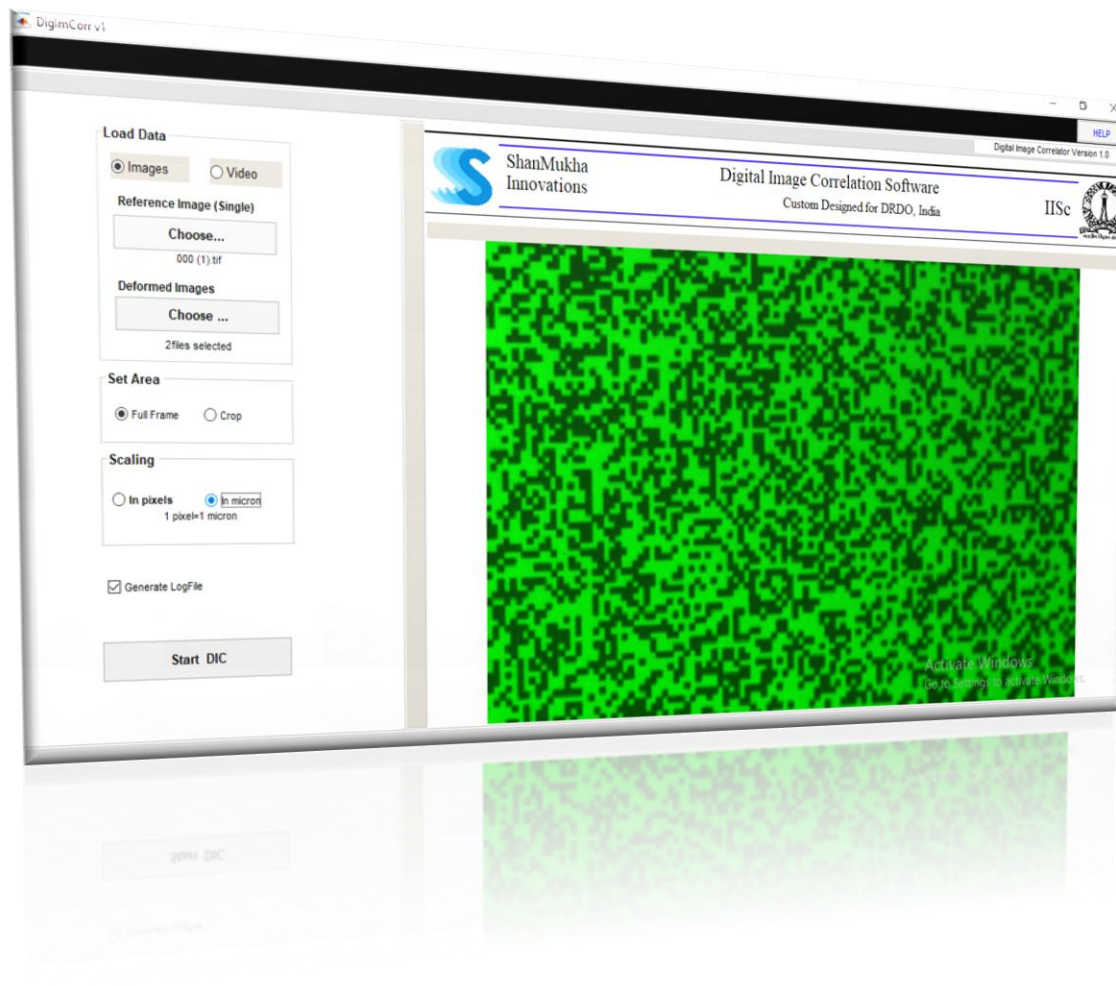


HELP DOCUMENTATION FOR

DigImCorr v1

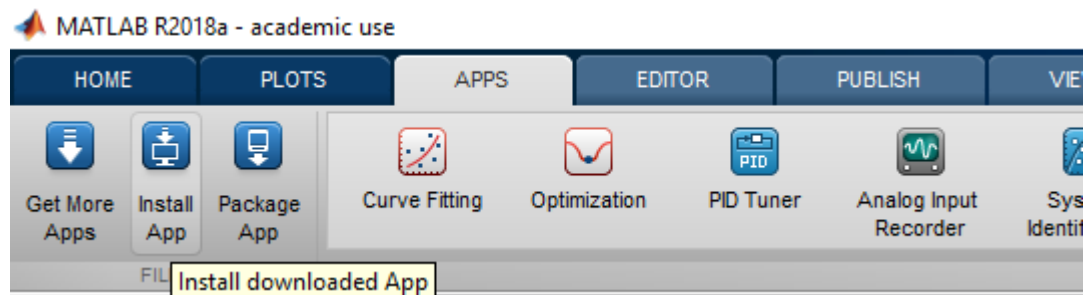


ShanMukha Innovations Pvt. Ltd.

