

Question 1: Image Extraction at Best Quality

Qn.1A, if you used the supplied replay software:

please save and submit your results using the filename:
'Q1A_ReplayDescribed_YOURINITIALS' or

Please specify (i) the investigation method used to a) examine the video sequence and b) extract and examine the frame, and (ii) all steps executed. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Did not use supplied replay software

Qn.1A, if you used another method:

Please save and submit your results using the filename:
'Q1A_OtherMethod_YOURINITIALS'

Please specify (i) the investigation method used to a) examine the video sequence and b) extract and examine the frame, (ii) all tools used, and (iii) all steps executed. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Used software SiraView version 3.2.0.521 to open the .drv file. The SiraView software supports this file format. The file open option 'autodetect' selects the decoder 'DRV (3.0)' to open the file. The video opens with accompanying time and date information

Navigated to the required timestamp of 04:43:01 on 28/04/2014, and set in and out markers to select this time region.

Selected the 'Save Video' option 'Forensic Export'. This exports selected video as a series of .bmp still images at the size which they are present in the recorded file. The software identifies the frame size as 720 x 288 pixels.

Renamed the correct still image as 'Qn1a_Sirav3_2_0_521_Forensic.bmp' and submitted this image

Also exported the same video selection using the export option 'Forensic Export (with metadata)'. Similarly, this exports the selected video as a series of .bmp images, however each still has the time and date appended to the bottom - adding an additional 32 pixels to the height of the frame - hence the dimensions are now identified as 720 x 320.

Renamed the correct sill image as 'Qn1a_Sirav3_2_0_521_ForensicMeta.bmp' and submitted this image.

Qn.1B, if you used the supplied replay software:

Please save and submit your results using the file name:
'Q1B_ReplayDescribed_YOURINITIALS'

Please specify (i) the investigation method used to a) examine the video sequence and b) extract and examine the frame, and (ii) all steps executed. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Did not use supplied replay software

Qn.1B, if you used another method:

Please save and submit your results using the filename
'Q1B_OtherMethod_YOURINITIALS'

Please specify (i) the investigation method used to a) examine the video sequence and b) extract and examine the frame, (ii) all tools used, and (iii) all steps executed. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Applied the same method as used for Qn. 1a - Used software SiraView version 3.2.0.521 to open the .PAR file. The SiraView software supports this file format. The file open option 'autodetect' selects the decoder 'Dedicated Micros Observer (3.0)' to open the file. The video opens with accompanying time and date information.

The SiraView software supports this file format, and so can interpret the time and date information.

Navigated to the required timestamp of 04:43:30, and set in and out markers to select this time region. Selected the 'Save Video' option 'Forensic Export'. This exports selected video as a series of .bmp still images at the size which they are present in the recorded file. The software identifies the frame size as 720 x 288 pixels.

Renamed the correct still image as 'Qn1b_Sirav3_2_0_521_Forensic.bmp' and submitted this image

Also exported the same video selection using the export option 'Forensic Export (with metadata)'. Similarly, this exports the selected video as a series of .bmp images, however each still has the time and date appended to the bottom - adding an additional 32 pixels to the height of the frame - hence the dimensions are now identified as 720 x 320.

Renamed the correct sill image as 'Qn1b_Sirav3_2_0_521_ForensicMeta.bmp' and submitted this image.

Qn.1C

| Frame Size of source file recording used in Qn.1A | | | | Frame Size of source file recording used in Qn.1B | | | |
|---|---|-----|--------|---|---|-----|--------|
| 720 | x | 288 | pixels | 720 | x | 288 | pixels |

What are your conclusions about the raw, encoded quality of the provided video frame/sequence in Q1A and Q1B?

Use any space you need

Both the .drv and .PAR video formats encode the video as video Fields of dimension 720x288 pixels. These are likely to be one of a pair of interlaced fields recorded by an interlaced camera - The system probably discards the information from every partner field which makes up an interlaced frame. The supplied replay software appears to restore the aspect ratio of the footage for viewing by doubling the height of the imagery via interpolation.

The replay software supplied for the first example (Qn1a) will export the footage at whatever arbitrary scale and aspect ratio at which the user has scaled the graphical user interface - which is also visible in the exported images.

