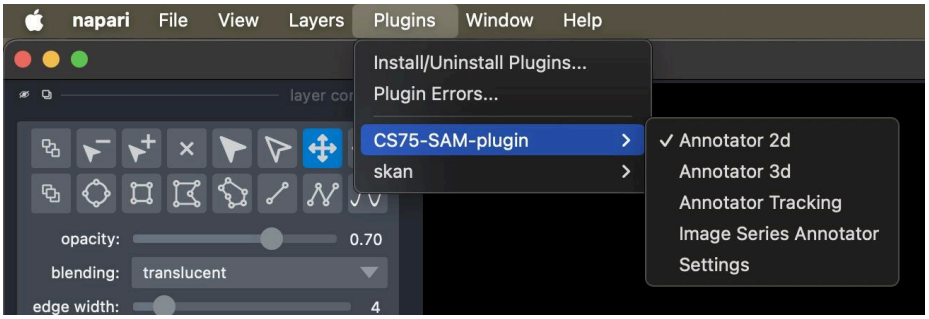
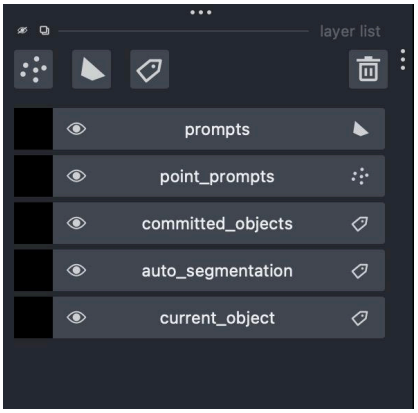
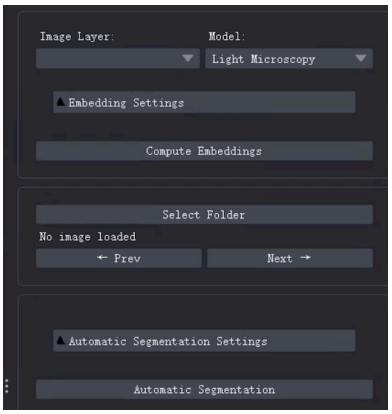
User stories List V3.0 – Based on Final Prototype

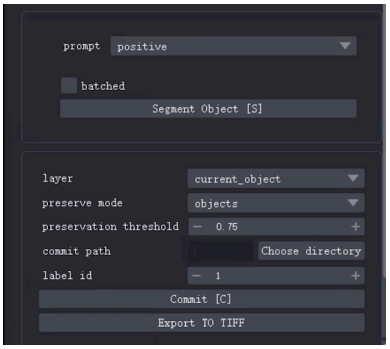
1. A User wants to do some research on cells, so he/she decides to use our Napari plugins to segment the cell images.
2. User opens the terminal in an environment-configured device, and input napari command to open the plugin.
3. The Napari will automatically open and the user clicks on the plugin menu on the top left and then see below drop down menu:



4. Firstly the user clicks on Annotator 2d, and the right side widget will be opened. The user is also able to see few masks in the left widgets. Shown below.



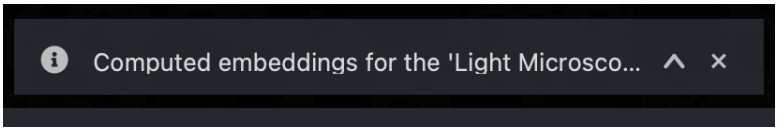




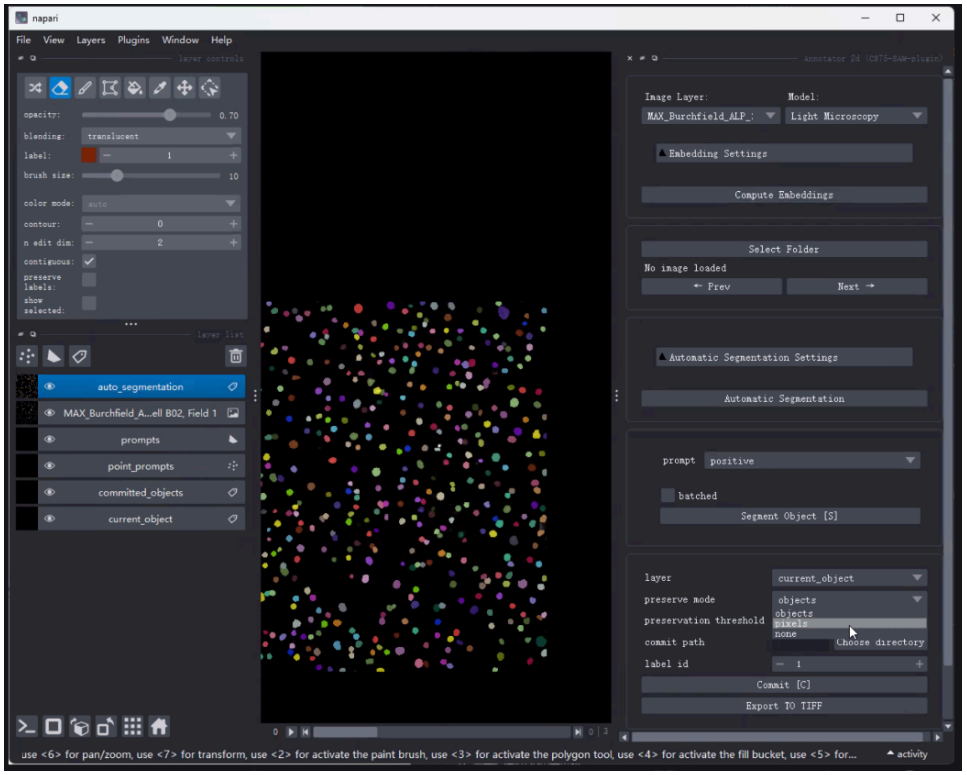
5. If the user wants to segment a folder of the images, he/she will be able to click on the button ‘Select Folder’ on the right widget of the napari window and then choose the folder they like to input into napari.
6. If the user wants to only segment one single image, he/she can also simply drag the image inside the napari window.