Installation:

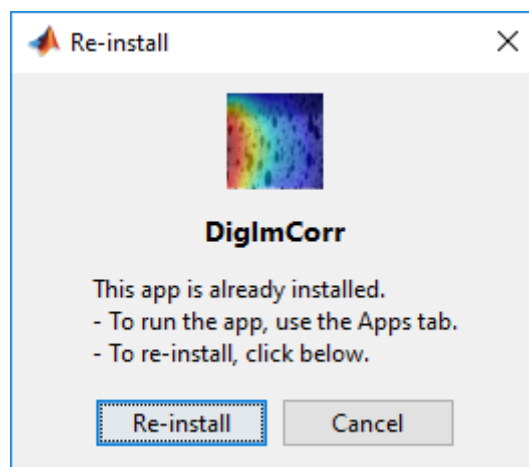
1. Open MATLAB(R)(version 2014 and above) in system
2. In MATLAB environment

- a. Go to APP—Install APP

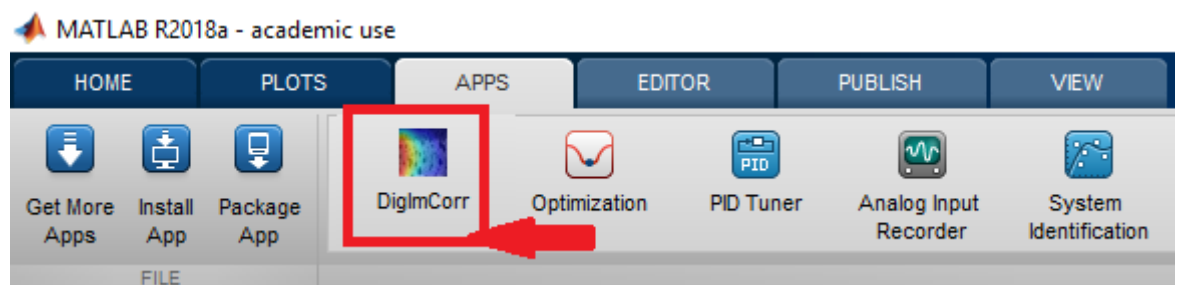


- b. Direct to the folder containing 'DigImCorr.mlappinstall' and select it

- c. Install/Reinstall it



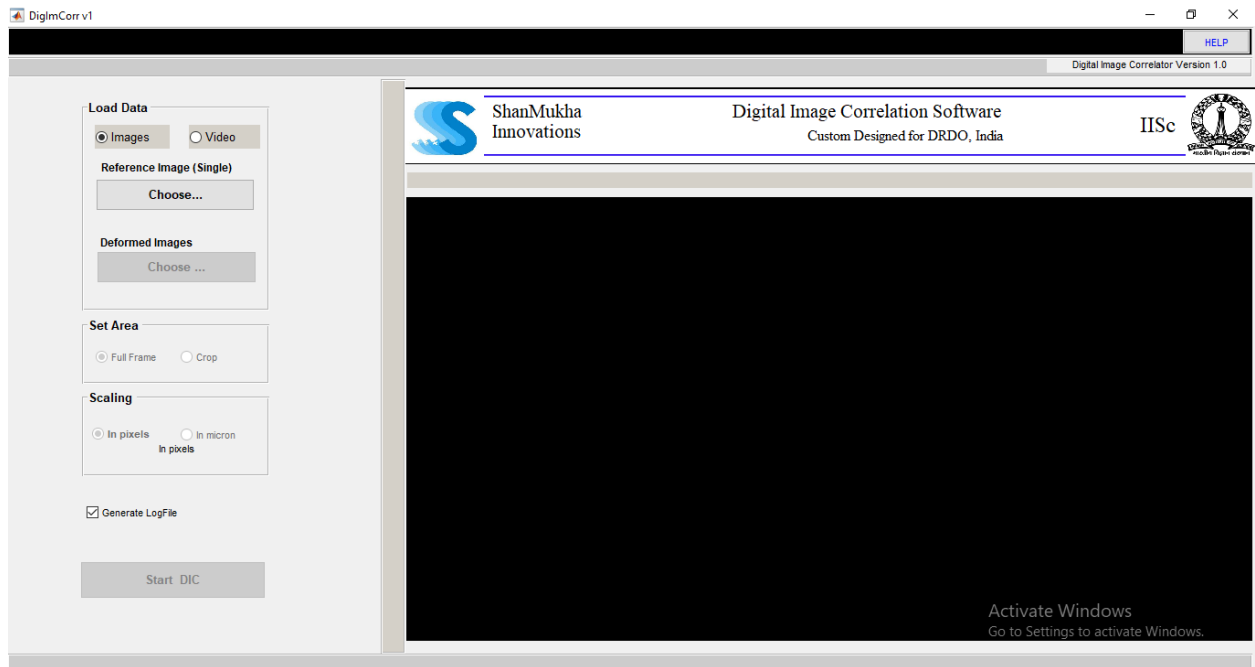
- d. After Installation it will be available under the APP Toolbar



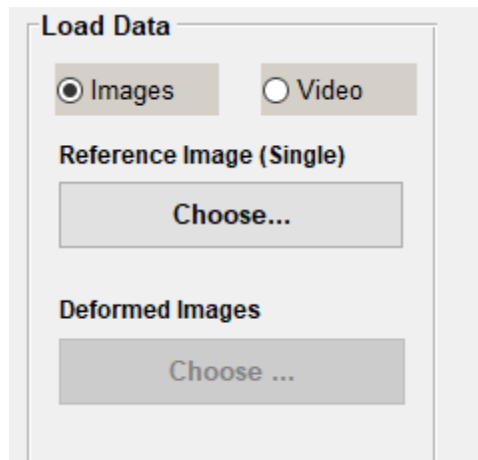
- e. Press the ICON  to launch the APP for data processing

Data Processing:

