steinbock

A dockerized multi-channel image segmentation and measurement framework

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April 20, 2021

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The steinbock framework

Framework for pixel classification-based image segmentation and data extraction

Components:

- Python package with integrated command-line interface (CLI)
- Docker container exposing the CLI, with third-party software pre-installed

Implemented workflows:

- ["Standard" workflow] Zanotelli et al. ImcSegmentationPipeline: A pixel classification-based multiplexed image segmentation pipeline. Zenodo, 2017.

https://bodenmillergroup.github.io/steinbock

Installation

1. Install Docker
2. Pull `steinbock` Docker image:
   `docker pull jwindhager/steinbock:0.3.2`
3. Configure system to enable the `steinbock` command

Usage

```
> steinbock --help

Usage: steinbock [OPTIONS] COMMAND [ARGS]...

Options:
--help  Show this message and exit.

Commands:
preprocess  Extract and preprocess images from raw data
classify    Perform pixel classification to extract probabilities
segment     Perform image segmentation to create object masks
measure     Extract object data from segmented images
tools       Various tools and applications
```

Example

```
steinbock preprocess imc --hpf 50          # optional

steinbock classify ilastik prepare
steinbock tools ilastik
steinbock classify ilastik run

steinbock segment cellprofiler prepare
steinbock tools cellprofiler
steinbock segment cellprofiler run

steinbock measure objects intensities      # regionprops, ...
steinbock measure distances border         # centroid, ...
steinbock measure graphs dist --thres 4    # knn, ...
```