

Review of Modern Frameworks for Microscopy Image Processing

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Modern research in microscopy image processing requires a deeper understanding of the influence of different factors on registration of this type of biomedical images. Analysis of this process requires smart software which should be able to obtain quantitative parameters of micro objectives with acceptable processing speed [1].

The purpose of this work is a review of the modern frameworks of microscopy image processing. There are the main 7 image processing libraries in Python: Scikit-image, OpenCV, Mahotas, SimpleITK, SciPy, Pillow, Matplotlib. We analyzed these frameworks and compared the technical characteristics for use in image processing, after this we selected the main 3 libraries for development of application for microscopy image processing (tab. 1) [2-3].

Table 1. Comparison functionality libraries for microscopy image processing

| Framework | Supporter of programming language | Image loading | Simple image processing functionality | Image display functionality |
|--------------|-----------------------------------|---------------|---------------------------------------|-----------------------------|
| Scikit-Image | Phyton | + | + | + |
| OpenCV | C++, Phyton | + | + | + |
| Pillow | Phyton | + | + | + |

As a result of the analysis of modern libraries for processing of microscopy images and the possibilities of their use, it is possible to allocate OpenCV for our purposes as it meets all requirements.

References:

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