

Package Description:

U-Track identifies and tracks objects in light microscopy time-lapse sequences. It is the Matlab implementation of the tracking algorithm described in the paper “Robust single particle tracking in live cell time-lapse sequences” by **Jaqaman et al., Nature Methods 5: 695-702 (2008)**.

U-track consists of 2 steps:

(1) Detection: Identifies the objects in each frame and returns information such as their positions and intensities.

(2) Tracking: Takes in the objects identified in the first step and constructs their trajectories over time.

Both steps require the definition of various parameters, done by clicking on the “Setting” buttons.

Both steps also come with routines for visualizing the results, done by clicking on the “Result” buttons.

To rerun detection and/or tracking on a previously analyzed dataset, the “Force Run” option must be checked.

Note:

While the tracking algorithm described in the Nature Methods paper is general, the currently supplied code, especially in the detection step, is limited to sub-resolution objects, such as single molecules or small molecular aggregates that are smaller than the diffraction limit.

However, the code is written in a modular fashion and the detection and tracking steps are independent of each other. The detection and tracking modules can be also called from the command line using “scriptDetectGeneral” and “scriptTrackGeneral.”

With this, the user can use their own code to detect their objects of interest, e.g. if the objects are not sub-resolution features, and then they can call the tracker using “scriptTrackGeneral.” See the non-GUI README for more details.