The replay software supplied for the second example (Qn1b) permits imagery to be exported in the formats .jpeg, .pdf, and .rtf. All of these exports are subjected to additional lossy compression - which can be seen by looking at the time and date which has been added to the top of the imagery by the replay software during export (The time and date has visible mosquito noise indicating lossy compression). It can be demonstrated that the time and datestamp is added to the exported images by the replay software by running the replay software on a computer which is set to a different country or region. The month will be shown in the language that the operating system has been set to. Alternatively, by examining the .PAR file, it can be seen that the imagery has been recorded using Motion jpeg. Each frame is encoded as a jpeg and can be extracted from the .PAR file. When viewing one such extracted file, it can be seen that there is no time and date at the top of the frame.

The imagery is recorded in the .PAR file format at 720x288 pixels, although the .jpeg export provided by the supplied replay software outputs the imagery at 720x594 pixels. This occurs due to the frames of 720x288 being doubled in height to 720x576, and then an additional 18 lines (the time and date info) is added to the top, making 594 lines. As the time and date is only 18 pixels high, this could shift the block-based grid which the imagery was initially encoded in. Jpegs are encoded in 8 by 8 blocks. 18 pixels is equivalent to 2 blocks and 2 pixels. Therefore if the jpeg is encoded from top to bottom, then the block grid would be mis-aligned by 2 pixels, hence different encoding decisions would be made when the additional jpeg compression is applied to export the frame as .jpeg file.

Question 2: Super-Resolution from supplied sequence of 249 .bmp files

Qn.2A

Please select your best result, i.e.: a single best quality super-resolution image:
Please save and submit your results using filename: "Q2A_SuperRes_YOURINITIALS"

1. How have you ingested the material into your enhancement system and super-resolution software tools?

Please detail all steps of any conversion performed including all software tools and settings used. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Used Impress Ultra v6.4.1.21340

Used 'Open Directory' to import all 249 .bmp files into the software environment so they can be played as a video.

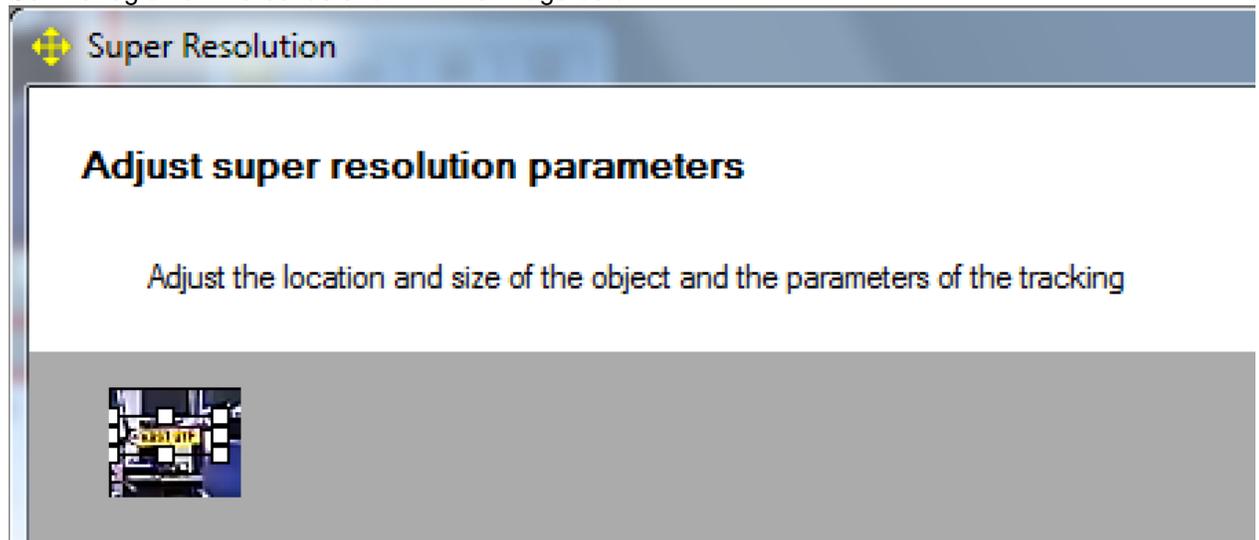
2. Please specify all software tools and all Enhancement Filters used (in order) and specific parameter settings; e.g. Super-Resolution Filter (Method? Zoom factor? Number of Iterations? Interpolation?.....)

