

Iterative Radial Voting Plug-in for ImageJ

1 General

This plug-in is provided by the *Imaging and Informatics Lab of Life Sciences Division of Lawrence Berkeley National Laboratory*(<http://vision.lbl.gov>) It is a "simplified version" of the method described in

"Iterative Voting for Inference of Structural Saliency and Characterization of Sub-cellular Events," Bahram Parvin, Qing Yang, Ju Han, Hang Chang, Bjorn Rydbery and Mary Helen Barcellos-Hoff, in *IEEE TRANSACTIONS ON IMAGE PROCESSING*, 2007.

In this simplified implementation, the Gaussian kernels are replaced with uniform kernels for improved computational performance.

Please contact Hang Chang (hchang@lbl.gov) or Bahram Parvin (b_parvin@lbl.gov) with respect to the usage and further support of this package.

2 Supported Versions

- (1) Linux 32bit(Compiled on 32bit CentOS with Intel CPU)
- (2) Linux 64bit(Compiled on 64bit CentOS with Intel CPU)
- (3) Windows 32bit(Compiled on 32bit WinXP with Intel CPU)
- (4) Mac 32bit(Compiled on 32bit Mac(version 10.5.7) with Intel CPU)

3 Installation

Before installation, make sure ImageJ is installed on your system.

- (1) Linux:
 - (a) make subdirectory in "ImageJ_folder/plugins" named "LBL".
 - (b) copy "Radial_Voting_LBNL.jar" into "LBL" folder.
 - (c) copy "libcvnativelib.so" to java library path, or add the location of this file to java library pathes.
- (2) Windows:
 - (a) make subdirectory in "ImageJ_folderplugins" named "LBL".

- (b) copy "Radial_Voting_LBNL.jar" into "LBL" folder.
- (c) copy "cvnativelib.dll" to windows system path, or add the location of this file to windows library path.
- (3) Mac:
 - (a) make subdirectory in "ImageJ_folderplugins" named "LBL".
 - (b) copy "Radial_Voting_LBNL.jar" into "LBL" folder.
 - (c) copy "libcvnativelib.jnilib" to "/Library/Java/Extensions".

4 Usage

4.1 Apply to test-data with default parameters

Together with the plug-in package, we have also provided test data. The test data correspond to a single slice of 3D cell culture models.

- (1) Open Image File.
- (2) Choose "Plugins/LBL/Radial Voting LBNL", use the default parameter settings (As shown in Figure 1).

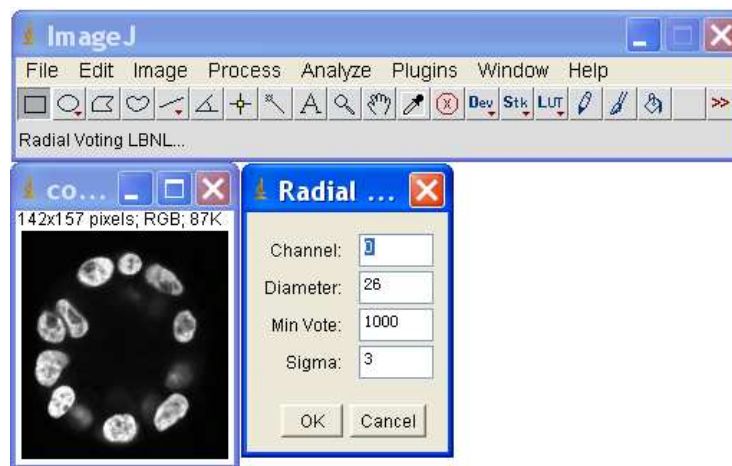


Fig. 1. Default parameter setting.

- (3) The output will be the red-cross-markers overlaid with the input image, and a popup window listing the detected centers(x,y) and strength of voting for each center point(the larger the strength value is, the more confident the detected center will be) (As shown in Figure 2).

4.2 Parameter Settings

- (1) **Channel:** To which image channel Radial voting will be applied.

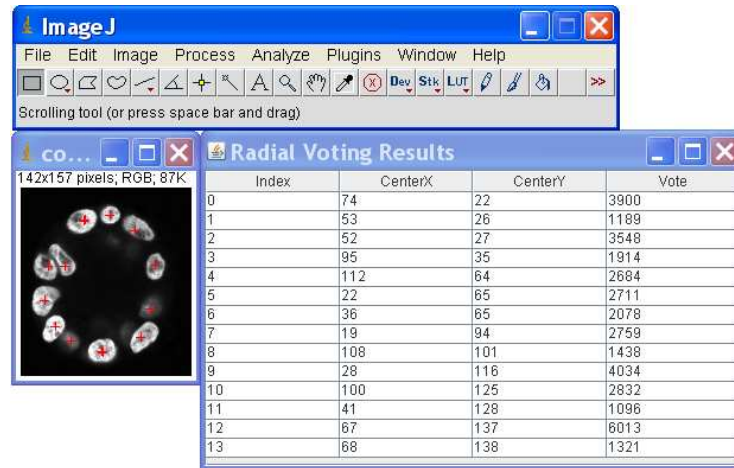


Fig. 2. Detection result with default parameter setting.

- (2) **Diameter:** Diameter of the blob to be detected.
- (3) **Min vote:** Vote strength threshold for picking up detected centers. The lower this value is, more blobs will be detected.
- (4) **Sigma:** Scale for computing image gradient, which will be used for voting process.