S-FIVE Collaborative Exercise

https://s-five.eu/mediawiki/index.php/Collaborative_Exercise

This document contains a description of a Collaborative Exercise (CE) aimed at making an anonymous comparison of image/video enhancement capabilities across Europe and the globe, trying to learn from this exercise and providing some first insights into future design of formal Proficiency Tests.
In other words, please note that this exercise has not been formally approved by ENFSI (DIWG/QCC) as an official collaborative exercise or proficiency test.

The questions included in this exercise are based on the results obtained from Survey1 that the S-FIVE project conducted earlier.

For returning your results, please use the **Answer Form**, and the file names specified below. More detailed instructions on how to submit your results will be provided via the S-FIVE webserver later on.
The **final deadline** for submission of results will be **Fri., April 24.**

Some questions have been labeled optional.
Please make a best effort to complete all (other) questions. If, for whatever reason, you are unable to complete some questions (lack of tools, time, ...), please return any results you may have obtained (and indicate why you have not answered some questions).

This document contains only a snapshot of the S-FIVE CE-webpage (Wed. 04 March 2015); Please consider revisiting the S-FIVE webpage about this Collaborative Exercise; if needed any corrections, updates or other additional information will be provided and documented there.

Please note that the provided video player archives contain executable/autorun files. Please consider appropriate PC setup and security measures when running/installing this software.

Please note that by participating to this exercise you agree that the S-FIVE project team may (re)use and publish all information reported in the Answer Form, all submitted image enhancement results, or any other provided information. However/See also:

All obtained information will only be used in an anonymous manner as outlined in the Privacy Policy and Statement and the Disclaimer & Terms and Conditions of Service available on the main S-FIVE Project website.

If you experience any issues or would have any questions related to the exercise, please contact us using info@s-five.eu.

Qn.1: Image extraction at best quality:

Within this question, the aim is to extract **at best quality** a specified frame from video footage recorded in different CCTV system file formats. Best quality should be understood to mean: minimum degradation with respect to its form within the source file, aiming for 1:1 pixel mapping. In other words, please submit the specified frames in this raw form without attempting to restore, e.g., true to life aspect ratio, or performing any other image operations.

Question 1A.

- Download the [Zip File: XVis TestE, 7m distance, high-elevation example](#) and extract its contents to a new folder.
  A player and files required for it to run are provided in the folder 'Player'. The folder '20140508' contains a video file in the .drv format as well as .sig metadata file (at the bottom of the folder tree in the folder titled 'Normal'.)
- Extract the first frame of the file (from timestamp 'PM 04:43:01 2014/04/28') at *best quality* (see definition given above) using either

1. the replay software supplied and the procedure described below, and submit your result using the filename 'Q1A_ReplayDescribed_YOUR INITIALS', or,
2. some other method (with or without the replay software) if a preferable result is achievable, and submit your result using the filename 'Q1A_OtherMethod_YOUR INITIALS'

- *Procedure: How to replay the footage using the Provided Replay Software:*
  - The replay software can be run by double clicking 'DVR_Player.exe'. The software is self contained and does not require installation.
  - Click the 'Play' style button on the bottom of the GUI. A Window titled 'Data List' will appear
  - Click 'Open' at the top of this window. A new window titled 'Source' will appear. Select the appropriate drive and navigate to the folder titled 'Normal' which contains the .drv file.
  - Ensure that you double click on the folder icon against 'Normal' so the icon changes from a closed folder to an open folder (the contents of the folder will not be shown).
  - Click 'OK' to confirm the selection which closes the window titled 'Source'
  - Click 'Playback' at the bottom of the window titled 'Data List'. A new window titled 'Playback' will appear.
  - Click 'OK' at the top-right of the window titled 'Playback'. After a moment or two, the footage will begin playing back.

Question 1B

- Download the video file and the replay software using the links below.
  [Video File: TestE_7mDistance_HighElevation.zip](#)
  [DM-observer-1.18.59-installer.exe (Replay Software)](#)

- Unzip 'TestE_7mDistance_HighElevation.zip' to obtain the video file 'TestE_7mDistance_HighElevation.PAR'

- Double click on 'DM-observer-1.18.59-installer.exe' to install the replay software on your computer. This will open an installation wizard. Select 'Next' for each step of the wizard, and 'Done' to complete the installation.

