to thresholding
- Fill holes & remove objects operation
- Overlap separation operation
- Guided partition operation
- User teaching, threshold and operation options are automatically saved to a segmentation recipe
- Unlimited number channels and masks can be processed with a single segmentation recipe
- Recipe can be easily updated through additional teaching; update teaching is fast
- Recipe performance is stable and predictable

Enhancement Recipe Teaching

- Automate common tasks such as renaming masks and channels, deleting masks and channels, image bit depth conversion, image copying, etc.
- A large set of image processing functions covering arithmetic, bitwise, comparison, distance transforms, common filters, geometric, logical, and zone of influence operations
- An advanced morphological processing library containing twenty-six morphological filters
- Grayscale and binary labeling functions for removing objects based on metrics such as size, mean intensity, max intensity, standard deviation and compactness
- Recipe can be easily created by selecting and saving operations from the processing history

Measurement Recipe Teaching

- Allows creation of large number of field and object measurements
- Inter channel measurements
- Support for inter-channel, multi-mask objects

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- Ratio measurements
- Cell templates for easy measurement

Decision recipe teaching

- Easy to use, teach by example labeling interface
- Sophisticated classification of objects using SVision regulated decision tree technology
- Automatic creation of the decision recipe containing the decision tree and user teaching
- Transparent tree shows all the decision rules
- Decision tree contingency table
- Decision tree parallel coordinates plot
- Object linking supported inside the recipe between the tree, images and charts
- Recipe classifies objects which are then displayed as subsets in the RFrame spreadsheet
- Classified objects can be saved as a labeled mask
- Recipe can be easily updated through additional teaching; update teaching is fast
- Recipe performance is stable and predictable

Memory Management

- User specifiable memory management, large image mode, and image database performance configurations

Operating System and File Format Support

- Windows® XP, XP Pro and Windows ® Vista
- Read and write BMP, DIB, GIF, JPG, JPEG, TIF, TIFF, PNG, RAW, RLE
- Read and write multi-dimensional formats such as OME (Open Microscopy Environment), ICS / IDS, STK and multi-page TIF
- FOVs can be saved to OME compliant SVCell TIF, which saves the FOV dimensionality along with masks, object ROIs, data and inherent relations
- 8, 16, and 24-bit grayscale and color images are supported

Recommended Platform

- Processor: Intel Pentium 4 or later
- Processor speed: 3.0+ GHz
- RAM: 2+ GB high speed memory
- Operating System: Windows XP, Service Pack 2

	Fixed Point configuration	*Live Cell configuration*
All other SVCell features	✓	✓
Load multi-channel FOV	✓	✓
Load time-lapse FOV		✓
Create, import, enhancement, measurement and segmentation recipe	✓	✓
Create decision recipe	Option	Option
Create tracking recipe	Option	Option
Load recipe	Option	Option
Save recipe	Option	Option

Image-based Decision Technology and Products

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