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NeuroImage

New user interface for interactive image processing in fluorescence microscopy

Focus Sectors
- Microscopy image analysis
- Fluorescence microscopy
- Electron microscopy
- IR microscopy

Project Key Words
- Live preview
- User-friendly
- Automated & adaptable image processing
- Direct control of microscope hardware

Development Status
- Proof of Concept
- Software developed and tested with images

Patent Procedure Status
- Patent application filed

Chances for Cooperation
- Licensing
- R&D Cooperation
- Patent right transfer

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Innovation and Customer Benefit

Fluorescence microscopy is one of the techniques of choice for the study of biological samples.

The large amount of data (images) produced needs to be processed before the analysis. This has been traditionally done using either:

- Fully automated processes, on which the analyst has little control, or
- Post-processing tools, fully dependent on the operator and time-consuming.

Our new software allows the operator full control over the image processing:

- Live preview of images
- User-friendly interface
- Modular structure
- Image parameters optimization
- Potential coupling & control of microscope parameters
- Applicability to major types of microscopy

Potential applications

NeuroImage efficacy has been tested in confocal fluorescence microscopy, yet it is applicable to other types as electron, IR of optical microscopies.

The operator controls each step on the image processing through intuitive modification of acquisition parameters.

The modular structure of NeuroImage allows the operator creating own, customized image processing multiple-step procedures by simple combination of existing operations or by the introduction of new steps.

The software can be adapted to operative platforms to complement the existing functions.

Technical Description

NeuroImage adds additional functionality to microscopy software.

Starting from a wide field of view or several stacking, high-resolution images, target structures are automatically identified by the software.

An automatic statistical analysis is performed on the stacking of images, involving all potential target structures.

Based on this process, the software is able to automatically regulate parameters on the microscope, as focus or zoom. This enables the acquisition of high quality images, specifically for each target.

The automatic control of microscope functions can also include the acquisition of spectra of a given sub-target in the image.

Once the analysis is completed, the software produces a reconstructed image. This image shows all the identified structures simultaneously, yet each one visually differentiated from the rest.

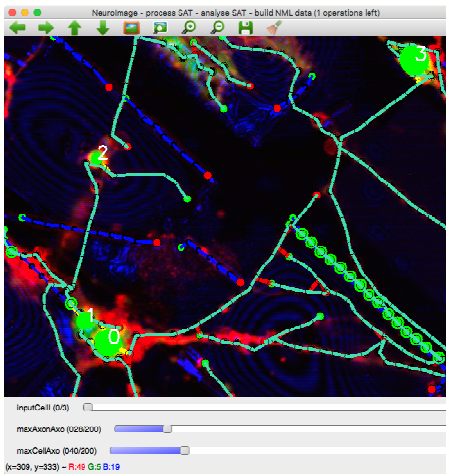

Fig 1: Fluorescence microscopy image of a neuron network with superimposed automatically recognized structures.

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