- Extract the first frame from timestamp '4:43:30 PM GMT' *at best quality* (see definition given above) using

1. the replay software supplied and the procedure described below, and submit your result using the filename 'Q1B_ReplayDescribed_YOUR INITIALS', or,
2. some other method if a preferable result is achievable, and submit your result using the filename 'Q1B_OtherMethod_YOUR INITIALS'

- *Procedure: How to replay the footage using the Provided Replay Software:*
  - Open the replay software via the 'Start' menu of your PC. Start/Programs/DM NetVu Observer\DM NetVu Observer
  - In the top left of the GUI, select 'File/Open Video'. A new window will appear titled 'Open'
  - Navigate to the video file of .PAR file format and click on 'Open'
  - In the window titled 'Import Video', Click on 'OK'. After a moment or two, the footage will begin playing back.

Question 1C

- What is the frame size (in pixels) of each of the source file recordings given for Question 1A & Question 1B?
- What are your conclusions about the raw, encoded quality of the provided video frame/sequence in Q1A and Q1B?

Qn.2: Super-Resolution:

In this question, the aim is to use the material available in the supplied video frames to create a single enhanced image using super-resolution enhancement such that the characters of the number plates are shown with greater clarity.

The number plates used in this exercise are composed of random numbers and letters from the UK number plate alphabet. The number and letter combinations will therefore not necessarily follow the legal format specified by any particular country.

Question 2A.

- Download the following folder containing a sequence of 249 frames of video as stills in .bmp format, and enhance the number plate as best as possible (using super-resolution): SuperResolutionTestFrames.zip: Frame Sequence for Super-Resolution.

- Submit your selected best result using the filename 'Q2A_SuperRes_YOURINITIALS'.

Question 2B.

- Download the following zip file containing video footage and replay software Zip File: TestP, 7m distance, mid-elevation example

- Extract the contents of the zip file in a new folder. It contains a video file in the .dav format as well as a further zip file 'Player.zip' containing replay software.

- Apply super-resolution methods to attempt to enhance the number plates as best as possible

- Submit your selected best result using the filename 'Q2B_SuperRes_YOURINITIALS'. If you wish to submit multiple results, e.g., for various procedure or tools and/or for each license plate, use the filenames 'Q2B_SuperRes_ProcedureNUMBER_PlateNUMBER_YOURINITIALS' and adapt/extend the answer form so that each procedure/tool used and number plate can be identified uniquely and all your results can be reproduced by another person. The answer form will ask to identify number plates as follows: 1=closest number plate, ..., 5=most distant.

How to number plates.

- *Using the Provided Replay Software:*
    - Unzip the replay software to a new folder, and run by double clicking 'play.exe'. The software is self contained and does not require installation.
    - Click the 'Eject' style button on the left of the GUI to locate the .dav file and select 'open'

Question 2C (Optional).

- Download the following Zip File: TestH, 7m distance, high-elevation example containing video footage and replay software and apply super-resolution to attempt to enhance the number plates as best as possible (See Question2B for guidelines on how to use the provided archive).

- Submit your selected best result using the filename 'Q2C_SuperRes_YOURINITIALS'. If you wish to submit multiple results, e.g., for various procedure or tools and/or for each license plate, use the filenames 'Q2C_SuperRes_ProcedureNUMBER_PlateNUMBER_YOURINITIALS' and adapt/extend the answer form so that each procedure/tool used and number plate can be identified uniquely and all your results can be reproduced by another person. How to number the plates is illustrated in the previous question.

Qn.3: Focal Deblur Tests:

- Download the following image containing letter charts positioned at different focal depths from the camera lens. As well as the title at the top, each chart contains 6 lines of random letters from the English Alphabet. Then:

1. Provide your best enhancement results for the test chart titled '125cm' and submit your result using the filenames 'Q3_125cm_YOURINITIALS' or 'Q3_125cm_LineNUMBER_YOURINITIALS'
2. Attempt to enhance the 4th line of letters in the test chart titled '75cm' and submit your result using the filenames 'Q3_75cm_Line4_YOURINITIALS'
3. (Optional): Attempt to enhance the 5th line of letters in the test chart titled '75cm' and submit your result using the filenames 'Q3_75cm_Line5_YOURINITIALS'
4. (Optional): Attempt to enhance any of the other test charts and lines and submit your result using the filenames 'Q3_CHARTDISTANCEcm_LineNUMBER_YOURINITIALS'

Focal Blur (Thumbnail View)]

Click here to download the image (Random_Focus_150cm_from_lens.JPG)

Qn.4: Motion Deblur Tests:

Question 4A.

- Please try to enhance any text, logo's or number regions of interest in the image below (max. of 5 different text, logo, or number regions).

- 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"

Question4A Image

[Click here to download the image Qn4A.png](#)

Question 4B.

- Please try to enhance any text, logo's or number regions of interest in the image below (max. of 5 different text, logo, or number regions).

- 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: "Q4B_RegionNUMBER_YOURINITIALS"

Question4B Image

[Click here to download the image Qn4B.png](#)

END OF DOCUMENT (version 04/03/2015)