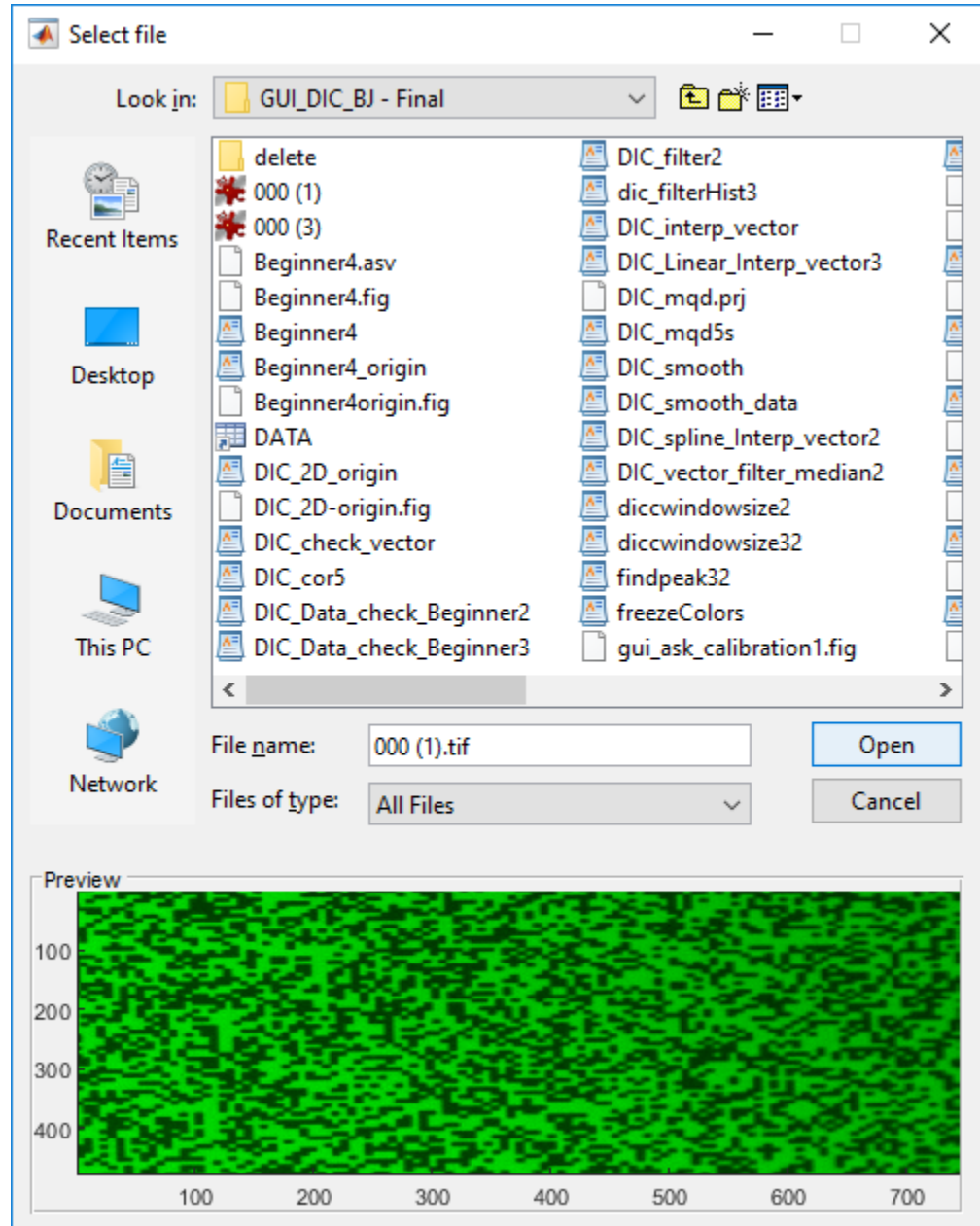
1. Launch the APP by pressing the ICON  under the APP Toolbar



2. Select **Images** for processing Images (or go to Step 8 for [Video input](#))



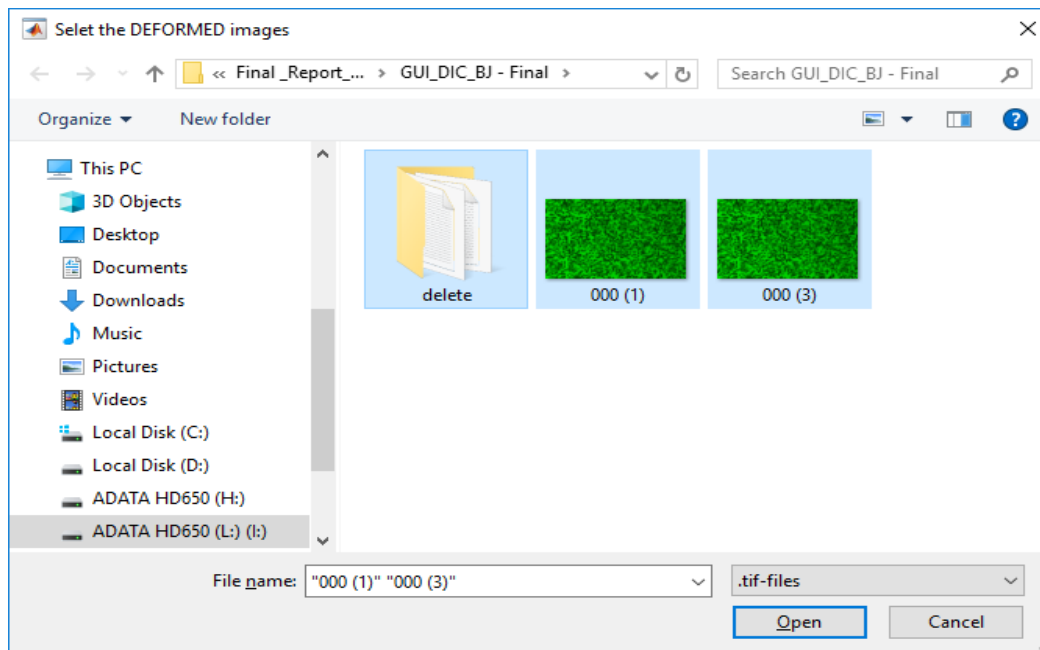
3. Load the images with the help of **REFERENCE** and **DEFORMED** buttons
 - a. Reference Image (see preview to select)

