User Guide

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1 Installing Required Python Libraries in Visual Studio 2022

To install the necessary Python 3.9/3.10/3.11 libraries in Visual Studio 2022, follow these steps:

1. Open Visual Studio 2022: Launch Visual Studio 2022 on your computer.
2. Create or Open Python Project: Create a new Python project or open an existing one where you want to use the mentioned libraries..
3. Access Python Environment Window: In Visual Studio, go to `View > Other Windows > Python Environments`. This will open the Python Environment window. Select the good python version and go into packages(Pypi).
4. Copy and paste the following command into the terminal and press Enter to install the required libraries:

   pip install numpy tifffile pyvistaqt pyqt5 multipagetiff matplotlib moviepy pyvista opencv-python
5. Verify Installation: Once the installation process is complete, you can verify that the libraries are installed by running your Python code within Visual Studio. If there are no import errors, it means the installation was successful.

2 Merge code

Warning : if the windows that open is resized the cropping won't be right. Keep it the same size as it is when it open.

2.1 Loading a TIFF Stack

To view a TIFF stack, follow these steps:

1. Click on the **Load TIFF Stack** button.

2. A file dialog will appear. Navigate to the directory containing the TIFF stack, select the file, and click "Open."

3. The TIFF stack will be loaded, and the first image in the stack will be displayed.

2.2 Navigating Through TIFF Stack

To navigate through the TIFF stack, follow these steps:

1. Use the **TIFF Image Slider** to move through the images in the stack.

2. As you move the slider, the displayed image will update accordingly.

2.3 Loading a PNG Overlay

To load a PNG overlay on the TIFF image, follow these steps:

1. Click on the **Load PNG** button.

2. A file dialog will appear. Navigate to the directory containing the PNG overlay, select the file, and click "Open."

3. The PNG overlay will be displayed on top of the TIFF image.

2.4 Adjusting PNG Opacity and Zoom

You can adjust the PNG overlay's opacity and zoom level for better visualization:

- Use the **PNG Opacity Slider** to control the transparency of the PNG overlay. Move the slider left to decrease opacity and right to increase it.

- Use the **PNG Zoom Slider** to control the size of the PNG overlay relative to the TIFF image. Move the slider left to decrease size and right to increase it.

2.5 Save the new tiff stack

To capture the combined view (TIFF image + PNG overlay) as a TIFF file, follow these steps:

1. Arrange the view with the desired TIFF image and PNG overlay.

2. Click on the **Save new tiff** button.

3. A file dialog will appear. Choose the location and provide a name for the screenshot TIFF file.

4. Click "Save" to save the combined view as a TIFF file. Can take few minutes.

3 Confocal Stack

3.1 Loading a 3D OME TIFF Stack

To load a 3D OME TIFF stack, follow these steps:

1. Click on the **Load Image** button.
2. A file dialog will appear. Navigate to the directory containing the 3D OME TIFF stack, select the file, and click "Open."
3. The TIFF stack will be loaded, and the "Plot Volume" button will be enabled.

3.2 Plotting the Loaded Volume

To plot the loaded volume data, follow these steps:

1. Ensure that you have successfully loaded a 3D OME TIFF stack using the steps in Section 3.1
2. Click on the **Plot Volume** button.
3. The 3D plot of the volume data will be displayed using the selected colormap and opacity transfer function.

3.3 Adjusting Volume Rendering Settings

You can adjust the volume rendering settings for better visualization:

- **Colormap Selection**: Choose a colormap from the combobox to change the color scheme for volume rendering.
- **Enable Depth Peeling**: Select "Enable Depth Peeling" from the combobox to enable depth peeling for better visualization of overlapping structures (optional).
- **Opacity Selection**: Choose an opacity transfer function from the combobox to control the transparency of the volume data.

3.4 Taking a Screenshot

To capture the 3D plot as an image, follow these steps:

1. Ensure that you have plotted the volume data using the steps in Section 3.2.
2. Click on the **Take Screenshot** button.
3. A file dialog will appear. Choose the location and provide a name for the screenshot image file (PNG or JPG format).
4. Click "Save" to save the screenshot image.

3.5 Displaying Camera Information

To view the position of the camera in the 3D plot, follow these steps:

1. Ensure that you have plotted the volume data using the steps in Section 3.2.
2. Click on the **Show Camera Info** button.
3. A message box will appear, displaying the camera position information (e.g., camera focal point, position, and view up),[(x,y,z), (fx,fy,fz,), (nx,ny,nz)].

4 Widefield

4.1 Loading a TIFF Stack

To view a TIFF stack, follow these steps:

1. Click on the **Choose TIFF Stack** button.
2. A file dialog will appear. Navigate to the directory containing the TIFF stack, select he file, and click "Open."
3. The TIFF stack will be loaded, and the first image in the stack will be displayed in the Image Display area.

4.2 Navigating Through TIFF Stack

To navigate through the TIFF stack, follow these steps:

1. Use the **TIFF Stack Slider** to move through the images in the stack.
2. As you move the slider, the displayed image will update accordingly.

4.3 Changing Colormap

To change the colormap for image display, follow these steps:

1. Click on the **Colormap Selection** combobox.
2. Choose the desired colormap from the list of available options.
3. The displayed image will update with the selected colormap.

4.4 Saving an Image

To save the currently displayed image as a PNG file, follow these steps:

1. Ensure that you have loaded a TIFF stack and selected the desired colormap.
2. Click on the **Save Image** button.
3. A file dialog will appear. Choose the location and provide a name for the PNG image file.
4. Click "Save" to save the image.

4.5 Saving a Video

To save the entire TIFF stack as an MP4 video, follow these steps:

1. Ensure that you have loaded a TIFF stack and selected the desired colormap.
2. Click on the **Save Video** button.
3. A file dialog will appear. Choose the location and provide a name for the MP4 video file.
4. Click "Save" to start saving the video.
5. The TIFF stack will be converted into an MP4 video and saved to the specified location.

4.6 Save modified Tiff

This function while save as a new tiff with the color map but for the moment it's really long : 30min

1. Ensure that you have loaded a TIFF stack and selected the desired colormap.
2. Click on the **Save modified Tiff** button.
3. A file dialog will appear. Choose the location and provide a name for the TIFF file.
4. Click "Save" to take the screenshot and save it as a TIFF file.