Both situation are all acceptable, and the user can input not only the normal images like .jpg, but also the tiff images.

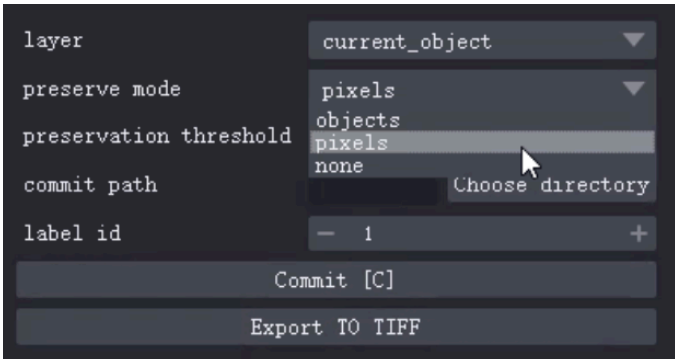
7. The user clicks the ‘open’ button and then the first image inside the folder will be displayed on the napari windows.
8. The user is able to see which image is he/she up to, then use the slider below to drag the channel of the image to complete the channel switching.
9. Then the user can click the ‘Compute Embeddings’ button to compute the specific channel of the specific image. The image is successfully loaded if the user sees this display as below:



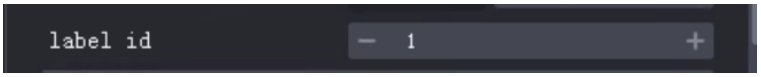
10. Then the user clicks on the ‘Automatic Segmentation’ button on the right, the Napari will segment the cell images.
11. The user is able to see the result of auto-segmentation in the auto-segmentation mask on the left widget. He/she can drag the auto segmentation mask on the top of the list on left masks widget, and then it can be displayed on the screen like below:



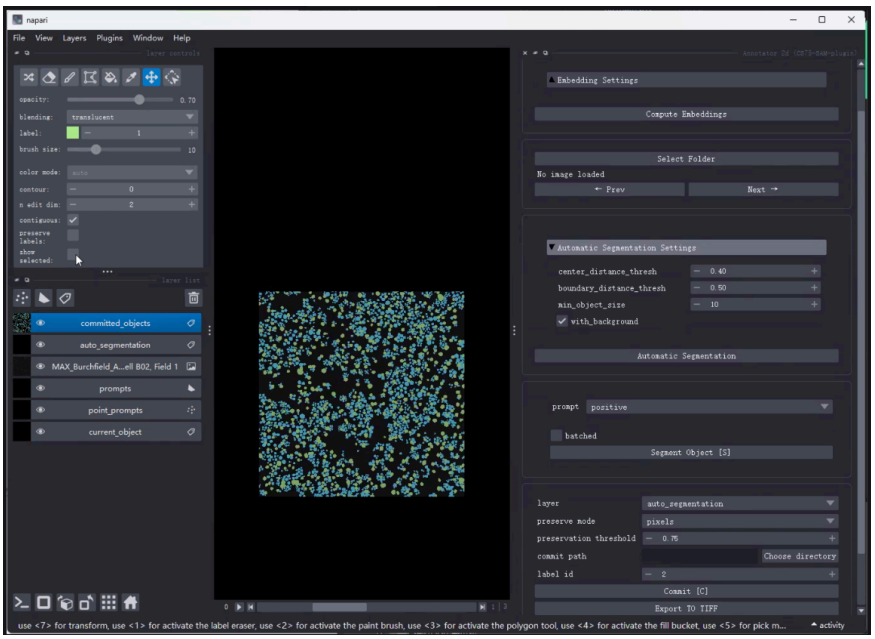
12. As the drop down list shows below, if the user chooses ‘pixels’ in the preserve mode, the segmentation result can be saved into the same mask.
13. If the user chooses ‘objects’ in the preserve mode, the segmentation result of each automatic segmentation can be saved into different masks and be displayed on the left widgets.