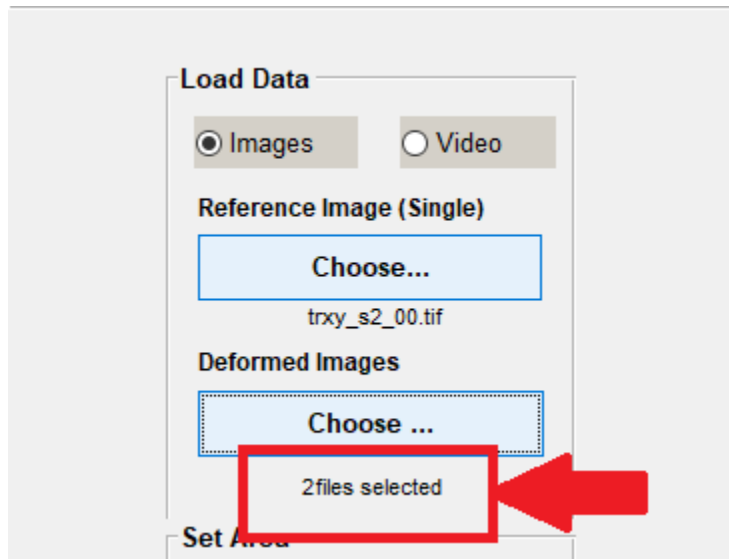


- b. Once selected it will be displayed in the main window

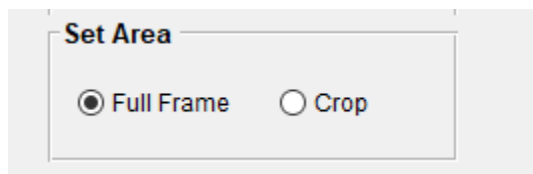


- c. Select the deformed image/images by pressing the corresponding button. Total number of selected files will be displayed at the adjacent of the Deformed Image button.

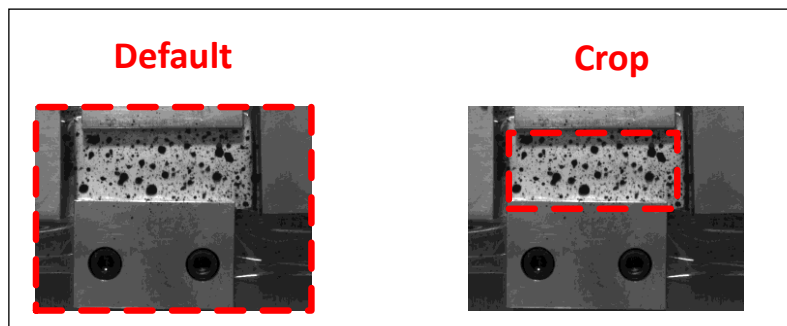




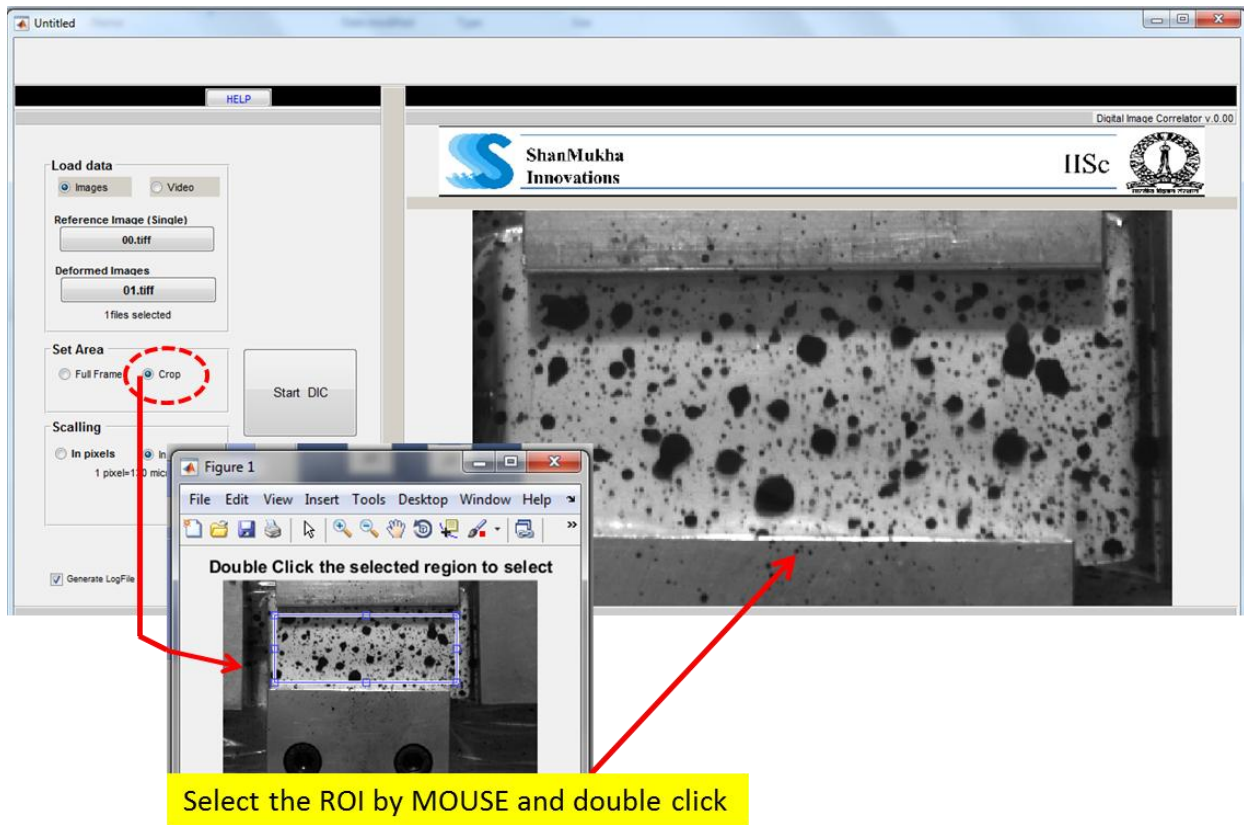
4: Select the region of interest (2 options)