Use any space you need

1. In Impress, Goto Tools\Options and in the folder 'SuperResolution' select 'Iteration' and set this value to '3'. Set the 'Type' to 'Integer' and Range Checking = 1.3

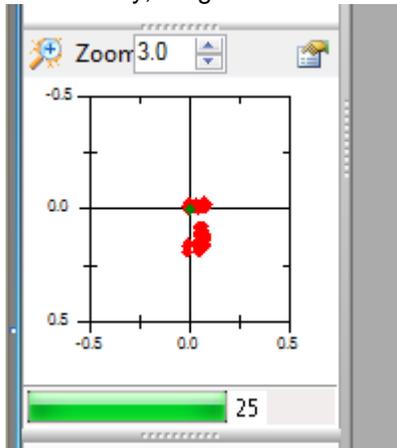
2. Apply a 'SuperResolution' filter

Set the region of interest as shown in the image below:



3. Set the Super Resolution 'Zoom' parameter to 3.0 (as illustrated below) and then played the file from start to end so that each image is registered. Note: The number to the right of the green indication bar shows that 25 images have been registered. Also the number of red dots would appear

to indicate that only 25 images have registered. This is not the case. These indications stop counting at 25, however as you continue to play the footage, each additional frame is also registered. (All the registered images get copied to two folders ending 'regs_0' and 'regs_1' in your Impress Case Directory. The frame which you start on gets copied to the folder ending in 'regs_0', and all the images being registered in relation to that image are added to the folder ending in 'regs_1'). In summary, I registered all 249 images with reference to the first image of the sequence.



4. Selected the magnifying glass icon 'Calculate super resolution image' (shown in the top left of the image above)
 5. Exported the resulting image as a .TIF file 'Result_249Images_Impress6_Itterations3_Zoom3.tif'
3. Did you select a "region of interest" for directing the super-resolution tool? If so please specify co-ordinates of the region (if used) in the format given by the tool.

Use any space you need
Yes, see images shown above

4. Did you select any specific frames or image? If so, please provide details of range of frames or specific frames you used.

Use any space you need
Used all 249 images for the super-resolution calculation (see above)

5. Please provide any other information that would be needed so that others would be able to repeat and reproduce your work.

Use any space you need

Qn.2B

Please select your best result, i.e.: a single best quality super-resolution image:
Please save and submit your results using filename: "Q2B_SuperRes_YOURINITIALS"

1. How have you ingested the material into your enhancement system and super-resolution software tools?
Please detail all steps of any conversion performed including all software tools and settings used. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Not Attempted this Question

2. Which of the 5 number plates have you concentrated your efforts on (1=closest number plate, ..., 5=most distant) and how did you decide on selecting this number plate?

Selected no. plate: 1, 2, 3, 4, or 5

Decision reached how:

3. Please specify all software tools and all enhancement filters used (in order) and specific parameter settings; e.g. Super-Resolution Filter (Method? Zoom factor? Number of Iterations? Interpolation?.....)

Use any space you need

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
- Etc

4. Did you select a "region of interest" for directing the super-resolution tool? If so please specify co-ordinates of the region (if used) in the format given by the tool.

Use any space you need

5. Did you select any specific frames or image? If so, please provide details of range of frames or specific frames you used.

Use any space you need

6. Please provide any other information that would be needed so that others would be able to repeat and reproduce your work.

Use any space you need

Qn2B. (continued): optional:

As indicated on the Collaborative Exercise webpage you may choose to submit multiple results. If this is the case then please specify how you obtained your results by replicating the previous 6 points for each Procedure/toolset used and/or each possible license plate you focussed on.

For example:

Please save and submit your results using filename:

'Q2B_SuperRes_Procedure1_PlateAll_YOURINITIALS' to indicate the best enhancement result you obtained for all plates using the Procedure1 you will describe using a cut-paste repetition of the 6 previous subquestions above, etc.

and/or

Please save and submit your results using filename:

File name: 'Q2B_SuperRes_Procedure2_Plate1_YOURINITIALS' to indicate the best enhancement result you obtained for Plate 1 using the Procedure2 you will describe using a cut-paste repetition of the 6 previous subquestions above, etc.

and/or

Please save and submit your results using filename:

File name: 'Q2B_SuperRes_Procedure2_Plate2_YOURINITIALS' to indicate the best enhancement result you obtained for Plate 2 using the Procedure2 you will describe using a cut-paste repetition of the 6 previous subquestions above, etc.

etc.

