

Evaluation software

The evaluation software for detection (DET), segmentation (SEG), and tracking (TRA) accuracy is written in C++ and released as three command-line executables to help the participants with the self-evaluation and refinement of their algorithms during the training period. The same routines are used to evaluate the submitted results in the competition phase of the challenge. The executables can be run on several Windows, Linux, and Mac platforms and require two input parameters:

- **dir** – Path to a dataset directory (e.g., Fluo-C2DL-MSD),
- **seq** – Sequence identifier (e.g., 01).

After specifying both parameters, each routine returns the value of a particular measure on the standard output, and creates a log file (**DET_log.txt**, **SEG_log.txt**, or **TRA_log.txt**) in the directory with evaluated results. Note that the software requires the evaluated results to be saved in the format as described in [Naming and file content conventions.pdf](#). To verify proper functionality of the software, the provided testing directory (the subdirectory "**testing_dataset**") can be used. It contains a ground truth and some results for three sequences:

- 01 – Example of 2D results for the sequence 01 from the Fluo-C2DL-MSD dataset, **dir=testing_dataset, seq=01**, SEG measure: 0.232874,
- 02 – Example of 3D results for the sequence 01 from the Fluo-C3DL-MDA321 dataset, **dir=testing_dataset, seq=02**, SEG measure: 0.443686,
- 03 – Image data that corresponds to Figure 2 in <http://dx.doi.org/10.1371/journal.pone.0144959>, **dir=testing_dataset, seq=03**, TRA measure: 0.622980.
- 03 – Image data that corresponds to Figure 2 in <http://dx.doi.org/10.1371/journal.pone.0144959>, **dir=testing_dataset, seq=03**, DET measure: 0.688000.

Windows users

The 32-bit executables for Windows users can be found in the subdirectory "**Win**", including mandatory dll files. They were dynamically built using the Microsoft Visual Studio C++ 2015 compiler. Thus, please make sure that the Microsoft Visual Studio 2015 Redistributable (x86) package has been installed on your machine before running the executables. Without this package installed, the executables will not run properly, producing no output. They may even complain about a missing msvcp140.dll file. The software was tested on workstations running Windows 7, Windows 8, and Windows 10 operating systems.

Linux users

The 64-bit executables (statically linked ELF 64-bit LSB executable) for Linux users can be found in the subdirectory "**Linux**". They were statically built using the Gentoo GCC-4.8.4 compiler. The software was tested on workstations running Debian 8, openSUSE 13.2, Gentoo Linux, Linux Mint 18.1 Serena, and CentOS release 6.5 (Final) operating systems.

Mac users

The 64-bit executables for Mac users can be found in the subdirectory "**Mac**". They were dynamically built using the Apple LLVM-8.0 compiler. The software was tested on workstations running Mac OS X 10.10.5 (Yosemite), 10.11.6 (El Capitan), 10.12.6 (Sierra), and 10.13.6 (High Sierra) operating systems.