Full Frame: Whole image will be processed

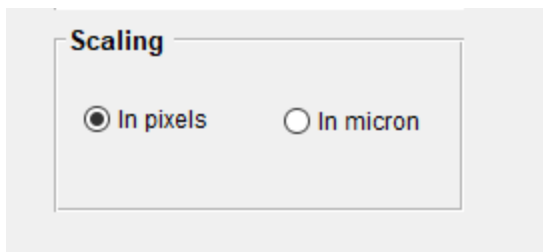


Crop: Selected region within the box will be processed

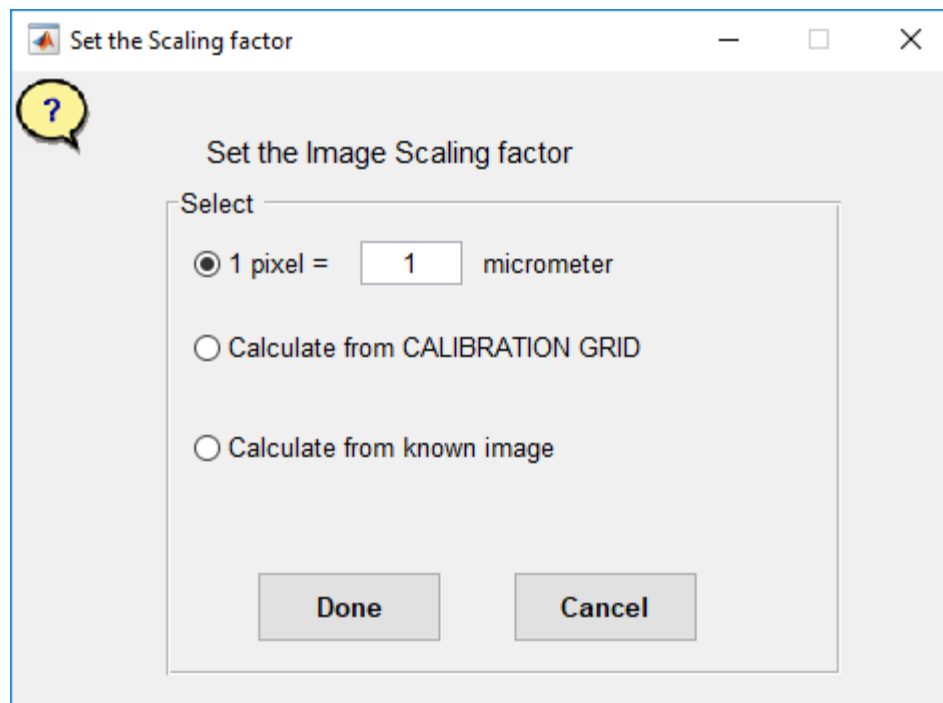


Step 5:

In Pixels: Results will be shown in pixels unit (Default)