Qn.2C (optional)

Please select your best result, i.e.: a single best quality super-resolution image:
please save and submit your results using filename: "Q2C_SuperRes_YOURINITIALS"

1. How have you ingested the material into your enhancement system and super-resolution software tools?
Please detail all steps of any conversion performed including all software tools and settings used. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

Use any space you need

Not Attempted this Question

2. Which of the 5 number plates have you concentrated your efforts on (1=closest number plate, ..., 5=most distant) and how did you decide on selecting this number plate?

Selected no. plate: 1, 2, 3, 4, or 5

Decision reached how:

3. Please specify all software tools and all enhancement filters used (in order) and specific parameter settings; e.g. Super-Resolution Filter (Method? Zoom factor? Number of Iterations? Interpolation?.....)

Use any space you need

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
- Etc

4. Did you select a "region of interest" for directing the super-resolution tool? If so please specify co-ordinates of the region (if used) in the format given by the tool.

Use any space you need

5. Did you select any specific frames or image? If so, please provide details of range of frames or specific frames you used.

Use any space you need

6. Please provide any other information that would be needed so that others would be able to repeat and reproduce your work.

Use any space you need

Qn2C. (continued): optional:

As indicated on the Collaborative Exercise webpage you may choose to submit multiple results. If this is the case then please specify how you obtained your results by replicating the previous 6 points for each Procedure/toolset used and/or each possible license plate you focussed on.

For example:

Please save and submit your results using filename:

'Q2C_SuperRes_Procedure1_PlateAll_YOURINITIALS' to indicate the best enhancement result you obtained for all plates using the Procedure1 you will describe using a cut-paste repetition of the 6 previous subquestions above, etc.

and/or

Please save and submit your results using filename:

File name: 'Q2C_SuperRes_Procedure2_Plate1_YOURINITIALS' to indicate the best enhancement result you obtained for Plate 1 using the Procedure2 you will describe using a cut-paste repetition of the 6 previous subquestions above, etc.

and/or

Please save and submit your results using filename:

File name: 'Q2C_SuperRes_Procedure2_Plate2_YOURINITIALS' to indicate the best enhancement result you obtained for Plate 2 using the Procedure2 you will describe using a cut-paste repetition of the 6 previous subquestions above, etc.

etc.

Question 3: Focal deblur test

Please specify (i) all software tools or processing steps, (ii) all enhancement filters used (in order) and (iii) all specific parameter settings. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

125 cm chart:

Please save and submit your results using filename: 'Q3_125cm_YOURINITIALS' or 'Q3_125cm_LineNUMBER_YOURINITIALS'

Use any space you need

Not Attempted this Question

75 cm, 4th line:

Please save and submit your results using filename: 'Q3_75cm_Line4_YOURINITIALS'

Use any space you need

Not Attempted this Question

75 cm, 5th line:

Please save and submit your results using filename: 'Q3_75cm_Line5_YOURINITIALS'

Use any space you need

Not Attempted this Question

any other results: optional:

Please save and submit your results using filenames:
'Q3_DISTANCEcm_LineNUMBER_YOURINITIALS'

Use any space you need

Question 4: Motion deblur test

Qn.4A:

Please specify (i) all software tools or processing steps, (ii) all enhancement filters used (in order) and (iii) all specific parameter settings. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

If you wish to provide results for different regions of interest in the image, please specify their coordinates and/or indicate the region in a small thumbnail, and use the filenames: "Q4A_RegionNUMBER_YOURINITIALS".

Region NUMBER: coordinates and/or thumbnail:

Use any space you need, repeat section depending on number of regions (max. 5)

Not Attempted this Question

Qn.4B:

Please specify (i) all software tools or processing steps, (ii) all enhancement filters used (in order) and (iii) all specific parameter settings. The information you provide should have sufficient detail so that anyone could independently reproduce your results.

If you wish to provide results for different regions of interest in the image, please specify their coordinates and/or indicate the region in a small thumbnail, and use the filenames: "Q4A_RegionNUMBER_YOURINITIALS".

Region NUMBER: coordinates and/or thumbnail:

Use any space you need, repeat section depending on number of regions (max. 5)

Not Attempted this Question