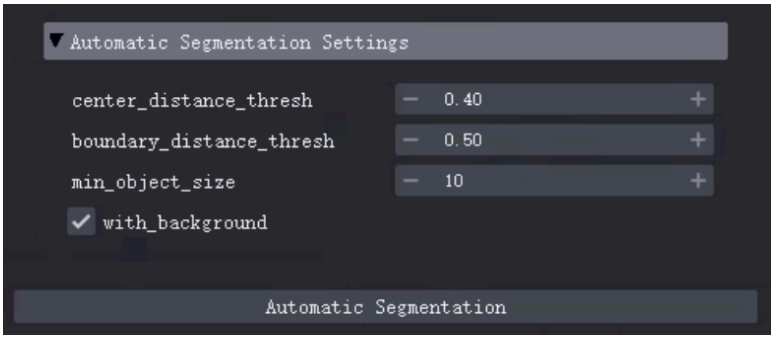
14. The user gets the result of channel 1 already, he/she decides to get the result of channel 2, 3 and 4 as well, and then he can just change the channel by the sider on the bottom of the Napari windows.
15. Each time when the user wants to segment a new channel, the result he/she must give a label number on that, like shown below: The user can just simply clicks on ‘+’ or ‘-’ to change the label id.



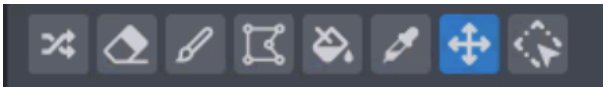
16. After all above, the user needs to press the ‘Commit’ button to commit the result into a new mask, and redo stories 9 - 15, to commit each segmentation result into one mask.
    The committed result is like below, below is the combined result of Channel 1 and 2.



17. The user find that the result in channel x, for example, the user need to segment the nucleus of the cells, means the user need to adjust the parameters of the model, he/she can just simply change the parameters in the below list:

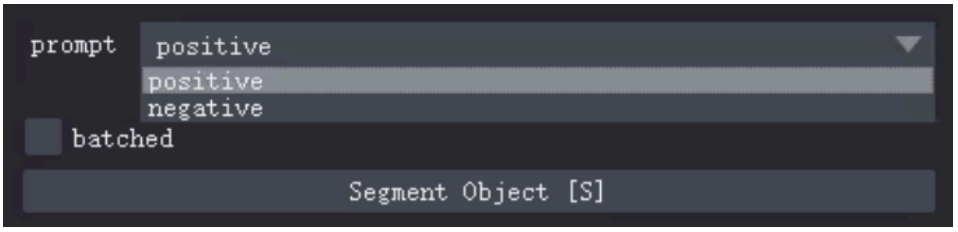


18. The user finds that the result accuracy of auto-segmentation on Channel x is still a bit low after the parameters adjustment. And then he/she uses box-segmentation to choose the cells that have been wrongly segmented.
19. The user clicks on the prompt mask in the mask list of the left widget on Napari.
20. The user chooses the Bounding box button on the top of the left widget, and uses the draw box button on the top left of the window to draw the box.

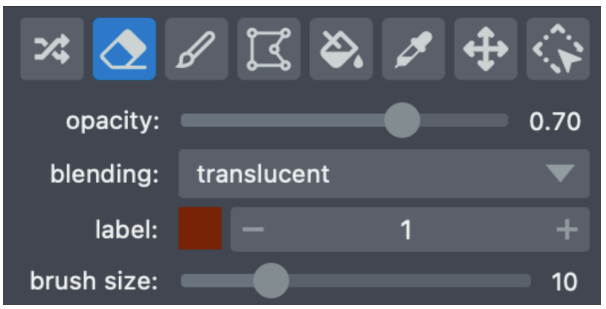


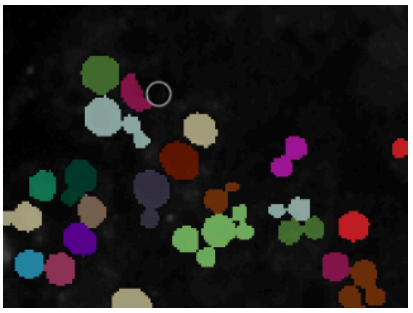
21. The user still does not get what he/she wants, then the user clicks the point_prompts on the left widget.
22. The user clicks the ‘add-point’ button so that the plugin can automatically add new points and segments itself. Then it will separate those two cells with points.

23. The user can also adjust the ‘positive’ or ‘negative’ for his point segmentation as below:



24. The user still needs to adjust some detailed cells, so he can use the eraser to adjust the segmentation result. Like below:





25. The user is able to click on the ‘seen/unseen’ button on the left of each mask.
26. After all, the user is able to store the result of different auto-segmentation of each different channel on different images in the folder by pressing the ‘Export to TIFF’ button on the bottom of the right sidebar. The image below shows the output result re-display on the window under the ‘label’ mask.