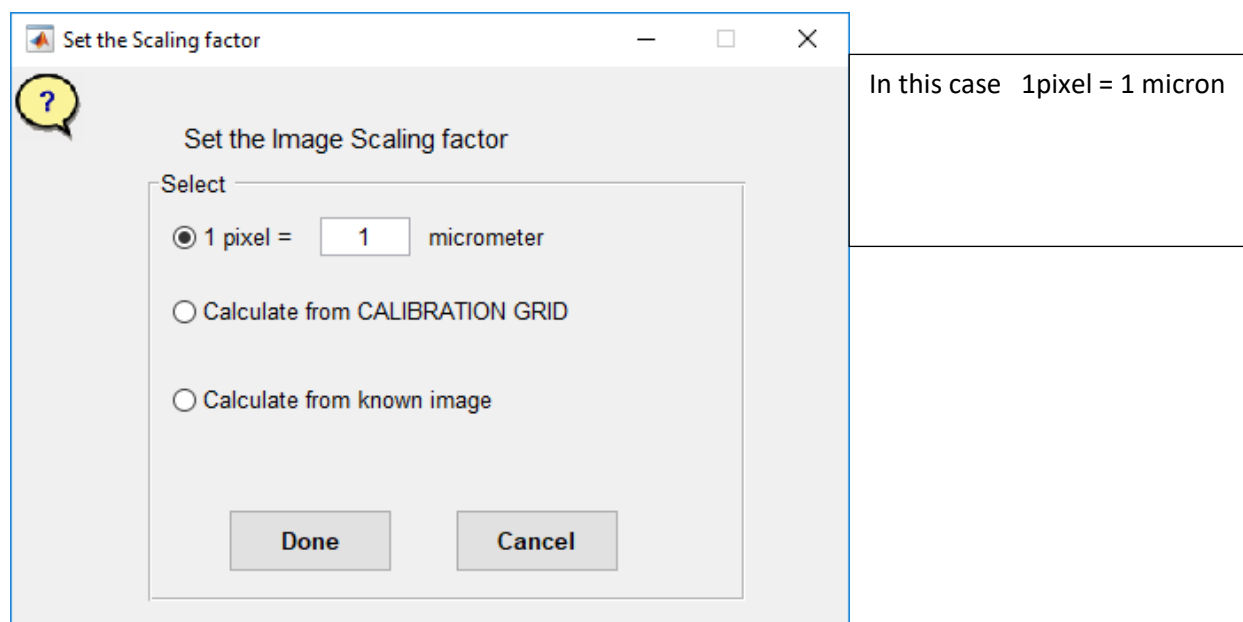


In micron: The following menu would appear



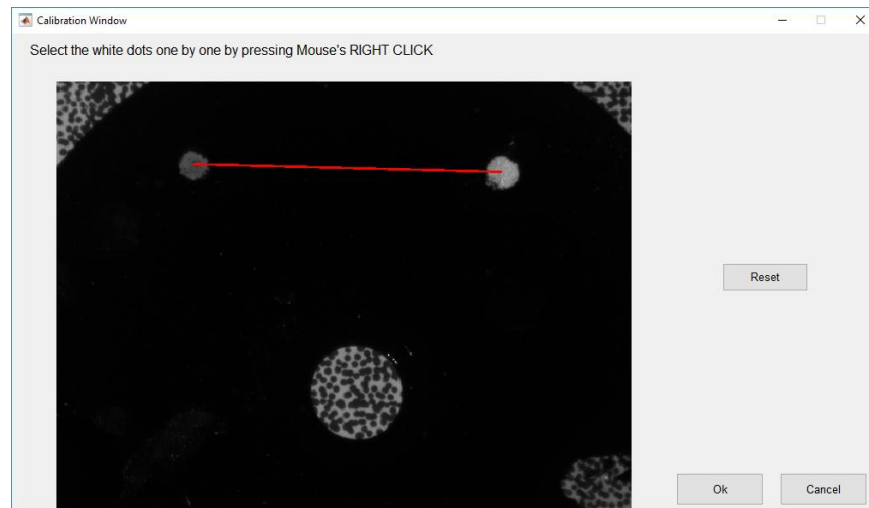
Option 1:

Select **1 pixel** option and insert known physical to pixel correspondence then press **DONE**



Option 2:

Select **Calculate from CALIBRATION GRID** option. A new menu would appear with an image in it. The image need to be loaded by following the steps in the GUI.

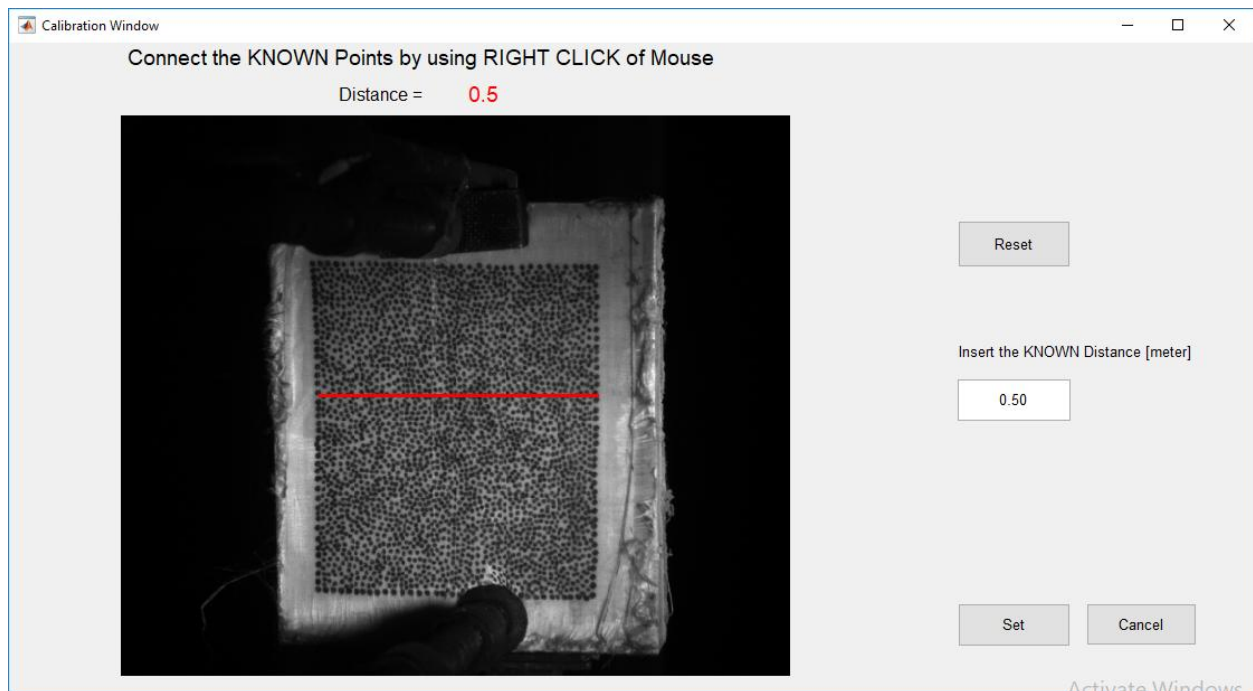


- By pressing **right click of the mouse** select the white dots one after another.
- If not satisfied then press **Reset** button to reinsert the coordinate(to remove the red line)
- Press
 - **Cancel** , if not following the conversion
 - **Okay**, to carry on the process

Option 3:

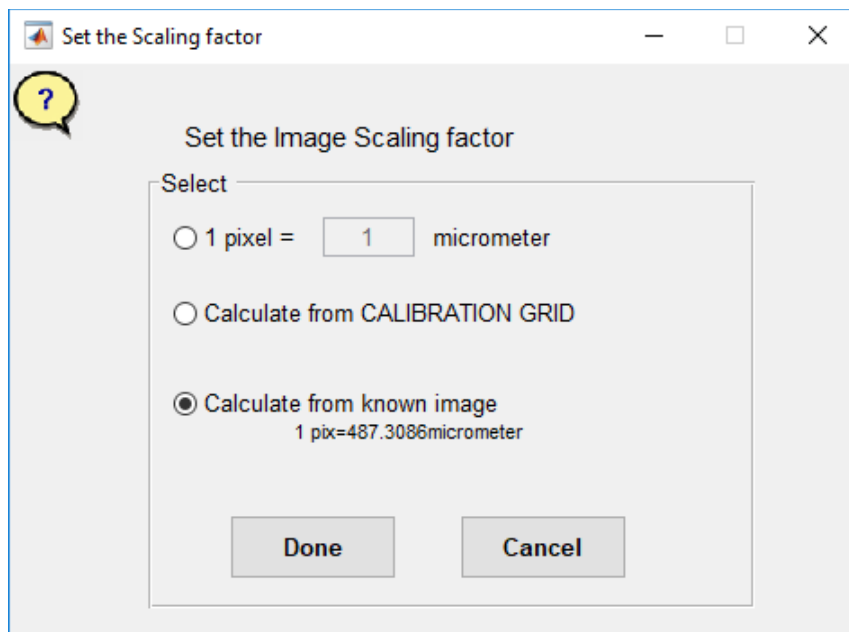
Select **Calculate from KNOWN IMAGE** option. A new menu would appear with an image in it. The image need to be loaded by following the steps in the GUI.

- By pressing **right click of the mouse** select the known points.
- If not satisfied then press **Reset button** to reinsert the coordinate(to remove the red line)
- Set the known distance in the Text box provided **(in meter unit)**
- Press
 - **Cancel** , if not following the conversion
 - **Set**, to carry on the process to the next level



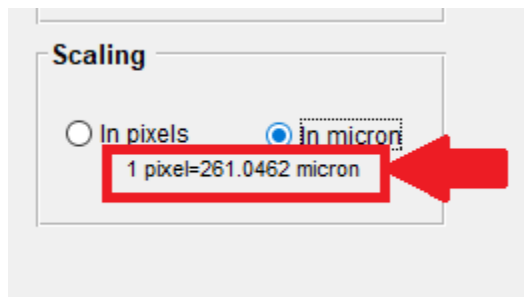
- Again, the previous menu would appear, press

Press **cancel** to terminate the process

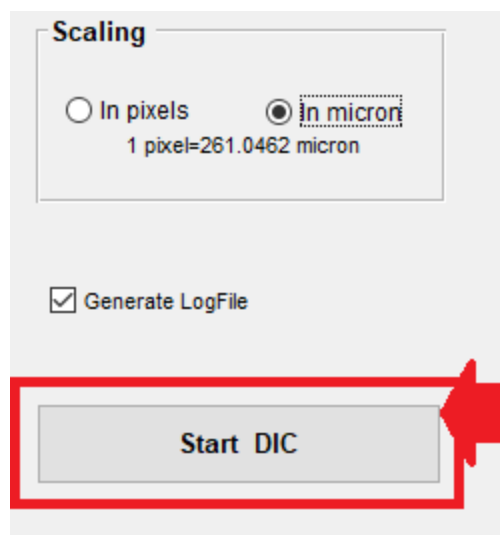


Press **Done** to continue

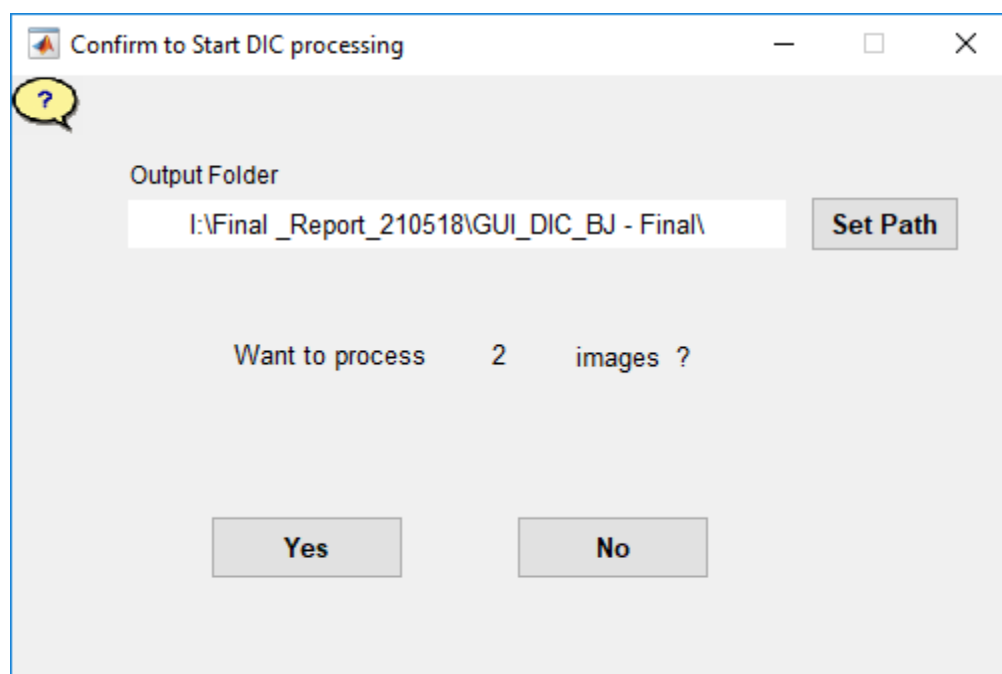
Note: Conversion will be displayed in the main GIU as shown



Step 6: Start processing by pressing **Start DIC button**



Step 7: Select one of the options

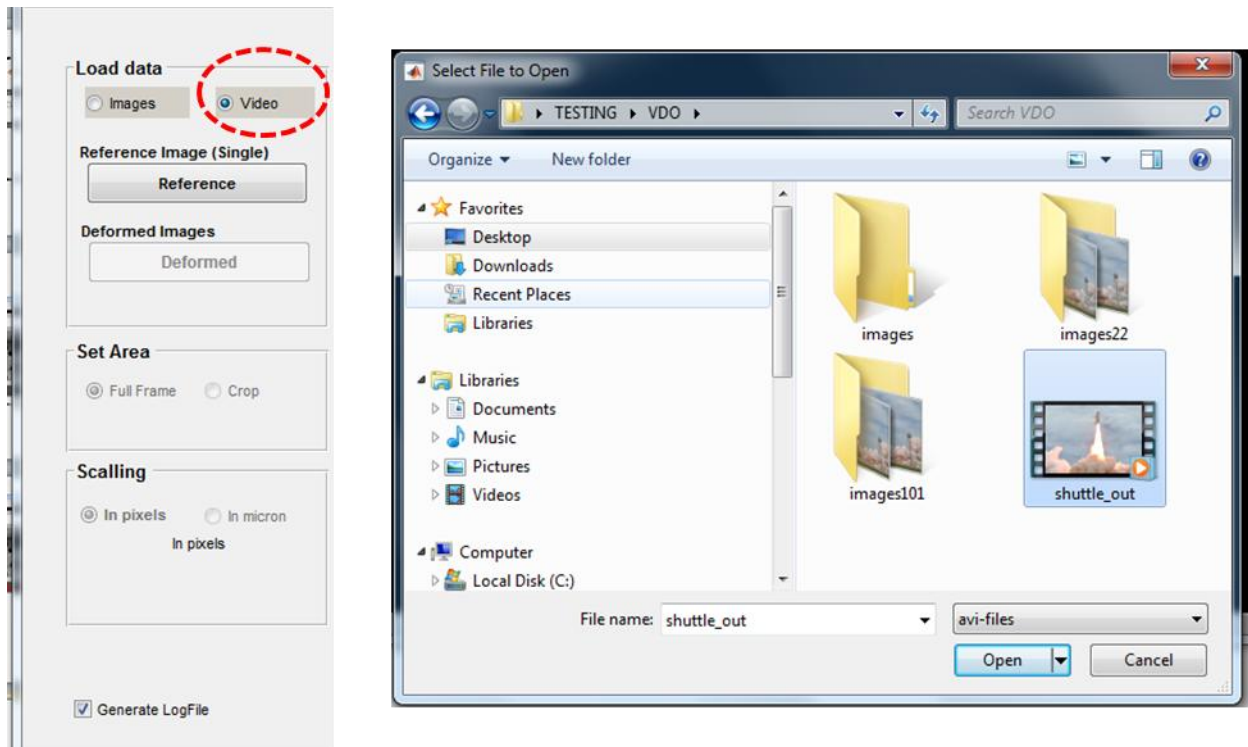


7.1 **NO**, to stop the process

7.2 Set the destination Folder by pressing **Set Path**

7.3 Press **Yes** to continue

Step 8: Video input



Options:

Cancel: It will go back to the start menu again

Open: A folder 'images101' will be created and image files (start with 001) from the video will be extracted within this folder.

Note: At this moment only '.avi' video format is supported

Note: Generated images are '.jpg' format.

Step 9:

Follow the steps from Step 4 to Step 7 to process the data

Results and Output data format:

In plane **displacements** (Along X-axis, Y-axis) and **displacement magnitude** are calculated. The calculated 2D-values are saved as images (heat map image) in **.tiff** format. Displacement/ deformation of the plane are also represented with the help of **vector map** indicating the direction of local displacements.

Two more files namely **Logfile.txt** and **result11_summary.txt** are also generated and saved in the same folder as directed by the user at STEP 7 (in this manual).

Logfile.txt contains details of various processing steps and parameters/variables used while analyzing the data.

result11_summary.txt contains (column wise) (Suitable for whole body translation of field of view):

deformed image file names, mean displacement along X-axis, mean displacement along Y-axis, minimum displacement along X-axis, maximum displacement along X-axis, minimum displacement along Y-axis, maximum displacement along Y-axis, Standard deviation of displacement along X-axis and Standard deviation of displacement along Y-axis respectively.

RAW data:

Estimated displacements are also saved in the same folder as "**DATA.mat**" file (MATLAB^(R) file). DATA is a cell element and has dimension of 1XN; where N is equal to the number of deformed images used during post-processing. Individual element is a structure that contains the following information (in bold format)

iu_s: estimated displacement in discrete points along X-axis

iv_s: estimated displacement in discrete points along Y-axis

U_inp: Interpolated displacement in along X-axis

V_inp: Interpolated displacement in along Y-axis

Xi and **yi**: points of inspection along X- and Y-axis respectively.

name: Name of the deformed image file used in post-processing